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October 27, 2020

Hillary Young
Chief Engineer - Land Protection Division
Oklahoma Department of Environmental Quality
P.O. Box 1677
Oklahoma City, OK 73162

Re: Submittal of Assessment of Corrective Measures Report
Western Farmers Electric Cooperative – Hugo Power Station, Fort Towson, Oklahoma

Dear Ms. Young:

Western Farmers Electric Cooperative (WFEC) has completed the Assessment of Corrective Measures (ACM) Report. It is being submitted for DEQ's review and approval. This work was outlined in the previously submitted Plan and Schedule for Analyzing SSIs for Molybdenum.

Please notify me at 405-255-3887 or by email should you have any questions.

Sincerely,

Kent Fletcher

Kent Fletcher
Environmental Coordinator

Copy: Chris Schaefer Altamira, Gerald Butcher, John McCreight, Bert Smith, Stephen Jantzen

ASSESSMENT OF CORRECTIVE MEASURES (ACM) REPORT
WESTERN FARMERS ELECTRIC COOPERATIVE
HUGO POWER STATION
FORT TOWSON, OKLAHOMA

October 29, 2020

Prepared for:

Western Farmers Electric Cooperative

P.O. Box 429

Anadarko, Oklahoma 73005

Prepared by:

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ALTAMIRA

formerly known as Enviro Clean Cardinal

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1.0 EXECUTIVE SUMMARY

Western Farmers Electric Cooperative (WFEC) is currently conducting Assessment Monitoring for its Landfill Coal Combustion Residuals (CCR) Unit at its Hugo Power Station (HPS) pursuant to Oklahoma Administrative Code (OAC) Chapter 517, Disposal of Coal Combustion Residuals from Electric Utilities (OAC 252:517). Molybdenum has been detected in four of the 10 downgradient monitoring wells at statistically significant levels (SSLs) above both the established site-specific Groundwater Protection Standard (GWPS) and the EPA risk based alternative GWPS for molybdenum. In its letter dated December 2, 2019, the Oklahoma Department of Environmental Quality (ODEQ) required that WFEC proceed with OAC 252:517-9-7 (Assessment of Corrective Measures); including submittal of a proposed plan and schedule for analyzing the molybdenum and for developing appropriate corrective action. A Plan and Schedule for Analyzing SSIs for Molybdenum (Altamira; March 4, 2020) was submitted and the ODEQ conditionally approved of this Plan in its letter dated April 28, 2020.

Activities as proposed in the above referenced Plan were completed between June and August 2020. These activities included installation and development of five perched zone and four nested deeper zone monitoring wells downgradient from the four monitoring wells where molybdenum had been found to exceed the GWPS; testing to evaluate horizontal hydraulic conductivity of groundwater at the HPS; testing to evaluate possible attenuation of molybdenum to subsurface rock/soils at the HPS; statistical trend analysis of the CCR Landfill monitoring wells for molybdenum; and sampling of select wells for total and dissolved molybdenum, for CCR detection monitoring constituents (OAC 252:517 Appendix A), and for parameters to evaluate effectiveness of monitored natural attenuation (MNA) as a possible remedy. These activities were conducted near concurrent with the first semi-annual 2020 Assessment Monitoring event. From these activities:

1) The highest molybdenum in groundwater is limited to the periphery along the northeast and southeast corners of the Landfill CCR Unit;
2) It does appear that molybdenum from the groundwater adsorbs to native rock materials at the HPS and that molybdenum attenuates significantly away from the Landfill CCR Unit. Molybdenum concentrations at further downgradient monitoring wells east and southeast of the Landfill CCR Unit are nearly an order of magnitude lower than those near the Landfill CCR Unit and are below the EPA risk-based GWPS. Molybdenum concentrations at further downgradient monitoring wells north and northeast of the landfill are below the GWPS;

3) The reported molybdenum concentrations coupled with no elevated molybdenum in wells associated with the Surface Impoundment CCR Unit (which is downgradient of the Landfill CCR Unit) are believed sufficient to characterize the lateral extent of molybdenum in groundwater;
4) It appears that near-surface groundwater at the HPS are perched non-contiguous groundwater zones. This is evidenced by the fact that most of the wells bail dry easily and that when bailed dry take several days, if not weeks, to recover;
5) Based upon statistical trend analysis of molybdenum in groundwater from the Landfill CCR Unit wells, no statistically significant increasing trends for molybdenum have been identified in any of the monitoring wells;
6) Based on hydraulic conductivity testing and hydraulic gradient, the average groundwater flow velocity in the uppermost perched groundwater system at the HPS is estimated at $1.72x10^{-6}$ cm/second; or 1.67 feet/year. The groundwater flow velocity through the Kiamichi Formation is conservatively estimated at $7.64x10^{-7}$ cm/second; or 0.79 feet/year. The groundwater flow velocity through the Caddo Formation is conservatively estimated at $1.94x10^{-6}$ cm/second; or 2.01 feet/year;
7) To the southeast, the nearest property boundary is more than 1,000 feet from identified molybdenum in groundwater over the GWPS. To the east and northeast, the nearest property boundaries are at least 7,500 feet from identified molybdenum concentrations in groundwater over the GWPS. Using the highest calculated groundwater velocity of 2.01 feet/year, it would take approximately 498 years to reach the nearest property boundary to the southeast and it would take approximately 3,730 years to reach the property boundaries to the northeast and east. Molybdenum would likely be attenuated to below the GWPS by the natural geologic regime prior to ever reaching any property boundary; and
8) From a risk evaluation conducted on wells downgradient and in the flow path of groundwater from the Landfill CCR Unit, constituents present in shallow perched groundwater <u>do not</u> pose a hazard to potential on-site or off-site human or ecological receptors.

Several different corrective measure alternatives were evaluated for source control and groundwater remediation pertaining to molybdenum at the HPS. These corrective measure alternatives were evaluated based on performance, reliability, ease of implementation, potential impacts of the corrective measure, time required to begin and complete remediation and institutional requirements of the corrective measure. Based on the evaluation contained herein, the preferred corrective measure alternative at the HPS is Source Control via Enhanced Dewatering (removal of standing water from the Landfill CCR Unit and maintaining run-on controls) combined with MNA as a groundwater remedy. However, the following actions are proposed to fill data gaps prior to final selection of a remedy.

- Continue on-going dewatering of standing water in the Landfill CCR Unit, combined with an evaluation of current run-on controls.
- Conduct a minimum of two years of semi-annual sampling of monitoring wells downgradient of the Landfill CCR Unit to establish the effectiveness of monitored natural attenuation at the HPS. It is proposed that sampling be conducted as outlined in the Plan and Schedule for Analyzing SSIs for Molybdenum (Altamira, March 4, 2020) and that semi-annual sampling occur in October and April until sufficient data is collected.

Until a remedy is selected, WFEC will prepare and submit to ODEQ for approval semi-annual reports describing the progress in selecting and designing the remedy. At least 30-days prior to selecting a remedy, WFEC will conduct a public meeting to discuss the results of the corrective measures assessment (as required by OAC 252:5179-7(e)). The Corrective Measures Assessment, supplemental data obtained, and the input received during the public comment period, will be used to identify a corrective measure for implementation at the HPS. Upon selection of a remedy, WFEC will prepare and submit to ODEQ for approval a final report describing the selected remedy, how it meets the standards, and specifying a schedule for implementing and completing remedial activities. The final report will include a certification from a qualified professional engineer that the remedy selected meets the requirements of the selection criteria and the final report will be placed in the operating record.

2.0 INTRODUCTION

This Assessment of Corrective Measures (ACM) Report is prepared on behalf of Western Farmers Electric Cooperative (WFEC) for its Landfill Coal Combustion Residuals (CCR) Unit (CCR Unit 1) at its Hugo Power Station (HPS). The HPS is currently conducting Assessment Monitoring for its Landfill CCR Unit pursuant to Oklahoma Administrative Code (OAC) Chapter 517, Disposal of Coal Combustion Residuals from Electric Utilities (OAC 252:517). As a result, molybdenum has been detected in downgradient wells at statistically significant levels (SSLs) above the established Site-specific Groundwater Protection Standard (GWPS) and the EPA alternative risk-based GWPS. Molybdenum is one of the constituents for assessment monitoring (OAC 252:517, Appendix B constituents).

This report is prepared and submitted to the Oklahoma Department of Environmental Quality (ODEQ) in accordance with OAC 252:517-9-7; which requires the owner or operator of a CCR Unit to initiate an assessment of corrective measures upon finding that any Appendix B constituent has been detected at an SSL exceeding the GWPS. It presents findings from activities performed to analyze the SSLs for molybdenum, including those to characterize nature and extent. It also identifies and evaluates potential corrective measures.

Sampling activities conducted to date associated with the Landfill CCR Unit are as follows:

1) Sampling to establish initial background was conducted between May 2016 and August 2017. Data was reported in the Initial Annual Groundwater and Corrective Action Report (Enviro Clean Cardinal; January 31, 2018). Based on results from initial background sampling, upper prediction limits were established for detection monitoring parameters and Site-specific Ground Water Protection Standards (GWPS) were established for assessment monitoring constituents.
2) Detection monitoring was initiated in May 2018. On June 27, 2018, WFEC determined that there may be potential statistically significant increases (SSIs) over background for some detection monitoring parameters. The ODEQ was notified of these potential SSIs on July 3, 2018. Sampling was conducted in August 2018 to verify the apparent SSIs over background and to support an alternative source demonstration. On September 24, 2018, WFEC provided notice that assessment monitoring was being initiated at the HPS.
3) Findings from the August 2018 sampling were reported in the Apparent Exceedance from Detection Monitoring/Alternative Source Demonstration (Enviro Clean Cardinal; September 26, 2018).
4) The initial assessment monitoring event was conducted in September/October 2018.
5) On October 26, 2018, the ODEQ responded to the Apparent Exceedance from Detection Monitoring/Alternative Source Demonstration (Enviro Clean Cardinal; September 26, 2018). The ODEQ requested that WFEC continue with assessment monitoring pending additional information and review of the next annual groundwater corrective action report by the ODEQ.
6) The laboratory experienced reporting and quality issues associated with the September/October 2018 initial assessment monitoring event. The analytical laboratory was changed and resampling for the initial assessment monitoring event was conducted starting on January 10, 2019. On January 22, 2019, the ODEQ granted an extension of the submittal deadline of the 2018 Annual Groundwater and Corrective Action Report to allow incorporation of results from the January 2019 resampling for the initial assessment monitoring event. The assessment monitoring program was "established" on March 4, 2019, upon receipt of all laboratory reports from the January 2019 sampling event. The 2018 Annual Groundwater Corrective Action Report (Enviro Clean Cardinal) was submitted on April 16, 2019. From the January 2019 assessment monitoring event, SSIs over the established Site-specific GWPS were indicated for molybdenum at four of the 10 monitoring wells downgradient of the Landfill CCR Unit (MW-15A, MW-16, MW-18 and MW-19S). An exceedance of the Site-specific GWPS (but not the EPA alternative risk-based GWPS) was indicated for cobalt at MW-21.
7) The second assessment monitoring event was conducted starting on April 23, 2019. WFEC again determined that there may be potential exceedances over the Site-specific

GWPS for molybdenum at MW-15A, MW-16, MW-18 and MW-19S. An exceedance of the Site-specific GWPS (but not the EPA alternative risk-based GWPS) was indicated for cobalt at MW-7S. The ODEQ was notified of these apparent exceedances from Assessment monitoring on July 24, 2019.

8) Data was obtained and compiled to support an alternative source demonstration to address the SSIs over the GWPS for cobalt and molybdenum. Findings were provided to ODEQ in the report Exceedances from Assessment Monitoring and Alternative Source Demonstrations (Altamira; September 30, 2019).
9) The third assessment monitoring event was conducted starting on October 3, 2019. WFEC again determined that there may potential SSIs over background levels for molybdenum at MW-156A, MW-16, MW-18 and MW-19S. The ODEQ was notified of these apparent exceedances on December 11, 2019.
10) On December 2, 2019, the ODEQ responded to the Exceedances from Assessment Monitoring and Alternative Source Demonstrations (Altamira; September 30, 2019). In its response, the ODEQ agreed that evidence supports an alternate source for cobalt exceedances identified. However, the ODEQ requested that WFEC submit a proposed plan and schedule for analyzing and for developing appropriate corrective action for the molybdenum exceedances.
11) The 2019 Annual Groundwater Corrective Action Report (Altamira) was submitted on January 31, 2020.
12) A Plan and Schedule for Analyzing SSIs for Molybdenum (Altamira) was submitted to ODEQ on March 4, 2020. This Plan was subsequently approved by the ODEQ on April 28, 2020. Activities outlined in the Plan were initiated in June 2020.
13) The fourth assessment monitoring event was conducted starting on June 17, 2020.

In addition to sampling as discussed above, the HPS is also conducting Assessment Monitoring of its Surface Impoundment CCR Units; comprised of a northern cell (CCR Unit 2) and a southern cell (CCR Unit 3). The CCR Unit 2 has been closed and a new permitted impoundment under the ODEQ Water Quality Division is being constructed. The CCR Unit 3 is slated for closure once the new impoundment is completed and in use. To present, no Appendix B constituents have been detected from the Surface Impoundment groundwater sampling program at SSLs above GWPSs. As such, this ACM does not apply to the Surface Impoundment CCR Unit.

This report will be placed in the HPS operating record and on WFEC's publicly accessible CCR Website (https://2015website2.wixsite.com/wfec-ccr).

3.0 SITE DESCRIPTION

The HPS is a 446-megawatt, coal-fired, electric generating plant owned and operated by WFEC. It went into commercial operation on April 1, 1982. The facility is located approximately 3 miles west of Fort Towson, Oklahoma on U.S. Highway 70 in Choctaw County in southeastern Oklahoma. The HPS occupies approximately 2,560 acres, of which approximately 1,200 acres are developed for power plant operations. The HPS generates CCR solid waste in the form of fly ash and bottom ash. The fly and bottom ash are managed at the Landfill CCR unit. The Landfill CCR Unit is situated in the southwestern portion of the HPS and covers an area of approximately 35.2 acres. The Surface Impoundment CCR Unit is situated in the southeast portion of the HPS, east of the Landfill CCR Unit. It is comprised of a northern cell (CCR Unit 2) and a southern cell (CCR Unit 3). The CCR Unit 2 has been closed and a new permitted impoundment under the ODEQ Water Quality Division is being constructed. The CCR Unit 3 is slated for closure once the new impoundment is completed and in use. The approximate property boundary and location of the CCR Units are shown on **Figure 1**.

As previously mentioned, the HPS conducts assessment monitoring for both the Landfill and Surface Impoundment CCR Units. However, no Appendix B constituents have been detected in groundwater at SSLs above the GWPSs for the Surface Impoundment CCR Unit and this ACM does not apply to that Unit.

4.0 MONITORING NETWORK (LANDFILL CCR UNIT)

The groundwater monitoring system for the Landfill CCR Unit is comprised of two upgradient (background) monitoring wells (MW-13 and MW-14A) and ten compliance monitoring wells (MW-3, MW-5S, MW-7S, MW-15A, MW-16, MW-17, MW-18, MW-19S, MW-20 and MW-21). All monitoring wells that are part of the monitoring network for the Landfill CCR Unit are installed in the Caddo Formation. Monitoring well locations for the Landfill CCR Unit are depicted on **Figure 2**. This figure also shows the location of proximate monitoring wells that are not associated with the Landfill CCR Unit.

5.0 STATUS OF GROUNDWATER MONITORING (LANDFILL CCR UNIT)

Groundwater sampling associated with the Landfill and the Surface Impoundment CCR Units has been ongoing since May 2016. **Appendix A** includes a summary table of analytical data collected to date for the Landfill CCR Unit. **Appendix B** includes a summary table of analytical data collected to date for the Surface Impoundment CCR Unit. The status of groundwater sampling associated with the Landfill CCR Unit is discussed in this section.

6.0 SAMPLING TO ESTABLISH INITIAL BACKGROUND

The initial eight sampling events to establish background for the Landfill CCR Unit were completed between May 2016 and August 2017. The groundwater sample data collected as part of initial background were provided to the ODEQ in the Initial Annual Groundwater and Corrective Action Report (Enviro Clean Cardinal; January 31, 2018). The report included all groundwater data collected to establish initial background and summarized statistical analysis conducted on the data. The Initial Annual Groundwater and Corrective Action Report established upper prediction limits from the distribution of the background data for each of the parameters contained in OAC 252:517 Appendix A and established GWPS for each of the Assessment Monitoring parameters as contained in OAC 252:517 Appendix B. This report is in the HPS operating record and on WFEC's publicly accessible CCR Website (https://2015website2.wixsite.com/wfec-ccr). A summary of data from the initial background sampling of Landfill CCR Unit monitoring wells is included on the table in **Appendix A**.

7.0 DETECTION MONITORING

Detection monitoring was initiated for the Landfill CCR Unit in May 2018. Findings from the May 2018 sampling were reported in the 2018 Annual Groundwater and Corrective Action Report (Enviro Clean Cardinal; April 16, 2019). From May 2018 sampling, WFEC determined that there may be potentially statistically significant increases (SSIs) over the established background for some detection monitoring parameters relating to the Landfill CCR Unit. As such, the ODEQ was notified of the potential SSIs on July 3, 2018 and an Assessment Monitoring Program was initiated as per OAC 252:517-9-6. A summary of data from the detection monitoring of the Landfill CCR unit monitoring wells is included on the table in **Appendix A**.

8.0 ASSESSMENT MONITORING

WFEC is currently conducting Assessment Monitoring for the Landfill CCR Unit. To date, four Assessment Monitoring Events have been completed (January 2019, April 2019, October 2019 and June 2020). Findings from assessment monitoring of the Landfill CCR unit monitoring wells are included on the table in **Appendix A** and are summarized below:

January 2019 Assessment Monitoring: Samples were initially conducted in September/October 2018, but WFEC experienced reporting and quality-control issues with the laboratory. In a letter dated January 22, 2019, ODEQ allowed for resampling; which occurred in January 2019. As a result of quality-control issues with the analytical laboratory, HPS decided to use another analytical laboratory (ALS, Houston, Texas) for the January 2019 sampling. From the January

2019 sampling, molybdenum was detected at an SSL above the GWPS in samples collected from four of the 10 downgradient monitoring wells from the Landfill CCR Unit (MW-15A, MW-16, MW-18 and MW-19S). Cobalt was also detected at an SSL above a Site specific GWPS, but not above the EPA risk-based GWPS, in a single sample collected from MW-21. The ODEQ via letter (August 20, 2019) requested that WFEC use data from the January 2019 sampling results. Findings from the January 2019 sampling were reported in the 2018 Annual Groundwater and Corrective Action Report (Enviro Clean Cardinal; April 16, 2019). Samples collected since January 2019 are being submitted to ALS, Houston, Texas.

April 2019 Assessment Monitoring: From the April 2019 sampling, molybdenum was again detected at an SSL above the GWPS in samples collected from four of the 10 downgradient monitoring wells from the Landfill CCR Unit (MW-15A, MW-16, MW-18 and MW-19S). Cobalt was also detected at an SSL above a Site specific GWPS, but not above the EPA risk-based GWPS, in a single sample collected from MW-7S. Unlike the January 2019 assessment monitoring, cobalt concentrations in MW-21 were not identified as an SSL above either a Site specific or EPA risk-based GWPS during the April 2019 sampling event. Findings from the April 2019 sampling were reported in the Notification of Apparent Exceedances from Assessment Monitoring (Enviro Clean Cardinal; July 24, 2019) and in the 2019 Annual Groundwater and Corrective Action Report (Altamira; January 31, 2020).

October 2019 Assessment Monitoring: From the October 2019 sampling, molybdenum was detected at an SSL above the GWPS in samples collected from four of the 10 downgradient monitoring wells from the Landfill CCR Unit (MW-15A, MW-16, MW-18 and MW-19S). No other Appendix B constituents were detected as an SSL over the GWPS. Findings from the October 2019 sampling were reported in the Notification of Apparent Exceedances from Assessment Monitoring (Altamira; December 11, 2019) and in the 2019 Annual Groundwater and Corrective Action Report (Altamira; January 31, 2020).

June 2020 Assessment Monitoring: This sampling was originally scheduled to occur in April 2020, but due to COVID-19 concerns, it was delayed until June 2020. From the June 2020 sampling, molybdenum was detected at an SSL above the GWPS in samples collected from four of the ten downgradient monitoring wells from the Landfill CCR Unit (MW-15A, MW-16, MW-18 and MW-19S). No other Appendix B constituents were detected as an SSL over the GWPS. Reports including findings for submission to ODEQ are pending. Reported molybdenum concentrations from June 2020 sampling are shown on **Figure 3**.

9.0 ALTERNATIVE SOURCE DEMONSTRATION

In a letter dated August 20, 2019, the ODEQ requested that WFEC submit an Alternate Source Demonstration (ASD) for SSIs at the Landfill CCR Unit. As part of the ASD, WFEC conducted select sampling of groundwater, ash, surface water, soil, rock, and an herbicide mixture (weed control) representative of that previously used at the HPS and the resulting data was evaluated. Findings were provided to ODEQ (Exceedances from Assessment Monitoring and Alternative Source Demonstration, Altamira; September 30, 2019). Evidence was presented supporting the proposition that periodic exceedances over the GWPS for cobalt may be associated with sediment in collected groundwater samples or due to leaching of naturally occurring metals in soil and/or rock. Evidence was also presented supporting the proposition that the ash contained in the Landfill CCR Unit is not a likely source of the SSLs indicated for molybdenum. Based on the data obtained, surface water contributions could not be ruled out as a possible source of the SSLs indicated for molybdenum. The ODEQ via letter dated December 2, 2019 recognized that sources other than the CCR Unit may be causing the exceedances above the GWPS for cobalt; but required that WFEC proceed with OAC 252:517-9-7 (Assessment of Corrective Measures) for molybdenum and requested a proposed plan and schedule be submitted to ODEQ within 90 days of receipt of the letter; March 5, 2020. A Plan and Schedule for Analyzing SSIs for Molybdenum (Altamira; March 4, 2020) was submitted to the ODEQ and conditionally approved for implementation via letter dated April 28, 2020.

10.0 CURRENT STATUS

The HPS is currently conducting Assessment Monitoring for the Landfill CCR Unit. From Assessment Monitoring, concentrations of molybdenum are consistently identified at SSLs above the GWPS in samples collected from four of the 10 downgradient monitoring wells from the Landfill CCR Unit (MW-15A, MW-16, MW-18 and MW-19S). An alternative source of the molybdenum in groundwater has not been identified to date and the Landfill CCR Unit is required to enter groundwater corrective action and assess corrective measures.

11.0 ADDITIONAL CHARACTERIZATION OF MOLYBDENUYM

A plan to further analyze the nature and extent of the molybdenum to aid in an assessment of corrective measures was provided to ODEQ (Plan and Schedule for Analyzing SSIs for Molybdenum, Altamira; March 4, 2020). The ODEQ conditionally approved this Plan in its letter dated April 28, 2020 (**Appendix C**). Activities completed under this Plan and findings are discussed below:

1) Five shallow perched-zone monitoring wells (CM-1A, CM-2, CM-3A, CM-4A and CM-5A) were installed in the Caddo Formation at the HPS further downgradient from the four monitoring wells where molybdenum had been found to exceed the GWPS. Well CM-1A was installed slightly northeast of the Landfill CCR Unit and northeast of well MW-15A. Well CM-2 was installed north of the Landfill CCR Unit and north of well MW-15A. Well CM-3A was installed east of the Landfill CCR Unit and east of well MW-16. Well CM-4A was installed east of the landfill CCR Unit and east of well MW-19S. Well CM-5A was installed southeast of the Landfill CCR Unit and southeast of well MW-19S. Approximate locations of these monitoring wells are depicted on **Figure 2**.

   Wells CM-1A, CM-2, CM-3A, CM-4A and CM-5A were installed between June 15 and June 18, 2020. The drilling was completed using sonic drilling methods and the drilling/well installation was completed by Environmental Works under direction of Altamira. Well CM-1A was screened from a depth of 16 feet to 26 feet, predominantly in orange to light brown stiff silty clay / weathered shale. Well CM-2 was screened from a depth of 15 feet to 25 feet, starting in orange to light brown weathered shale and extending into the underlying hard dark grey/black shale containing fossils and intermittent limestone stringers. Well CM-3A was screened from a depth of 12.6 feet to 22.6 feet, well CM-4A was screened from a depth of 15.5 feet to 25.5 feet, and well CM-5A was screened from 18.5 feet to 28.5 feet. Each of these wells were screened within the hard dark grey/black low-permeability shale. The orange to light brown weathered shale observed near surface at CM-1A and CM-2 was not present at these well locations as a fossiliferous limestone extended directly from the top of the dark grey/black shale to the surface. Boring logs, well completion records, and Oklahoma Water Resources Board (OWRB) Groundwater Well and Water Well Test Hole Completion Reports for these monitoring wells are included in **Appendix D**.

2) Four nested deeper monitoring wells (CM-1B, CM-3B, CM-4B and CM-5B) were installed at the HPS in the deeper portions of the Caddo Formation. These wells were installed within 10 feet of the corresponding shallow zone monitoring wells discussed above. These wells were installed between June 15 and June 18, 2020. As with the shallow zone monitoring wells, drilling was completed using sonic drilling methods and the drilling/well installation was completed by Environmental Works under direction of Altamira. Well CM-1B was screened from a depth of 32 feet to 42 feet, CM-3B was screened from a depth of 46 to 56 feet, CM-4B was screened from a depth of 36 to 46 feet and CM-5B was screened from a depth of 38 to 48 feet. Each of these wells was completely screened within a dark gray/black hard shale containing fossils and intermittent limestone stringers in the Caddo Formation. Boring logs, well completion records, and Oklahoma Water

Resources Board (OWRB) Groundwater Well and Water Well Test Hole Completion Reports for these monitoring wells are included in **Appendix D**.

3) An evaluation was conducted to assess whether molybdenum from groundwater might adsorb to the native rock during subsurface flow. A sample of native rock material (both a crushed sample and an undisturbed core sample) were provided to Pace Analytical Laboratories along with groundwater obtained from MW-19S (a well consistently exhibiting elevated molybdenum and completed in the Caddo Formation). Both rock samples were collected from CM-5 from an approximate depth of 12 feet and in the Caddo Formation. The crushed rock sample was analyzed to determine general chemical properties and the core was used for leach testing described below. The groundwater sample was analyzed to obtain a baseline for molybdenum and other chemical parameters and then used as the leaching solution for one of the leach tests.

   The laboratory conducted leach testing over the core with groundwater collected from MW-19S. The water was leached through the core for a period of 16 to 18 hours, the resulting leachate (Leach 1) was analyzed and then leached through the core a second time for a period of 16 to 18 hours, the resulting leachate from the second leach (Leach 2) was analyzed and then leached through the core a third time for a period of 16 to 18 hours, and then the resulting leachate from the third test (Leach 3) was analyzed. From the leach testing using water from MW-19S, it appears that molybdenum from groundwater <u>does</u> adsorb to the native rock material. The baseline molybdenum in the sample from MW-19S prior to leaching was 0.445 mg/L. This value is consistent with results reported from June 17, 2020 samples submitted to ALS (0.402 mg/L), confirming the reported value. After the initial leach, a marked reduction of molybdenum concentration is apparent (as well as a reduction in aluminum, potassium and sodium). The molybdenum concentration of the Leach 1 Sample is 0.310 mg/L; which is a reduction of 0.135 mg/L or approximately 30.4% from that of the original sample.

   A reduction in molybdenum in groundwater due to adsorption to native rock corresponds to findings from groundwater sampling. From groundwater sampling it is evident that molybdenum in groundwater attenuates significantly away from the Landfill CCR Unit; with reported concentrations being more than an order of magnitude lower at CM-3A, CM-3B, CM-4A, CM-4B, CM-5A and CM-5B which are located between 500 to 1,200 feet downgradient from the Landfill CCR Unit.

   The laboratory also conducted leach testing to evaluate potential of molybdenum to leach from the native rock under various pH conditions. Leach testing was conducted over the core with deionized water adjusted to pH of 7 S.U., and with deionized water adjusted to

pH of 12 S.U. For each of these leach tests, the water was leached through the core for a period of 16 to 18 hours, the resulting leachate (Leach 1) was analyzed and then leached through the core a second time for a period of 16 to 18 hours, the resulting leachate from the second leach (Leach 2) was analyzed and then leached through the core a third time for a period of 16 to 18 hours, and then the resulting leachate from the third test (Leach 3) was analyzed. From this leach testing, it does not appear that molybdenum is leached from native rock to groundwater under conditions of either neutral pH of 7 S.U. or elevated pH of 12 S.U.

Results for testing to evaluate adsorption/leaching are included on **Table 1**. Laboratory reports used to assess whether molybdenum from groundwater might adsorb to the native rock during subsurface flow or leach from the rock under various pH conditions are included in **Appendix E**.

4) A survey to determine location, surface elevation and top of casing elevation was completed for wells CM-1A, CM-1B, CM-2, CM-3A, CM-3B, CM-4A, CM-4B, CM-5A and CM-5B. The survey was performed by Lemke Land Surveying, LLC. on July 8, 2020. Details on well construction and screened intervals for all wells at the HPS based on survey are included on **Table 2**.

5) Development of the newly-installed monitoring wells was initiated on June 18, 2020. Each of the wells was surged across its screened portion and intermittently purged using a submersible pump and/or a bailer. Each of the wells was purged dry and allowed to partially recharge. In general, these wells were very slow to recover (taking several days to at least two weeks to fully recover). Because of this, the surging/purging process was repeated several times and over separate events during an approximate three week period extending to July 9, 2020 to ensure proper development. Recovery was measured over an approximate three day period (July 6 through July 9, 2020) at each of the wells to evaluate hydrologic conditions and recharge.

6) Molybdenum concentrations reported at MW-15A, MW-16, MW-18 and MW-19S are consistent with individual well history and the concentrations do not represent an increase over those observed during the original sampling to develop background. Molybdenum concentrations from sampling prior to June/July 2020 were evaluated for trends using a Sen's Slope test combined with a Mann-Kendall test. To date, no statistically significant increasing trends are apparent for molybdenum at monitoring wells MW-15A, MW-16, MW-18 or MW-19S at a 95% confidence interval. To the contrary, significant decreasing trends are apparent for molybdenum at monitoring wells MW-15A and MW-18.

7) Sampling was conducted in June and July 2020 to aid in Site characterization for molybdenum. Monitoring wells comprising the current monitoring network for the Landfill CCR Unit (MW-3, MW-5S, MW-7S, MW-13, MW-14A, MW-15A, MW-16, MW-17, MW-18 , MW-19S, MW-20 and MW-21); and for the Surface Impoundment CCR Unit (MW-8, MW-9, MW-10, MW-11, MW-22A, MW023A, MW-24 and MW-25R) were sampled for CCR constituents for detection monitoring (OAC 252:517 Appendix A), for CCR constituents for assessment monitoring (OAC 252:517 Appendix B) and for nitrate. Of these, MW-5S, MW-7S, MW-15A, MW-16, MW-17, MW-18 and MW-22A were also sampled for dissolved molybdenum and for parameters to evaluate effectiveness of monitored natural attenuation (MNA) as a possible remedy (specific conductance, nitrate, sulfide, ferrous iron, total iron, and dissolved iron). Additionally, sampling conducted in June and July 2020 included some existing monitoring wells not part of the CCR monitoring networks (MW-15B and MW-22B) and the newly-installed wells (CM-1A, CM-1B, CM-2, CM-3A, CM-3B, CM-4A, CM-4B, CM-5A and CM-5B). These wells were sampled for constituents for detection monitoring, total and dissolved molybdenum, and for parameters to evaluate effectiveness of MNA.

   Samples from June and July 2020 groundwater sampling were submitted to ALS, Houston, Texas. Laboratory reports from June/July 2020 groundwater sampling are included in **Appendix F** and the findings are summarized in **Appendix A** (Landfill CCR Unit) and **Appendix B** (Surface Impoundment CCCR Unit). Laboratory reports for June/July 2020 groundwater sampling for total and dissolved molybdenum and for parameters to aid in evaluation of natural attenuation are included in **Appendix G** and are summarized on **Table 3**. Reported molybdenum concentrations (both total and dissolved) from June/July 2020 sampling are shown on **Figure 3**.

8) From the June and July 2020 sampling of the Landfill CCR monitoring wells, total molybdenum was again detected at an SSL above the Site-specific GWPS (0.029 mg/L) in samples collected from MW-15A, MW-16, MW-18 and MW-19S. Reported molybdenum concentrations at these wells also exceeded the EPA alternative risk-based GWPS for molybdenum (0.0100 mg/L). Dissolved molybdenum was reported at similar concentrations in groundwater at these wells and was detected as an SSL above both the Site-specific GWPS and the EPA alternative risk-based GWPS. At some of the newly-installed further downgradient wells (CM-3A, CM-3B, CM-4B and CM-5B) and at well MW-15A (a downgradient monitoring well not typically sampled as part of the CCR Program) total and dissolved molybdenum were detected at concentrations only slightly above the Site-specific GWPS. The reported molybdenum concentrations in groundwater at these wells were below the EPA alternative risk-based GWPS. At two of the newly-installed further downgradient wells (CM-4A and CM-5A), only dissolved molybdenum was

detected at concentrations above the Site-specific GWPS. The reported concentration for dissolved molybdenum at these wells was only slightly above the Site-specific GWPS and below the EPA alternative risk-based GWPS for molybdenum. Total molybdenum concentrations in groundwater reported for these wells was below the Site-specific GWPS. Reported molybdenum concentrations in groundwater at CM-1A, CM-1B and CM-2 did not exceed the Site-specific GWPS.

9) Depth-to-groundwater measurements were obtained on June 15, 2020 and on August 19, 2020. Depth-to-groundwater measurements and water level elevations based on these measurements are summarized in **Table 4**. A potentiometric surface map based on August 19, 2020 depth to water measurements is shown on **Figure 4**. Based on this, apparent groundwater flow across the Landfill CCR Unit is predominantly to the east, southeast and northeast (consistent with that previously observed). From August 19, 2020 depth-to-water measurements, horizontal hydraulic gradient across the Landfill CCR Unit is approximately 0.05 feet per foot (feet/foot) to the northeast and southeast and approximately 0.02 feet/foot to the east. A very slight downward vertical hydraulic gradient is apparent at the HPS based the differences in measured groundwater elevations at the nested wells. Near the Landfill CCR Unit, the measured vertical hydraulic gradient is between -0.05 to 0.25 feet/foot, where a negative value indicates an upward head and a positive value indicates a downward head. The vertical hydraulic gradient at wells located further distance from the Landfill CCR Unit ranged from 0.88 to 1.4 feet/foot.

10) Slug testing was conducted in August 2020 by Altamira at MW-15A, MW-16, MW-18, MW-19S, CM-1A and CM-2. Both a falling head and a rising head test were conducted at these wells. The Bouwer-Rice method was employed to evaluate the resulting data and estimate horizontal hydraulic conductivity. Results from the falling and rising head testing from August 2020 slug testing are contained in **Appendix H** and the estimated horizontal hydraulic conductivities are summarized in **Table 5**. The horizontal hydraulic conductivities near the southeast corner of the Landfill CCR Unit (MW-18 and MW-19S) were on the order of 10^{-4} cm/second and the horizontal hydraulic conductivities near the northeast corner of the Landfill CCR Unit (MW-15A and MW-16) were on the order of 10^{-5} cm/second. For CM-1A and CM-2 (both located several hundred feet away from the Landfill CCR Unit), the horizontal hydraulic conductivities were found to range from 10^{-6} to 10^{-8} cm/second, which are consistent with previously reported hydraulic conductivity values at the HPS (Burns and McDonnell; October 9, 2018).

11) Bail-down testing was conducted in August 2020 at CM-1B, C-3A, CM-3B, CM-4A, CM-4B, CM-5A and CM-5B. Bail-down testing was conducted in lieu of slug testing at these wells due to low water column thickness. As done with the slug test data, the Bouwer-Rice method was employed to estimate horizontal hydraulic conductivity. Results from the rising head testing from August 2020 bail-down testing are contained in **Appendix H** and the estimated horizontal hydraulic conductivities are summarized in **Table 5**. The estimated horizontal hydraulic conductivities for these wells was found to range from 10^{-6} to 10^{-8} cm/second, which are consistent with previously measured values at the facility.

12.0 CONCEPTUAL SITE MODEL

To support the Assessment of Corrective Measures, a Conceptual Site Model (CSM) was developed for the HPS. The CSM is included in **Appendix I** of this report. The CSM is based on available information from Site characterization associated with groundwater monitoring and permitting requirements of OAC 252:517. The CSM was included as part of the Plan and Schedule for Analyzing SSIs for Molybdenum (Altamira; March 4, 2020); but has been updated to include subsequent information obtained from activities discussed herein.

From the CSM, the highest molybdenum in groundwater is consistently limited to the periphery along the northeast and southeast corners of the Landfill CCR Unit (MW-15A, MW-16, MW-18 and MW-19S). At these wells, total molybdenum concentrations from June 2020 sampling ranged from between 0.168 mg/L and 0.402 mg/L; which is above both the Site specific GWPS of 0.029 mg/L and the EPA risk-based GWPS of 0.100 mg/L. Molybdenum concentrations at further downgradient monitoring wells east and southeast of the Landfill CCR Unit (CM-3A, CM-3B, CM-4A, CM-4B, CM-5A and CM-5B) were nearly an order of magnitude lower than those near the Landfill CCR Unit The highest reported concentration in these wells was 0.0529 mg/L at CM-4A. Molybdenum concentrations in these wells were only slightly above the Site specific GWPS (0.029 mg/L) and were below the EPA risk-based GWPS for molybdenum (0.100 mg/L). Molybdenum concentrations at further downgradient monitoring wells north and northeast of the landfill (CM-1A, CM-1B and CM-2) were below the GWPS. The reported molybdenum concentrations in these wells coupled with no elevated molybdenum in wells further to the east (associated with the Surface Impoundment CCR Unit) are believed sufficient to characterize the lateral extent of molybdenum in groundwater. In general, reported concentrations for dissolved molybdenum were consistent with those for total molybdenum, indicating that molybdenum exceedances are due to molybdenum in its dissolved form and not sediment loading in the sample.

From leach testing conducted using impacted groundwater and native rock samples, it does appear that molybdenum from the groundwater adsorbs to the native rock materials at the Site. It is also evident from groundwater sampling that molybdenum in groundwater attenuates

significantly away from the Landfill CCR Unit; with reported molybdenum concentrations generally being nearly an order of magnitude lower at CM-3A, CM-3B, CM-4A, CM-4B, CM-5A and CM-5B which are located between 500 to 1,200 feet downgradient from the Landfill CCR Unit. The molybdenum appears to be attenuating due to adsorption combined with the natural buffering capacity of the soil/rock and the low permeability of the perched groundwater system.

The predominant direction of groundwater flow from the Landfill CCR Unit is consistently to the southeast, east and northeast. From August 19, 2020 depth-to-water measurements (August 2020 Potentiometric Surface Map, **Figure 4**), the average horizonal hydraulic gradient (I) across the Landfill CCR Unit is approximately 0.05 feet/foot to the northeast and southeast and approximately 0.02 feet/foot to the east. A very slight downward vertical hydraulic gradient is generally apparent at the HPS based the differences in measured groundwater elevations at the nested wells. Near the Landfill CCR Unit, the measured vertical hydraulic gradient is between -0.05 to 0.25 feet/foot. The vertical hydraulic gradient at wells located further distance from the Landfill CCR Unit ranged from 0.88 to 1.4 feet/foot.

Slug and/or bail down testing has been completed on several wells by Burns and McDonnell and by Altamira to evaluate horizontal hydraulic conductivity at the HPS. Overall, Burns and McDonald conducted slug tests on 13 on-site monitoring wells and Altamira conducted slug tests on 16 on-site monitoring wells, or 29 wells total. Of these 29 wells, five were completed in the Kiamichi Formation and 24 in the Caddo Formation. These formations have similar lithology, composed of dark gray/ black shale alternating with fossiliferous limestone. Estimated horizontal hydraulic conductivities from this testing are summarized on **Table 5**. In general, horizontal hydraulic conductivities range from 10^{-4} cm/second to 10^{-8} cm/second. The horizontal hydraulic conductivity for the Caddo Formation is estimated at 3.892×10^{-6} cm/sec (geometric mean) based on the 24 wells completed in this formation. The horizontal conductivity for the Kiamichi Formation is estimated at 1.527×10^{-6} cm/sec (geometric mean) based on the 5 wells completed in this formation. Using all slug/bail down test data (from both the Caddo and Kiamichi Formations), the geometric mean of the horizontal hydraulic conductivity at the HPS is estimated at 3.43×10^{-6} cm/sec.

Using data obtained from the horizontal hydraulic conductivity (K) test results (as measured by Burns and McDonald and Altamira) and estimating the effective porosity (n) of the formation, the average groundwater flow rate or velocity in the uppermost perched groundwater system can be calculated using Darcy's Law (V_a=KI/n). The effective porosity (n) of shale and massive limestone is conservatively estimated to be 0.1. Assuming the conservative hydraulic gradient of 0.05 feet per foot and using the horizontal hydraulic conductivity geometric mean of 3.43×10^{-6} cm/sec, the average groundwater flow velocity at the HPS is estimated at 1.72×10^{-6} cm/second; or 1.67 feet/year. Assuming the conservative hydraulic gradient of 0.05 feet per foot and using

the horizontal hydraulic conductivity geometric mean of $1.527x10^{-6}$ cm/sec, the groundwater flow velocity through the Kiamichi Formation is estimated at $7.64x10^{-7}$ cm/second; or 0.79 feet/year. Assuming the conservative hydraulic gradient of 0.05 feet per foot and using the horizontal hydraulic conductivity geometric mean of $3.892x10^{-6}$ cm/sec, the groundwater flow velocity through the Caddo Formation is estimated at $1.94x10^{-6}$ cm/second; or 2.01 feet/year. As expected, the Caddo and Kiamichi Formations have nearly identical flow properties.

Migration of molybdenum through groundwater is controlled by the geologic setting at the HPS. Soils/rock are predominantly tight clays and hard shale exhibiting very low horizontal hydraulic conductivities (geometric mean of $3.43x10^{-6}$ cm/second) and well yields of less than 0.01 gallons per minute. Based on estimated well yields and hydraulic conductivities (both as obtained by Burns and McDonnell and by Altamira), it appears that near-surface groundwater at the HPS are perched non-contiguous groundwater zones. This is evidenced by the fact that most of the wells bail dry easily and that when bailed dry take several days, if not weeks, to recover. Well yield is such that formations containing shallow perched groundwater would not generally be considered a usable water bearing unit and not considered a major groundwater aquifer under Oklahoma Standards.

To the southeast, the nearest property boundary is more than 1,000 feet from identified molybdenum in groundwater over the GWPS. To the east and northeast, the nearest property boundaries are at least 7,500 feet from identified molybdenum in groundwater over the GWPS. The nearest residential well is approximately 1.9 miles east from identified molybdenum over the GWPS. Using the highest calculated groundwater velocity of 2.01 feet/year, it would take approximately 498 years to reach the nearest property boundary to the southeast and it would take approximately 3,730 years to reach the property boundaries to the northeast and east. Molybdenum would likely be attenuated to below the GWPS by the natural geologic regime prior to ever reaching any property boundary.

13.0 RISK EVALUATION

A risk evaluation was completed and submitted to the Oklahoma Department of Environmental Quality-Water Quality Division in anticipation of a new surface impoundment at the HPS (FO-08). A copy of this risk evaluation is included in **Appendix J** (Risk Evaluation for Shallow Perched Groundwater; Planned Impoundment FO-08, Nancy Coleman, March 19, 2020).

Exposure pathways reasonably expected to be complete at present time and into the foreseeable future for both human and ecological receptors were evaluated for several wells hydraulically downgradient of the Landfill CCR Unit (MW-8, MW-10, MW-11, MW-22A, MW-23A, MW-24 and MW-25R). Concentrations for CCR detection and assessment monitoring constituents at these

wells were screened against conservative human-health risk-based screening values. It was concluded that the constituents present in shallow perched groundwater at the designated wells (which are downgradient of the Landfill CCR Unit) do not pose a hazard to potential on-site or off-site human or ecological receptors.

14.0 REQUIREMENTS FOR ASSESSMENT OF CORRECTIVE MEASURES

Pursuant to OAC 252:517-9-7, WFEC must initiate an Assessment of Corrective Measures (ACM) to prevent further releases, to remediate any releases and to restore the affected area to original conditions. This ACM must include an analysis of the effectiveness of potential corrective measures addressing:

1) The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;

2) Time required to begin and complete the remedy; and

3) The institutional requirements, such as state or local permit requirements or other environmental or public health requirements that may substantially affect implementation of the remedy(s).

The completed ACM must be submitted to ODEQ for approval, and the approved ACM placed in the facility's operating record.

14.1 POTENTIAL CORRECTIVE MEASURES EVALUATED

This section provides a brief description of several different corrective measures that were evaluated for source control and groundwater remediation pertaining to molybdenum at the HPS.

14.1.A SOURCE CONTROL TECHNOLOGIES

Controlling sources of historical, current, and future constituents are important to the overall groundwater remediation. Source control can encompass a range of potential actions including source removal, dewatering, stabilization, containment, or some combination of these with the goal of reducing or eliminating, to the extent practicable, the release. Advantages and disadvantages associated with source removal, source containment, stabilization and enhanced dewatering are described below.

14.1.A.1 SOURCE REMOVAL

Source removal would consist of excavating the CCR, drying/stabilizing the CCR as necessary, loading and transport of the CCR, and either recycling of the CCR or disposal of the CCR at a permitted, off-site solid-waste landfill. Excavation of the CCR would initially be conducted using conventional earth moving equipment. However, dewatering or dredging of saturated materials in the lower portions of the Landfill CCR Unit may be necessary. In such a case, specialized dewatering or dredging equipment would be needed because saturated ash is liquefiable and would not be safely accessible to construction equipment. The CCR undergoes a transformation from liquefiable to cohesive as the water content is lowered by dewatering. Therefore, once dry the CCR can again be removed using conventional equipment. Once excavated, the CCR would be loaded into trucks (or rail cars) for disposal at a facility permitted to accept CCR material, or recycled via a beneficiation facility. Dust suppression measures would be required as the material is excavated and loaded. Removal of CCR may effectively eliminate a potential ongoing source of constituents leaching to groundwater. However, it would not immediately address constituents already leached to groundwater.

Advantages: Reduce the time frame over which remediation goals can be attained and negate potential for future releases by effectively eliminating the potential source.

Disadvantages: A large-scale ash removal would present technical and logistical challenges. Removal activities would likely require full-time dewatering, implementation of CCR stabilization, and temporary staging/stockpiling of material for drying, which would all increase removal duration and affect productivity. Excavation and construction safety during the removal duration is another major concern due to the use of heavy equipment (bulldozers, excavators, front end loaders, off-road trucks) and dump truck operation within the active Site. Additionally, there would be community impacts associated with the use of heavy equipment and truck traffic. There could be risks to workers, the surrounding community, and the environment from factors such as fugitive dust generation and heavy construction equipment emissions. Due to off-Site transport and disposal, there would be an increased risk potential for severe cross-media environmental effects and safety hazards from accidents.

14.1.A.2 SOURCE CONTAINMENT BY CAPPING

Source containment by capping would leave source material in place but the CCR would be covered with a low-permeable material to prevent infiltration of precipitation. This would eliminate releases from stormwater runoff or fugitive dust generation and would reduce leachate generation by minimizing the infiltration of precipitation into the CCR and leaching of constituents to groundwater. The cap would require design, construction and maintenance to prevent erosion, maintain vegetative cover and to control run-on and runoff.

Advantages: Reduce the time frame over which remediation goals can be attained and reduce potential for future release by minimizing water infiltration into the waste and leaching of constituents to groundwater. Established procedures exist for design and construction of low-permeability covers/caps utilizing conventional construction equipment. Implementation of a cover/cap can usually be completed in a relatively short time period, depending on dewatering characteristics and the size and depth of the impounded wastes.

Disadvantages: Significant design consideration would be required for a low permeability cover system. Cover systems can be difficult to design with respect to tolerating settlement and maintaining reliable long-term stormwater collection and conveyance controls. The cover would require routine monitoring, maintenance and repair throughout its service life.

14.1.A.3 DISCRETE IN-SITU SOLIDIFCATION AND STABILIZATION

This technology for source control would involve physically and hydraulically encapsulating the CCR in the Landfill CCR Unit to reduce constituent mobility due to reduced surface area and low permeability. Additives are mixed in with a cementing agent to chemically stabilize the ash to reduce leachability. The mixture can be applied to the Landfill CCR Unit in its entirety, or just to the bottom and sides of the Landfill CCR Unit.

Advantages: Reduce the time frame over which remediation goals can be attained and reduce potential for future releases by minimizing water flow through the waste and leaching of constituents to groundwater.

Disadvantages: Would require pilot testing to determine which additives and cement formulation are effective and to evaluate effects on leachability. Mixing and incorporation into hard pack ash could be problematic. Further, the ash is already expected to exhibit low permeability. Low permeable material could further complicate distribution of additives.

14.1.A.4 ENHANCED DEWATERING OF THE LANDFILL CCR UNIT

This technology for source control would involve decanting the existing water in the Landfill CCR Unit and removing pore water from the CCR via use of capture or extraction wells or a dewatering trench located within the Landfill CCR Unit. Additionally, controls would be employed to minimize run-on of water into the Landfill CCR Unit.

Advantages: Reduce the time frame over which remediation goals can be attained and reduce potential for release. Enhanced dewatering of the Landfill CCR unit minimizes water in the CCR Unit and minimizes water flow through the waste and leaching of constituents to groundwater.

Decanting of water in the Landfill CCR unit can be initiated in a relatively short time period. A similar system would likely be necessary as an initial step for the other source control actions previously discussed.

Disadvantages: Controls would need to be designed, put into place and maintained to prevent or minimize the run-on of stormwater into the CCR Unit. Frequent inspection and decanting of standing water from the Landfill CCR Unit would be required following precipitation events. Dewatering of pore water from the Landfill CCR Unit would require installation of extraction wells or a dewatering trench and use of mechanical equipment requiring long-term operation and routine monitoring, maintenance and repair. The ash is expected to exhibit very low permeability making extraction of all water from within the ash impractical to impossible. Extracted pore water would likely require treatment prior to discharge.

14.1.B GROUNDWATER REMEDIATION TECHNOLOGIES

14.1.B.1 MONITORED NATURAL ATTENUATION

Monitored Natural Attenuation (MNA) is an in-situ remedial strategy that relies on naturally occurring physical, chemical, or biological processes to attenuate and/or reduce the toxicity, concentration, and/or mobility of dissolved constituents in groundwater. These processes can include biodegradation, dispersion, dilution, sorption, volatilization, radioactive decay, chemical or biological stabilization, transformation, or destruction of constituents. Natural attenuation of molybdenum primarily occurs through dilution and adsorption. Dilution is a physical attenuation mechanism that distributes constituent concentrations over large volumes of groundwater thereby reducing concentration. Adsorption is a chemical mechanism that reduces concentrations by immobilizing constituents as they interact with the natural soils or rock in which the groundwater flows. Molybdenum may be attenuated further through precipitation processes. MNA is particularly effective when used in combination with source control.

MNA requires establishing a continued monitoring program over a specified well network. Monitoring is conducted to track changes in constituent concentration, to monitor trends, and to characterize Site geochemistry and aquifer attenuation capacity over the long term. In designing the sampling network and monitoring frequency, consideration should be given to the spatial extent of the constituent, aquifer pH, the oxidizing/reducing conditions of the aquifer, and influences on the aquifer by external hydrologic forces such as interactions between groundwater and surface water, and recharge from precipitation.

MNA is recognized by state and federal regulators as being a viable remedial technology applicable to both organic and inorganic compounds in groundwater and is increasingly employed at sites where constituent concentrations are near threshold levels, where there are

no immediate pathways to sensitive receptors, where constituents are not from an on-going source, and where constituent concentrations and extent are stable.

From the CSM, the highest molybdenum concentrations in groundwater appear to be limited to the periphery along the northeast and southeast corners of the Landfill CCR Unit. It appears that molybdenum from the groundwater does adsorb to the native rock material at the Site and molybdenum in groundwater attenuates significantly away from the Landfill CCR Unit; with reported concentrations being nearly an order of magnitude lower at wells located between 500 to 1,200 feet downgradient from the Unit.

Groundwater migration is controlled by the natural geologic setting. Soils/rock are predominantly tight clays and hard shale exhibiting very low horizontal hydraulic conductivities (geometric mean of 3.43×10^{-6} cm/second). Also, only a very slight vertical hydraulic gradient (between -0.05 and 0.25 feet/foot) is apparent at the HPS based on the differences in measured groundwater elevations at the nested wells. The predominant direction of groundwater flow from the Landfill CCR Unit is to the southeast, east and northeast. To the southeast, the nearest property boundary is more than 1,000 feet from identified molybdenum in groundwater over the GWPS. To the east and northeast, the nearest property boundaries are at least 7,500 feet from identified molybdenum in groundwater over the GWPS. The nearest residential well is approximately 1.9 miles east from identified molybdenum over the GWPS. Assuming the conservative hydraulic gradient of 0.05 feet per foot and using the horizontal hydraulic conductivity geometric mean of 3.892×10^{-6} cm/sec, the groundwater flow velocity through the Caddo Formation is estimated at 1.94×10^{-6} cm/second; or 2.01 feet/year. Based on this, it would take approximately 498 years to reach the nearest property boundary to the southeast and it would take approximately 3,730 years to reach the property boundaries to the northeast and east Molybdenum would likely be attenuated to below the GWPS by the natural geologic regime prior to ever reaching any property boundary.

MNA is a viable remedial option for molybdenum groundwater above the GWPS at the HPS considering that 1) that molybdenum is the only constituent that consistently exceeds the GWPS at SSLs; 2) that molybdenum concentration exceeds the EPA risk based alternative GWPS only at wells in close proximity to the Landfill CCR Unit; 3) that molybdenum concentrations in groundwater are low; 4) that exceedances of the GWPS are thousands of feet from the property boundaries and groundwater flow is estimated at only 2.01 feet/year; 5) that laboratory testing indicates attenuation of molybdenum to Site soils/rock does occur, 6) that drinking water supply wells do not exist at the property; 7) that a risk evaluation concluded that molybdenum is unlikely to pose unacceptable risks to nearby human or ecological receptors; and 8) natural processes such as dilution/dispersion, precipitation and/or sorption are expected to decrease molybdenum

concentrations in the downgradient groundwater to achieve remedial objectives prior to reaching any property boundary.

Advantages: MNA reduces molybdenum concentrations in groundwater through naturally occurring processes. Therefore, it is easily implemented, requires little infrastructure, can be implemented almost immediately and causes minimal disruption to remediation areas. Long-term monitoring and evaluation allow for informed decision making when assessing the continued effectiveness of MNA and for determining when remedial objectives are achieved. Time frames to achieve remedial goals via MNA are often comparable to that of other groundwater remedial technologies.

Disadvantages: The primary attenuation mechanisms for molybdenum do not result in destruction of molybdenum and there is potential that the attenuation processes could be reversed under changed subsurface conditions. Based on current data and Site conditions, MNA appears applicable, but continued monitoring and additional evaluation is necessary to evaluate the effectiveness of MNA and to estimate a timeline to complete the remedy.

14.1.B.2 HYDRAULIC CONTAINMENT VIA GROUNDWATER EXTRACTION WELLS/TRENCHES

Hydraulic containment via groundwater extraction has been employed for decades to control groundwater constituent migration. As part of this technology, a groundwater extraction network consisting of vertical and/or horizontal extraction wells is designed and the extraction wells are installed with overlapping radii of influence and/or subsurface trenches (French drains) constructed to effectively capture and remove groundwater and to prevent constituents from migrating further downgradient, thus providing hydraulic control of the groundwater. The captured groundwater is pumped through subsurface piping to be contained for off-Site disposal, or treated through a centralized treatment system to meet regulatory discharge limits and then discharged to a permitted outfall. The applicability and orientation of a hydraulic containment system (including number and spacing of wells, well depths, trench location and design) is based on site-specific aquifer characteristics (including dimensions and conductivity, presence of confining layers, depth, gradient), characteristics of the constituents, and presence of receiving water bodies or wells. As such, hydrogeologic modeling is necessary to design the hydraulic containment system orientation. The time frame to achieve GWPS with a hydraulic containment system is strongly dependent on a site's hydrogeologic conditions, the degree and extent of impact, and the chemical behavior of constituents in the subsurface. Time frames to achieve remedial goals via this technology are often comparable to that of other groundwater remedial technologies. Long term monitoring and evaluation are necessary to assess continued effectiveness of the system.

Advantages: Under ideal hydrologic conditions, hydraulic containment via groundwater extraction can effectively prevent constituents from migrating downgradient in groundwater and is a proven and demonstrably effective remedial option for groundwater remediation where favorable subsurface conditions are present. The technology is well established and installation and operation of groundwater extraction systems are well understood. Under favorable geological conditions, groundwater extraction can be used successfully in both alluvium and bedrock aquifers.

Disadvantages: Hydrologic conditions at the HPS are not such that hydraulic containment via groundwater extraction is viable. Hydraulic conductivities are low; the geometric mean of the horizontal hydraulic conductivity at the HPS is estimated at 3.43×10^{-6} cm/sec. Because of this, numerous closely spaced groundwater extraction wells would be necessary to attempt to effectively capture groundwater; and based on slow recovery of Site wells, such a system would not be able to operate continuously and would require substantial maintenance and cleaning of probes. Also, geologic conditions at the HPS make it extremely difficult to construct a subsurface trench. In the affected areas, limestone bedrock is encountered at depths of only a few feet and in some areas limestone is exposed at the surface. Such conditions will make construction by traditional means nearly impossible. Given both the Site topography and vegetative cover, siting wells at desired locations would prove extremely difficult. Approvals and permitting would be required for the discharge of recovered groundwater and recovered groundwater could require ex-situ treatment prior to discharge. Ex-situ treatment may have limited effectiveness for molybdenum because precipitation is dependent on pH and other variables. Likewise, molybdenum adsorption via ex-situ treatment is rarely favorable and may require additional removal steps thus producing residuals that would require management. Implementation of a large-scale hydraulic containment system would require pilot testing (such as pumping testing and groundwater modeling) to verify the hydraulic capture zone and a detailed design effort with bench scale testing to verify groundwater treatment. Hydraulic containment via groundwater extraction would require long-term operation as well as routine monitoring, maintenance, cleaning and repair throughout its service life. Modifications to the system (including additional extraction wells) are often required to optimize a system's performance as Site conditions change. Groundwater extraction can be affected by adsorption of constituents to the aquifer soils/rock, which can slow desorption and diffusion from that matrix resulting in limited effectiveness of the system.

14.1.B.3 HYDRAULIC CONTAINMENT VIA NON-PERMEABLE PHYSICAL BARRIER

Under this technology, hydraulic containment is achieved by installing a low-permeability barrier wall around or downgradient of the waste or impacted groundwater. Examples of non-permeable barrier walls include slurry walls (a soil/bentonite slurry placed inside a trench), sheet pile walls (where steel panels are driven through the soil column), soil/bentonite walls (where dry soil/bentonite mixtures are placed inside a trench), or grout curtain (injection of cement-based grout). Non-permeable barrier walls are typically keyed into underlying impermeable soil or bedrock layers and serve as a physical barrier to limit migration of affected groundwater. Groundwater extraction or control systems are commonly used in conjunction with non-permeable barrier walls to prevent groundwater mounding behind the barrier and to prevent flowing around the barrier. Time frames to achieve remedial goals via this technology are often comparable to that of other groundwater remedial technologies. Long-term monitoring and evaluation are necessary to assess continued effectiveness of the system.

Advantages: Hydraulic Containment via Non-Permeable Barrier Walls can prevent constituents from migrating downgradient in groundwater and is a proven and demonstrably effective remedial option for groundwater remediation where subsurface conditions are favorable. This technology does not rely on the geochemical properties of constituents to achieve remedial objectives.

Disadvantages: Geologic conditions at the HPS will may make it extremely difficult to construct a barrier wall. In the affected areas limestone bedrock is encountered at depths of only a few feet and in some areas limestone is exposed at the surface. Such conditions will make construction by traditional means nearly impossible. Also, variability in bedrock presents complications when designing a continuous system so that bypass of the system does not occur. Backpressure on a non-permeable wall can alter groundwater flow characteristics when groundwater flow is restricted. To prevent changes in groundwater flow, dewatering is often necessary to relieve the backpressure. Approvals and permitting would be required for the discharge of recovered groundwater and recovered groundwater could require ex-situ treatment prior to discharge. Ex-situ treatment may have limited effectiveness for molybdenum because precipitation is dependent on pH and other variables. Likewise, molybdenum adsorption via ex-situ treatment is rarely favorable and may require additional removal steps thus producing residuals that would require management. Implementation will require a detailed design effort with bench scale testing to verify groundwater treatment if groundwater extraction is necessary. The treatment system would require long-term operation as well as routine monitoring, maintenance and repair throughout its service life.

14.1.B.4 PERMEABLE REACTIVE GROUNDWATER FLOW BARRIER

A Permeable Reactive Barrier (PRB) is an in-situ treatment technology for various inorganic constituents that may be present in groundwater at CCR sites. A PRB consists of reactive material that is placed in the subsurface, typically via trenching, at a location hydraulically downgradient of the waste or affected groundwater. Remediation is achieved as groundwater passes through this reactive zone which either removes the constituent from groundwater or facilitates its transformation into a less toxic form. The reactive media used varies on chemical and site conditions, but can range from zero valent iron which can promote both adsorption and precipitation of a broad range of constituents to hybrid ion exchange resins that specifically target a single or narrow range of constituents. In particular, zero valent iron, organic matter, ion- exchange resins, surfactant-modified zeolites, ferrous sulfate, red muds, and Granular Ferric Hydroxide may have applications for remediation of CCR leachate. A Permeable Reactive Barrier must be properly designed with appropriate reactive media, effective residence time of impacted groundwater within the reactive media, and location such to capture the extent of the plume. Several design configurations are in use including continuous barriers, funnel-and-gate systems, in-situ deep slurry injections, and in situ reactive vessels. Time frames to achieve remedial goals via this technology are often comparable to that of other groundwater remedial technologies. Long-term monitoring and evaluation are necessary to assess continued effectiveness of the system.

Advantages: Permeable Reactive Barriers can effectively prevent constituents from migrating downgradient in groundwater and is a proven and demonstrably effective remedial option for groundwater remediation.

Disadvantages: Geologic conditions at the HPS make it extremely difficult to construct a barrier wall. In the affected areas limestone bedrock is encountered at depths of only a few feet and in some areas limestone is exposed at the surface. Such conditions will make construction by traditional means nearly impossible. Also, variability in bedrock presents complications when designing a continuous system so that bypass of the system does not occur. Bench scale testing, flow studies, and modeling are typically necessary to select appropriate reactive material and to size and design an effective PRB system. Bypass or inconsistent treatment can occur dependent on pH conditions and preferential pathways developing due to metals precipitation. Also, PRB may lose effectiveness over time, depending on hydrologic and chemical characteristics of the site, and may require periodic replacement.

14.2 DEVELOPMENT AND ASSESSMENT OF CORRECTIVE MEASURES ALTERNATIVES

The potential corrective measures evaluated under Section 8.1 of this CMA were used to develop Corrective Measure Alternatives for both source control and for groundwater remediation at the HPS. The first three of the following Corrective Measure Alternatives are for source control only. Source Containment by Capping is not feasible at this time at the HPS and was not retained as a Corrective Measure Alternative.

The following Corrective Measure Alternatives #4 through #7 rely on groundwater remediation technologies. The developed Corrective Measure Alternatives are as follows:

Alternative #1:	Source Control via Source Removal
Alternative #2:	Source Control via Enhanced Dewatering
Alternative #3:	Source Control via Discrete In-Situ Solidification/Stabilization
Alternative #4:	MNA
Alternative #5:	Hydraulic Containment via Groundwater Extraction Wells/Trenches, Treatment and Surface Water Discharge
Alternative #6:	Hydraulic Containment by Non-Permeable Physical Barrier Wall
Alternative #7:	Permeable Reactive Barrier

Below is a high-level evaluation of each of these Corrective Measure Alternatives based on (1) performance, (2) reliability, (3) ease of implementation, (4) potential impacts, (5) time to begin/complete remedy, and (6) institutional requirements. A more detailed evaluation of technologies leading to a final Selection of Remedy will be performed and reported during the Selection of Remedy phase as discussed in Section 9 of this report.

14.2.A PERFORMANCE

This section evaluates the anticipated performance for each of the Corrective Measure Alternatives to prevent further releases, to remediate any releases and to restore the affected area to original conditions.

Alternative #1: Source Control via Source Removal –This alternative alone is not an effective remedial action for groundwater, but is evaluated for possible enhancement of groundwater remediation through alternatives #4, #5, #6 or #7 presented in Section 7.2 of this report. Performance from Source removal is expected to be **HIGH** as it would effectively eliminate the potential for future releases to occur and potentially reduce the time frame over which remediation goals for groundwater are obtained. However, it will have no significant effect on current molybdenum levels in groundwater.

Alternative #2: Source Control via Enhanced Dewatering –This alternative alone is not an effective remedial action for groundwater, but is evaluated for possible enhancement of groundwater remediation through alternatives #4, #5, #6 or #7 presented in Section 7.2 of this report. Performance from Source Control via Enhanced Dewatering is expected to be **MEDIUM** as it would minimize the infiltration of storm water into the underlying CCR which would, in turn, reduce both the groundwater flow rates and the total constituent loading on the aquifer. However, it will have no significant effect on current molybdenum levels in groundwater.

Alternative #3: Source Control via Discrete In-Situ Solidification/Stabilization –This alternative alone is not an effective remedial action for groundwater, but is evaluated for possible enhancement of groundwater remediation through alternatives #4, #5, #6 or #7 presented in Section 7.2 of this report. Performance from In-Situ Solidification is expected to be **MEDIUM** as it would reduce constituent mobility due to reduced surface area and low permeability and stabilize the ash to reduce leachability. However, it will have no significant effect on current molybdenum levels in groundwater.

Alternative #4: MNA – MNA is evaluated as a measure to be employed in combination with source control through alternatives #1, #2 or #3. Performance from MNA is expected to be **HIGH** as dispersion, precipitation and/or sorption are expected to decrease molybdenum concentrations in the downgradient groundwater to achieve remedial objectives. Performance will be dependent on Site-specific geochemical interactions between constituents and aquifer solids. Data collected to date suggests that molybdenum does attenuate within subsurface rock. MNA will include monitoring to evaluate the effectiveness of the program.

Alternative #5: Hydraulic Containment via Groundwater Extraction Wells/Trenches, Treatment and Surface Water Discharge – Under certain circumstances groundwater extraction can effectively control hydraulic gradient, thus limiting constituent migration and infiltration. However, at this Site performance of Hydraulic Containment via Groundwater extraction is expected to be **LOW** based on very low horizontal hydraulic conductivities observed at the Site which would inhibit constituent capture and reduce effectiveness to achieve remedial objectives. Additional data from pump tests, flow modeling and capture zone analysis could be needed to design an adequate system to further evaluate and refine this corrective measure alternative.

Alternative #6: Hydraulic Containment by Non-Permeable Physical Barrier – At this Site performance of Hydraulic Containment by Non-Permeable Physical Barrier is expected to be **LOW** based on subsurface geology. Additional data from pump tests, flow modeling and subsurface geologic investigations could be needed to design an adequate barrier and to further evaluate and refine the corrective measure alternative. Very low formation permeability and slow groundwater flow make this alternative less likely to work because upstream dewatering is often required and such a system may not be viable.

Alternative #7: Permeable Reactive Barrier– Use of a Permeable Reactive Barrier is evaluated as a measure to be employed. At this Site, performance of a Permeable Reactive Barrier is expected to be **LOW** based on subsurface geology and constituents present. Additional data from bench scale testing may be necessary to select appropriate reactive material, to size and design a proper barrier and to further evaluate and refine this corrective measure alternative. In addition, very low formation permeability and very slow groundwater flow rates make this alternative less desirable.

14.2.B RELIABILITY

This section evaluates the anticipated reliability for each of the Corrective Measure Alternatives. Reliability is the ability of a technology to consistently function as expected under variable conditions. Factors affecting reliability can include aquifer variability (e.g., groundwater geochemistry and flow changes), constituents of concern, and equipment performance (e.g., power outages and frequency of maintenance activities). Reliability considers future conditions since achieving remedial objectives can take decades. Corrective measures that incorporate some degree of source control sometimes are more reliable than technologies that rely on perpetual operation.

Alternative #1: Source Control via Source Removal – Reliability from Source removal is expected to be **HIGH** as it would employ standard construction techniques. This alternative could require removal of pore water via multiple techniques that could change over duration and possible treatment this water through a system that may need to be modular to address changing conditions. Dewatering of the low-permeability ash may be difficult to achieve.

Alternative #2: Source Control via Enhanced Dewatering – Reliability from enhanced dewatering is expected to be **MEDIUM** as it would rely on mechanical probes which would be subject to periodic cleaning and repair and/or plant personnel to enact water removal based on practicability. Decanting of standing water in the CCR Unit after precipitation can be effective in combination with controls to prevent run-on to the CCR Unit. Removal of pore-water from the low-permeability ash may be difficult to achieve and could require the use of multiple techniques to recover and possibly treat the extracted water, that could change over duration. The system may need to be modular and designed to address changing conditions.

Alternative #3: Source Control via Discrete In-Situ Solidification/Stabilization – Reliability of Discrete In-Situ Solidification/Stabilization is expected to be **LOW** as it would rely on appropriate coverage and adequate mixing of the stabilization agent with CCR at the bottom and along the sides of the Landfill CCR Unit.

Alternative #4: MNA – Reliability of MNA is expected to be **HIGH**, as it would rely on taking advantage of already existing natural processes. This alternative may be conducted in a tiered approach where changes in hydraulic conditions and geochemistry are frequently assessed.

Alternative #5: Hydraulic Containment via Groundwater Extraction Wells/Trenches, treatment and Surface Water Discharge – Reliability of Hydraulic Containment via Groundwater extraction is expected to be **LOW.** Groundwater extraction can be reliable, but high flow rates are optimal. The low hydraulic conductivities observed at the facility are likely to lower the reliability of a groundwater extraction system. Furthermore, the extraction and treatment rely on mechanical systems and would require continued operation and maintenance including cleaning and repair. Addition of new wells or revision of extraction wells field are commonly required where duration is extended.

Alternative #6: Hydraulic Containment by Non-Permeable Physical Barrier Wall – Reliability of a low-permeability barrier wall is expected to be **LOW.** It would rely on uniform placement of the barrier wall so bypass does not occur and could possibly require continued monitoring and mechanical equipment to control mounding so change in groundwater flow does not occur.

Alternative #7: Permeable Reactive Barrier– Reliability of a Permeable Reactive Barrier is expected to be **LOW.** It would rely on uniform placement of the barrier so bypass does not occur. Bypass or inconsistent treatment can also occur dependent on pH conditions and preferential pathways developing due to precipitation of metals. As such, eventual replacement of the barrier may be necessary.

14.2.C EASE OF IMPLEMENTATION

This section evaluates the anticipated ease of implementation for each of the Corrective Measure Alternatives. Ease of implementation addresses both technical and administrative feasibility of installing or implementing an alternative considering site-specific conditions (e.g., degree of aquifer heterogeneity), required design effort (e.g., modeling, bench scale and pilot testing, etc.), and the availability of suitable equipment. Technical feasibility considers technical and logistical challenges including availability of materials, equipment and skilled workers to construct, operate or maintain the alternative. Administrative feasibility involves practicability of obtaining needed permits, rights-of-way, or any other administrative approvals, and is also addressed in the evaluation of Institutional Requirements.

Alternative #1: Source Control via Source Removal – Ease of implementation for Source removal is expected to be **LOW**. Large-scale ash removal would present technical and logistical challenges. Construction equipment and skilled workers would be needed to implement this

alternative along with enhanced safety requirements. Removal activities would likely require full-time dewatering, implementation of CCR stabilization, and temporary staging/stockpiling of material for drying, which could all present operational issues due to spatial constraints, could increase removal duration and could affect productivity. Bench scale testing could be necessary to identify the best reagent(s) for use in treating the water to remove molybdenum from solution. Such a bench scale testing program would be expected to go through multiple iterations before establishing the treatment program needs. A proper recycling and/or disposal facility would need to be identified and the waste would have to be approved for recycling and/or disposal at such facility. Discharge of water could require additional permitting.

Alternative #2: Source Control via Enhanced Dewatering – Ease of implementation for Source Control via enhanced dewatering is expected to be **MEDIUM**. This alternative would rely on plant personnel to enact removal of standing water and pore-water in the CCR Unit based on practicability. This alternative could require removal of substantial amounts of water via multiple techniques that could change over duration. Bench scale testing could be necessary to identify the best reagent(s) for use in treating the water to remove molybdenum from solution. Such a bench scale testing program would be expected to go through multiple iterations before establishing the treatment program needs. Discharge of water could require additional permitting. Pore-water removal may be difficult to achieve due to the low-permeability of the ash.

Alternative #3: Source Control via Discrete In-Situ Solidification/Stabilization – Ease of implementation for Source Control via Discrete In-Situ Solidification is expected to be **LOW**. Pilot testing would be necessary to identify the best reagents. Skilled workers and specialized equipment would be necessary to implement this alternative.

Alternative #4: MNA – Ease of implementation for MNA is expected to be **HIGH.** No additional equipment would be necessary for a natural attenuation remedy.

Alternative #5: Hydraulic Containment via Groundwater Extraction Wells/Trenches, treatment and Surface Water Discharge – Ease of implementation for Hydraulic Containment via Groundwater extraction is expected to be **LOW.** Implementation of a large-scale hydraulic containment system could require a detailed design effort with pilot testing; pump tests; and groundwater modeling. Based on the low permeability nature of the aquifer, it is likely that numerous groundwater extraction wells would be necessary to capture impacted groundwater. Given both the Site topography and vegetative cover, siting the wells in the desired locations would prove extremely difficult. Bench scale testing could be necessary to identify the best reagent(s) for use in treating the water to remove molybdenum from solution. Such a bench scale testing program would be expected to go through multiple iterations before establishing

the treatment program needs. Discharge of water could require additional permitting. Construction equipment and personnel would be involved in the installation of extraction wells, drilling, electrical work and installation of conveyance piping. Operations and maintenance, repair, and possible replacement activities would be required over the life of the system. The low permeability of the formation would make capture zones for any interceptor wells very small, with very limited groundwater recovery likely.

Alternative #6: Hydraulic Containment by Non-Permeable Physical Barrier Wall – Ease of implementation for Hydraulic Containment by a Non Permeable Physical Barrier Wall is expected to be **LOW.** Construction equipment and skilled workers could be needed to implement this alternative. Geologic conditions at the HPS make it extremely difficult to construct a barrier wall. In the affected areas limestone bedrock is encountered at depths of only a few feet and in areas the limestone is exposed at the surface. Such conditions will make construction by traditional means nearly impossible. This alternative would require monitoring and could possibly require mechanical dewatering equipment to control mounding so change in groundwater flow does not occur. Bench scale testing could be necessary to identify the best reagent(s) for use in treating the water to remove molybdenum from solution. Such a bench scale testing program would be expected to go through multiple iterations before establishing the treatment program needs. Discharge of water could require additional permitting.

Alternative #7: Permeable Reactive Barrier – Ease of implementation for a Permeable Reactive Barrier is expected to be **LOW.** Construction equipment and skilled workers would be needed to implement this alternative. Geologic conditions at the HPS make it extremely difficult to construct a barrier. In the affected areas limestone bedrock is encountered at depths of only a few feet and areas the limestone is exposed at the surface. Such conditions will make construction by traditional means nearly impossible. Bench scale testing, flow studies and modeling could be necessary to select appropriate reactive material, to size and design a proper barrier and to further evaluate and refine this corrective measure alternative.

14.2.D POTENTIAL IMPACTS OF APPROPRATIE REMEDIES

This section evaluates the anticipated potential impacts for each of the Corrective Measure Alternatives. Potential impacts were evaluated considering safety, cross-media impacts and control of exposure to residual contamination.

Alternative #1: Source Control via Source Removal – Potential Impacts for Source Control via Source Removal is expected to be **HIGH**. Excavation and construction safety during the removal duration is a major concern due to the use of heavy equipment (bulldozers, excavators, front end loaders, off-road trucks) and dump truck operation within the active WFEC Site. Dangers could

also exist due to excessive settlement and low shear strength which are common with dewatered CCR. Additionally, there could be community impacts associated with the use of heavy equipment and truck traffic. There could be risks to workers, the surrounding community, and the environment from factors such as fugitive dust generation and heavy construction equipment emissions and operation to and from the site. Due to off-Site transport and disposal, there would be an increased potential for severe cross-media environmental effects and safety hazards from accidents. Safety risks and potential for releases that could impact Site soils, groundwater or surface water would exist at well connections, valves, system piping, and tanks associated with dewatering and operation of a treatment system. These could be minimized through proper operation and maintenance procedures and through implementation of an appropriate health and safety plan. Treatment residuals would need to be properly managed to minimize exposure and cross media effects.

Alternative #2: Source Control via Enhanced Dewatering – Potential Impact for Source Control via Enhanced Dewatering is expected to be **MEDIUM**. There would be a low risk to safety anticipated associated with decanting standing water from the Landfill CCR Unit. Enhanced safety risks could be associated with removal of pore water due to drilling extraction wells or trenching into the waste and construction of a treatment facility. Also, safety risks and potential for releases that could impact Site soils, groundwater or surface water would exist at well connections, valves, system piping, and tanks associated with dewatering and operation of a treatment system. Treatment residuals would need to be properly managed to minimize exposure and cross media effects.

Alternative #3: Source Control via Discrete In-Situ Solidification/Stabilization – Potential Impact for Source Control via In-Situ Solidification/Stabilization is expected to be **HIGH**. Specialized equipment would be needed for incorporation/mixing of chemical agents into the ash, including highly pressurized equipment. Safety risks associated with injecting the stabilization chemical would exist. Little cross media impacts would be expected and little residual contaminants would be generated.

Alternative #4: MNA in combination with Source Control – Potential Impact for MNA is expected to be **LOW.** There remains a slight safety risk associated with possible installation of additional wells and sampling of wells. These could be minimized through implementation of an appropriate health and safety plan. No cross-media impacts would be expected and no contamination residuals would be generated. Risk to exposure would be low based on proximity of groundwater to the facility boundary and since there are no near drainage features or water supply users.

Alternative #5: Hydraulic Containment via Groundwater Extraction Wells/Trenches, Treatment and Surface Water Discharge – Potential Impact for Hydraulic Containment via Groundwater extraction is expected to be **MEDIUM.** Safety risks associated with drilling extraction wells and construction of a treatment facility would exist. Also, safety risks would exist due to construction to bury piping associated with a treatment system. Safety risks and potential for releases that could impact Site soils, groundwater or surface water would exist at well connections, valves, system piping, and tanks associated with dewatering and operation of a treatment system. The main potential for cross-media impacts would occur if the piping failed and untreated extracted groundwater were released to the environment. This risk is mitigated through periodic monitoring and secondary containment. Treatment residuals would need to be properly managed to minimize exposure and cross media effects.

Alternative #6: Hydraulic Containment by Non-Permeable Physical Barrier Wall – Potential Impact for Hydraulic Containment by a Non-Permeable Physical Barrier Wall is expected to be **MEDIUM.** Safety risks associated with trenching and construction of the barrier exist. Treatment residuals would be low. Low for release of residuals.

Alternative #7: Permeable Reactive Barrier in combination with Source Control as per Alternative #1, #2 or #3 – Potential Impact for a Permeable Reactive Barrier is expected to be **MEDIUM.** Safety risks associated with trenching and construction of the barrier would exist. However, due to the presence of near-surface rock, specialized equipment and/or blasting may be necessary to install such a system. These would present enhanced safety risks. Little cross media impacts would be expected. Treatment residuals generated would be low, with the majority of treatment residuals occurring during the infrequent replacement of reactive media.

14.2.E TIME REQUIRED TO COMPLETE REMEDY

This section evaluates the anticipated time required to begin and complete the remedy for each of the Corrective Measure Alternatives. The anticipated time required to begin and complete a remedy considers factors such as the complexity of the design, construction, and permitting efforts, as well as forecasting how efficient the technology is expected to be in achieving remedial goals in a timely manner.

Alternative #1: Source Control via Source Removal – Time required to begin Source Control via Source Removal is expected to be **MEDIUM**. Large-scale ash removal would present technical and logistical challenges due to spatial constraints and possible need for dewatering and would require proper planning prior to implementation. Bench scale testing could likely be necessary to identify the best reagent(s) for use in treating the water to remove molybdenum from solution. Such a bench scale testing program could be expected to go through multiple iterations before

establishing the treatment program needs. A proper recycling and/or disposal facility could need to be identified and the waste would have to be approved for recycling and/or disposal at such facility. Discharge of water could require additional permitting. Anticipated time to complete is **MEDIUM**. Removal activities would likely require full-time dewatering, implementation of CCR stabilization, and temporary staging/stockpiling of material for drying, which could all increase removal duration. Duration would also be affected by availability to transport materials off-Site and the needs of recycling facility if material is to be recycled.

Alternative #2: Source Control via Enhanced Dewatering – Time required to begin Source Control via Enhanced Dewatering is expected to be **SHORT,** as HPS has already initiated measures to remove standing water from the Landfill CCR Unit. Anticipated time to complete Source Control via Enhanced Dewatering is **LONG**. Source control via dewatering would be an on-going process and after initial dewatering would require continual measures to prevent run-on from entering into the CCR Unit and to actively remove precipitation and accumulated water from the CCR unit. If molybdenum concentrations in the recovered water contain molybdenum at levels such that treatment is required, bench scale testing may be necessary to identify the best reagent(s) for use in treating the water. Such bench scale testing could be expected to go through multiple iterations before establishing the treatment program needs.

Alternative #3: Source Control via Discrete In-Situ Solidification/Stabilization – Time required to begin Source Control via Discrete In-Situ Solidification/Stabilization is expected to be **MEDIUM**. Testing would be necessary to select an effective stabilization compound, a design for placement would need to be completed, and to compound would need to be put into place. Anticipated time to complete is **MEDIUM**. Source control would be enacted

Alternative #4: MNA – Time required to begin MNA is expected to be **SHORT**, as it can be implemented nearly immediately. The time to complete the remedy cannot be determined at this time, but the anticipated time to complete is **LONG**. A monitoring program possibly combined with modeling may be necessary to demonstrate attenuation mechanisms and aquifer attenuation capacity over the long term and to track progress and estimate time to complete. The timeline to complete treatment via this alternative is expected to be similar to other methods of groundwater treatment evaluated.

Alternative #5: Hydraulic Containment via Groundwater Extraction, treatment and Surface Water Discharge – Time required to begin Hydraulic Containment via Groundwater Extraction is expected to be **LONG.** Significant time could be required to design and install a treatment system and could include aquifer testing and modeling. The time to complete the remedy cannot be determined at this time, but the anticipated time to complete is **LONG**. If molybdenum concentrations in the recovered water are at levels such that treatment is required, bench scale

testing may be necessary to identify the best reagent(s) for use in treating the water. Such bench scale testing could be expected to go through multiple iterations before establishing the treatment program needs. A monitoring program possibly combined with modeling may be necessary to track progress and estimate time to complete. The timeline to complete treatment via this alternative is expected to be similar to other methods of groundwater treatment evaluated.

Alternative #6: Hydraulic Containment by Non-Permeable Physical Barrier Wall – Time required to begin Hydraulic Containment via a low-permeability barrier wall is expected to be **LONG**. A non-permeable barrier would involve significant design and installation efforts. Due to geologic conditions at the HPS, specialized contractors and equipment would need to be identified for installation of the barrier. If dewatering becomes needed, and if molybdenum concentrations in the recovered water contain molybdenum at levels such that treatment is required, bench scale testing may be necessary to identify the best reagent(s) for use in treating the water. Such bench scale testing could be expected to go through multiple iterations before establishing the treatment program needs. The time to complete the remedy cannot be determined at this time, but the anticipated time to complete is **LONG**. It would likely be effective in the short term immediately downgradient of the barrier, but would rely on monitored natural attenuation for treatment of impacted groundwater upgradient and further downgradient of the barrier. A monitoring program combined with modeling is necessary to track progress and estimate time to complete. The timeline to complete treatment via this alternative is expected to be similar to other methods of groundwater treatment evaluated.

Alternative #7: Permeable Reactive Barrier – Time required to begin remediation via a Permeable Reactive Barrier is expected to be **LONG**. A permeable active barrier would involve significant design and installation efforts. Due to geologic conditions at the HPS, specialized contractors and equipment would need to be identified for installation of the barrier. Also, bench testing could be necessary to select the appropriate reactive compound. The time to complete the remedy cannot be determined at this time, but the anticipated time to complete is **LONG**. It would likely be effective in the short term immediately downgradient of the barrier, but would rely on monitored natural attenuation for treatment of impacted groundwater upgradient of the barrier. A monitoring program possibly combined with modeling could be necessary to track progress and estimate time to complete. The timeline to complete treatment via this alternative is expected to be similar to other methods of groundwater treatment evaluated.

14.2.F INSTITUTIONAL REQUIREMENTS

This section evaluates the anticipated institutional requirements for each of the Corrective Measure Alternatives. State and local permits, or other approvals, may be required to construct and/or operate a remedial technology. These can include required modifications to permits already in-place such as a CCR Solid Waste Permit or NPDES permits. Consultation with the ODEQ would be conducted regardless of technology chosen to determine necessary permits/approvals to support remedy selection, design and implementation.

Alternative #1: Source Control via Source Removal – Institutional requirements to begin Source Control via Source Removal is expected to be **HIGH**, possibly requiring modifications to the current Solid Waste Permit, and a stormwater NPDES for construction, and an amendment to or a new individual NPDES permit for construction and operation of a treatment system. Also, an appropriate disposal or recycling facility would need to be identified and accepting of the waste.

Alternative #2: Source Control via Enhanced Dewatering – Institutional requirements to begin Source Control via Enhanced Dewatering is expected to be **MEDIUM**, possibly requiring modifications to the current Solid Waste Permit, a stormwater NPDES for construction, and an amendment to or a new individual NPDES permit for construction and operation of a treatment system.

Alternative #3: Source Control via Discrete In-Situ Solidification/Stabilization – Institutional requirements to begin Source Control via Discrete In-Situ Solidification/Stabilization is expected to be **MEDIUM**, possibly requiring modifications to the current Solid Waste Permit.

Alternative #4: MNA – Institutional requirements to begin MNA is expected to be **LOW**. No new or amended permits or approvals are anticipated from state or local agencies.

Alternative #5: Hydraulic Containment via Groundwater Extraction Wells/Trenches, Treatment and Surface Water Discharge – Institutional requirements to begin treatment via groundwater extraction is expected to be **HIGH**, possibly requiring modifications to the current Solid Waste Permit, a stormwater NPDES for construction, and an amendment to or a new individual NPDES permit for construction and operation of a treatment system. Locations for any subsurface features, including wells and piping, would require utility clearance.

Alternative #6: Hydraulic Containment by Non-Permeable Physical Barrier – Institutional requirements to begin treatment via a low-permeability barrier wall is expected is expected to be **MEDIUM**, possibly requiring modifications to the current Solid Waste Permit, a stormwater

NPDES for construction, and an amendment to or a new individual NPDES permit for construction.

Alternative #7: Permeable Reactive Barrier– Institutional requirements to begin treatment via a Permeable Reactive Barrier is expected to be **MEDIUM**, possibly requiring modifications to the current Solid Waste Permit, a stormwater NPDES for construction, and an amendment to or a new individual NPDES permit for construction.

14.3 COMPARITIVE ANALYSIS OF CORRECTIVE MEASURES ALTERNATIVES

Each of the remedial alternatives listed in Section 7.2 were ranked with respect to the evaluation categories discussed in Section 7.3. For performance, reliability and ease of implementation a designation of HIGH was scored a value of three, a designation of MEDIUM was scored a value of two, and a designation of LOW scored a value of one. For Potential Impacts and Institutional Requirements, a designation of LOW was scored a value of three, a designation of MEDIUM was scored a value of two, and a designation of HIGH was scored a value of one. For time to begin remedy and time to complete remedy, a designation of SHORT was scored with a value of three, a designation of MEDIUM was scored with a value of two, and a designation of LONG was scored with a value of one. Findings from this comparison are included on the table below.

	Alternative #1 Source Control via Source Removal	Alternative #2 Source Control via Enhanced Dewatering	Alternative #3 Source Control via In-Situ Solidification	Alternative #4 MNA	Alternative #5 Groundwater Extraction	Alternative #6 Non-Permeable Barrier	Alternative #7 Perm. Reactive Barrier
Performance	3	2	2	3	1	1	1
Reliability	3	2	1	3	1	1	1
Ease of Implement	1	2	1	3	1	1	1
Potential Impacts	1	2	1	3	2	2	2
Time to Implement	2	3	2	3	1	1	1
Time to Complete	2	1	2	1	1	1	1
Institutional Controls	1	2	2	3	1	2	2
Total	13	14	11	19	8	9	9

Based on a comparative analysis of the corrective measure alternatives, Alternative #2 (Source Control via Enhanced Dewatering) ranks as the highest for source control and Alternative #4 (MNA) ranks as the highest groundwater remedy alternative. Alternative #3 (Source Control via

Discrete In-Situ Solidification/Stabilization) ranks lowest for source control and Alternative #5 (Groundwater Extraction) ranks as the lowest groundwater remedy. From this, source removal via enhanced dewatering to remove standing water in the Landfill CCR Unit and to maintain controls to prevent run-on from entering into the CCR Unit combined with an MNA Program appears to be the most appropriate and preferred corrective measure alternative.

15.0 ADDITIONAL DATA NEEDS AND SELECTION OF REMEDY

As per OAC 2562:517-9-8(a), WFEC must, as soon as feasible, select a remedy that meets the standards listed in OAC 252:517-9-8(b) and (c). From this CMA, the preferred corrective measure at the HPS is Source Control via Enhanced Dewatering (removal of standing water from the Landfill CCR Unit and maintaining run-on controls) combined with MNA as a groundwater remedy. However, supplemental information is necessary to fill data gaps prior to selection of remedy.

The following actions are proposed to fill these data gaps:

- Continue on-going dewatering of standing water in the Landfill CCR Unit, combined with an evaluation of current run-on controls.

- Conduct a minimum of two years of semi-annual sampling of monitoring wells downgradient of the Landfill CCR Unit to establish the effectiveness of MNA at the HPS. It is proposed that sampling be conducted as outlined in the Plan and Schedule for Analyzing SSIs for Molybdenum (Altamira, March 4, 2020) and that semi-annual sampling occur in October and April until sufficient data is collected.

Until a remedy is selected, and in accordance with OAC 252:517-9-8(a), WFEC will prepare and submit to ODEQ for approval semi-annual reports describing the progress in selecting and designing the remedy. At least 30-days prior to selecting a remedy, WFEC will conduct a public meeting to discuss the results of the corrective measures assessment (as required by OAC 252:5179-7(e)).

The Corrective Measures Assessment, supplemental data obtained, and the input received during the public comment period, will be used to identify a corrective measure for implementation at the HPS. Upon selection of a remedy, WFEC will prepare and submit to ODEQ for approval a final report as per OAC 252:517-9-8(a) describing the selected remedy and how it meets the standards specified in OAC 252:517-9-8 (b) and (c).

As required by OAC 252:517-9-8(d), WFEC will specify as part of the selected remedy a schedule for implementing and completing remedial activities. The schedule will require the completion of remedial activities within a reasonable period of time taking into consideration 1) the extent and nature of molybdenum, 2) reasonable probabilities of remedial technologies in achieving compliance with the groundwater protection standards, 3) availability of treatment or disposal capacity for CCR managed during implementation of the remedy, 4) potential risks to human health and the environment from exposure of constituents prior to remedy completion and 5) resource value of the aquifer. Recordkeeping, notification and internet requirements as per OAC 252:517 will be complied with during all aspects of this process. The final report will include a certification from a qualified professional engineer that the remedy selected meets the requirements of the selection criteria and the final report will be placed in the operating record.

Professional Engineer Certification

I, as a registered Professional Engineer in the State of Oklahoma, verify the accuracy of the information in this report.

Christopher Scott Schaefer
Name of Professional Engineer

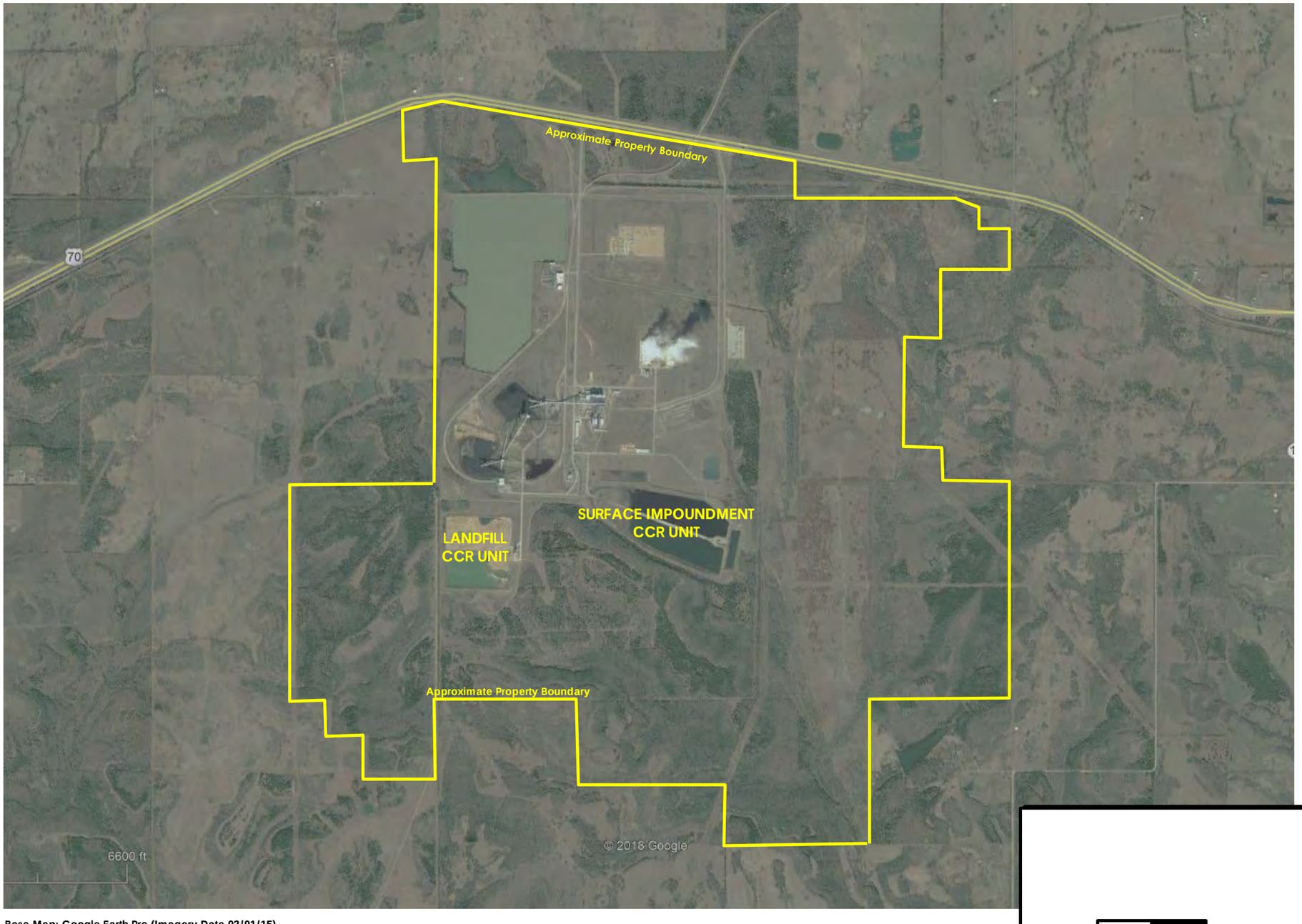
Date: 10/29/2020

22313
Registration Number

Oklahoma
Issuing State

Altamira-US, LLC (CA# 7335)
Firm

FIGURES



Base Map: Google Earth Pro (Imagery Date 02/01/15)

One inch approximately 2,000 ft

FIGURE 1: APPROXIMATE PROPERTY BOUNDARY - HPS FACILITY

PROJECT

WESTERN FARMERS ELECTRIC COOPERATIVE

LOCATION

HUGO POWER STATION (HPS)

PREPARED FOR

WESTERN FARMERS ELECTRIC COOPERATIVE

DRAWING TITLE

FIGURE 1
APPROXIMATE PROPERTY BOUNDARY – HPS FACILITY

Project No.	WFEE160019
Drawn By	CSS
Checked By	BS
Date:	10/14/2020
Scale	1" – 2,000' (Approximate)
Issued For.	Western Farmers Elect. Coop.
Figure No.	1

ALTAMIRA
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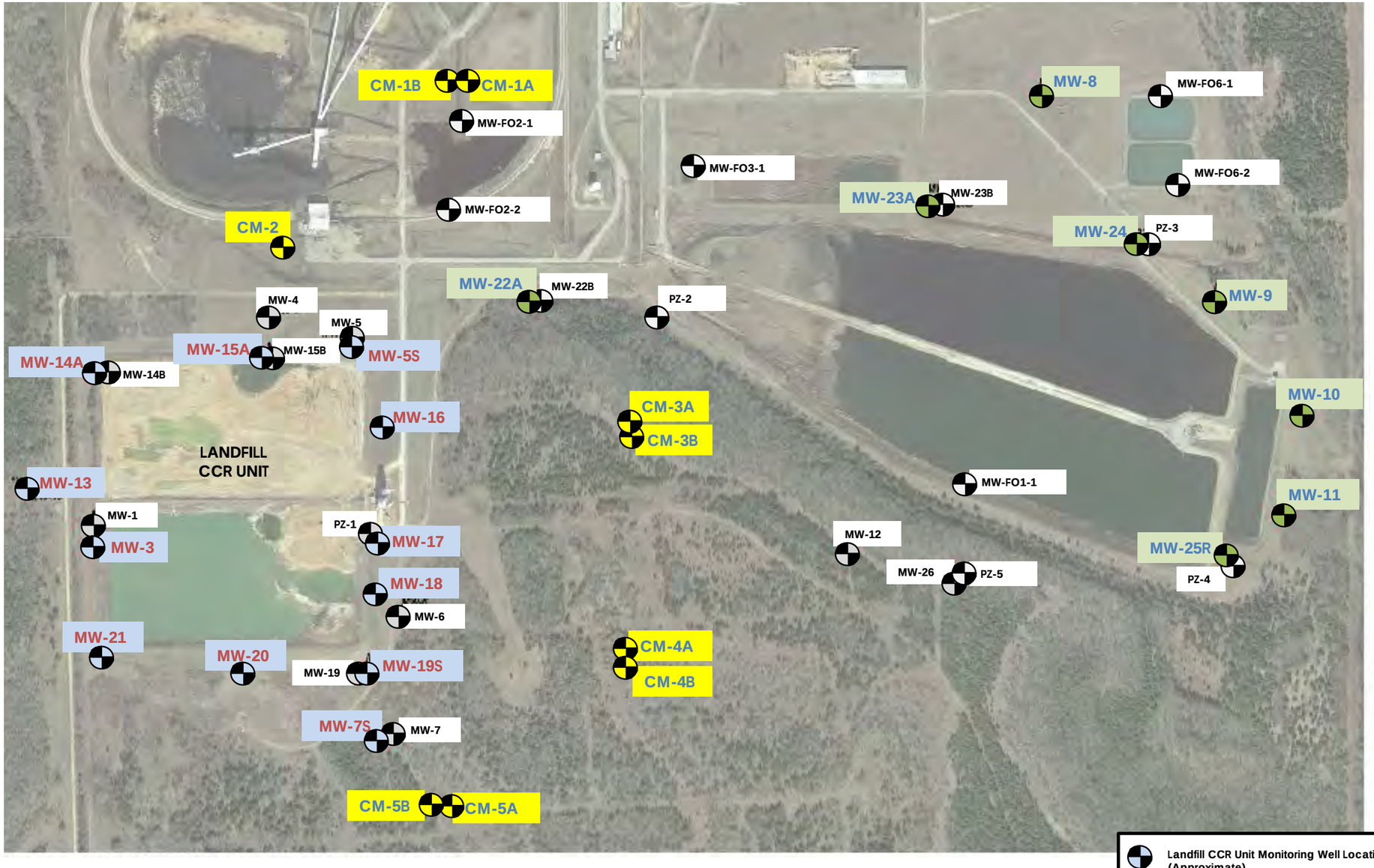

Base Map: AERIAL PHOTOGRAPH DATED FEBRUARY 1, 2015, GEOREFERENCED SCREEN CAPTURE FROM GOOGLE EARTH PRO

Landfill CCR Unit Monitoring Well Locations (Approximate)

Location of Monitoring Wells to Characterize Molybdenum and Evaluate MNA (Approximate)

Surface Impoundment CCR Unit Monitoring Well Locations (Approximate)

Location of Other Site Monitoring Wells/piezometers (Approximate)

One inch approximately 500 ft

FIGURE 2: MONITORING WELL LOCATIONS (APPROXIMATE)

PROJECT

WESTERN FARMERS ELECTRIC COOPERATIVE

LOCATION

HUGO POWER STATION (HPS)

PREPARED FOR

WESTERN FARMERS ELECTRIC COOPERATIVE

DRAWING TITLE

FIGURE 2
MONITORING WELL LOCATIONS (APPROXIMATE)

Project No.	WFEE160019
Drawn By	CSS
Checked By	BS
Date:	10/14/2020
Scale	1" – 500' (Approximate)
Issued For.	Western Farmers Elect. Coop.
Figure No.	2

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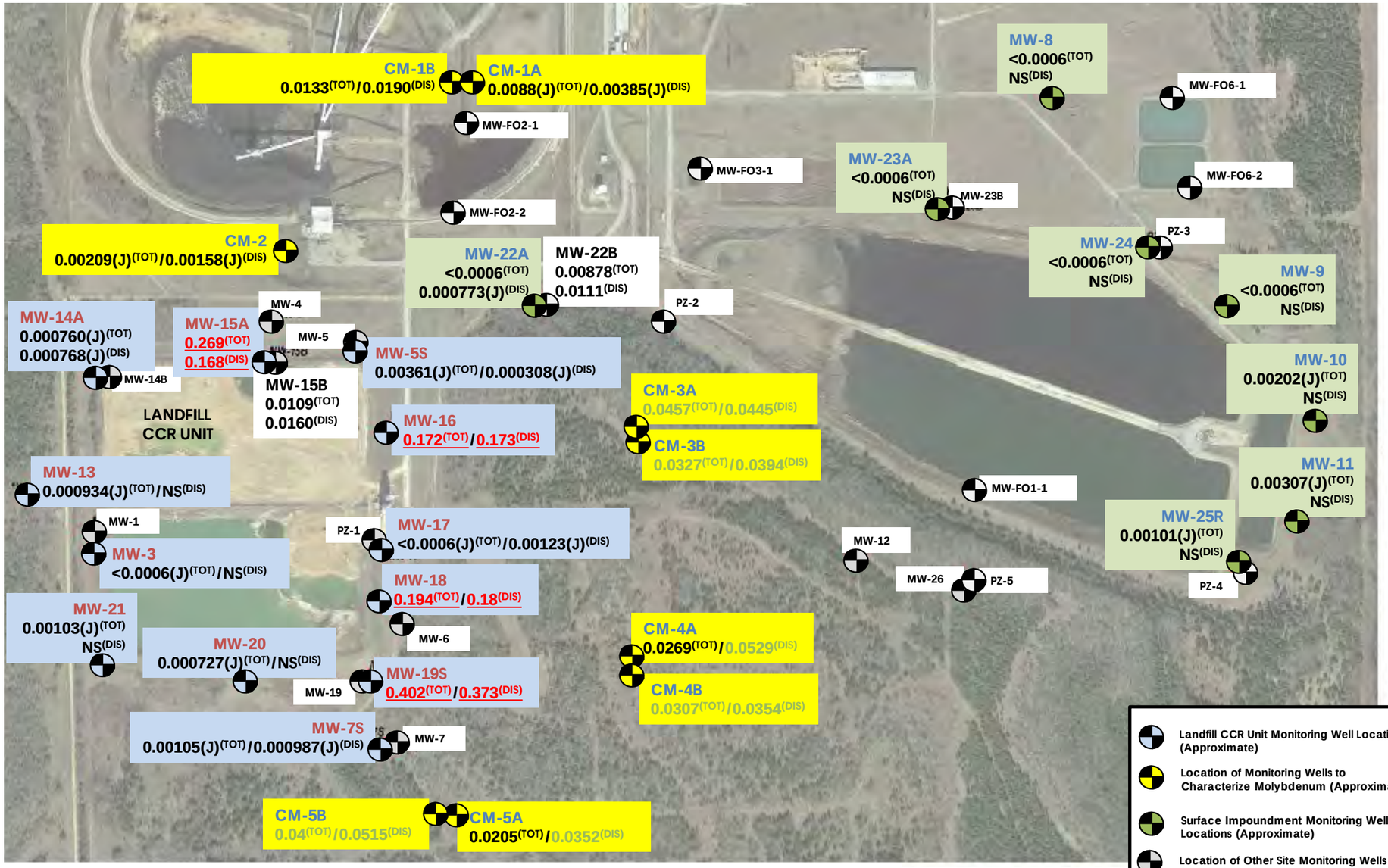

<0.0006 = Molybdenum Concentration (mg/L) for June/July 2020 Sampling (Does not Exceed GWPS of 0.029 mg/L)

0.0327 = Molybdenum Concentration (mg/L) for June/July 2020 Sampling
(Exceeds GWPS of 0.029 mg/L but below EPA Risk Based Alternative GWPS of 0.100 mg/L)

0.377 = Molybdenum Concentration (mg/L) for June/July 2020 Sampling
(Exceeds Both GWPS and EPA Risk Based Alternative GWPS)

No molybdenum concentration beside well indicates that well was not sampled in June/July 2020 and used only for water level measurement

Base Map: AERIAL PHOTOGRAPH DATED FEBRUARY 1, 2015, GEOREFERENCED SCREEN CAPTURE FROM GOOGLE EARTH PRO

FIGURE 3: MOLYBDENUM CONCENTRATONS IN GROUNDWATER FROM JUNE/JULY 2020 SAMPLING

- Landfill CCR Unit Monitoring Well Locations (Approximate)
- Location of Monitoring Wells to Characterize Molybdenum (Approximate)
- Surface Impoundment Monitoring Well Locations (Approximate)
- Location of Other Site Monitoring Wells (Approximate)

(TOT) – Concentration for Total Molybdenum

(DIS) – Concentration for Dissolved Molybdenum

NS = Well Not Tested For Dissolved Molybdenum

(J) = Concentration Below Laboratory Reporting Limit; Estimated Value

One inch approximately 500 ft

PROJECT

WESTERN FARMERS ELECTRIC COOPERATIVE

LOCATION

HUGO POWER STATION (HPS)

PREPARED FOR

WESTERN FARMERS ELECTRIC COOPERATIVE

DRAWING TITLE

FIGURE 3
MOLYBDENUM CONCENTRATIONS IN GROUNDWATER FROM JUNE/JULY 2020 SAMPLING

Project No.	WFEE160019
Drawn By	CSS
Checked By	BS
Date:	10/14/2020
Scale	1" – 500' (Approximate)
Issued For.	Western Farmers Elect. Coop.
Figure No.	3

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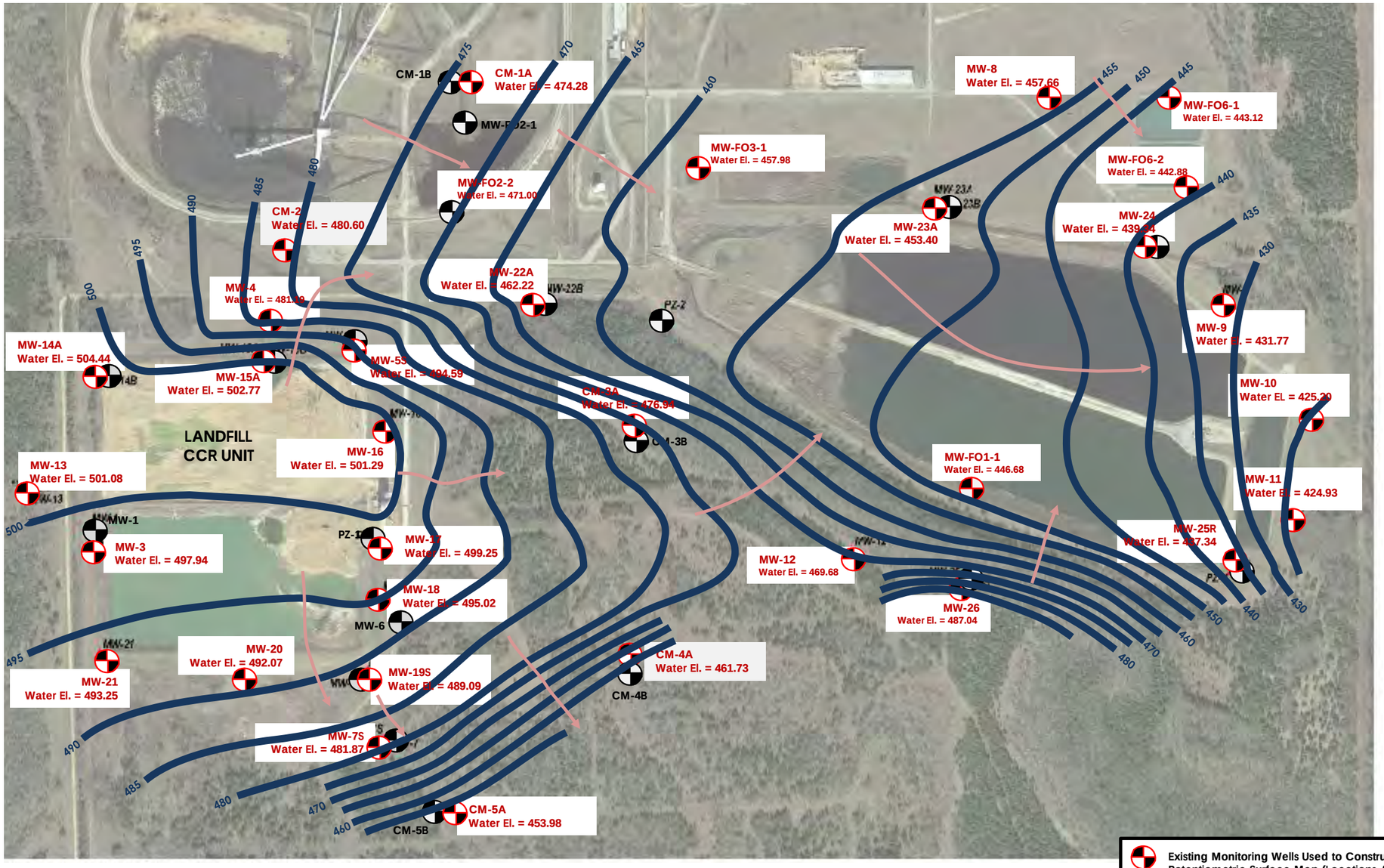

Base Map: AERIAL PHOTOGRAPH DATED FEBRUARY 1, 2015, GEOREFERENCED SCREEN CAPTURE FROM GOOGLE EARTH PRO

Existing Monitoring Wells Used to Construct Potentiometric Surface Map (Locations Approximate)

Other Existing Monitoring Wells and piezometers (Locations Approximate)

Water El = Water Elevations (August 19,2020) in Feet Above Mean Sea Level (AMSL)

Groundwater Flow Direction (August 19, 2020)

One inch approximately 500 ft

FIGURE 4: POTENTIOMETRIC SURFACE MAP (AUGUST 19, 2020)

PROJECT

WESTERN FARMERS ELECTRIC COOPERATIVE

LOCATION

HUGO POWER STATION (HPS)

PREPARED FOR

WESTERN FARMERS ELECTRIC COOPERATIVE

DRAWING TITLE

Figure 4
POTENTIOMETRIC SURFACE MAP
(AUGUST 19, 2020)

Project No.	WFEE160019
Drawn By	CSS
Checked By	BS
Date:	10/14/2020
Scale	1" – 500' (Approximate)
Issued For.	Western Farmers Elect. Coop.
Figure No.	4

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TABLES

TABLE 1
RESULTS FROM ADSORPTION/LEACHING LABORATORY ANALYSIS AFTER EXPOSURE TO SITE-SPECIFIC FORMATION ROCK (SHALE)
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

3.A INITIAL ANALYSIS OF SHALE (6/15/20) - CM-5, 12'		
Parameters	***Units***	**RESULTS**
Aluminum	mg/Kg	21,500
Calcium	mg/Kg	9,100
Cation Exchange Capacity	meq/100g	45.0
Iron	mg/Kg	27,100
Magnesium	mg/Kg	5,040
Manganese	mg/Kg	1,870
Molybdenum	mg/Kg	<2.2
Percent Moisture	%	18.4
pH	S.U.	8.5
Potassium	mg/Kg	6,200
Sodium	mg/Kg	1,880
Total Solids	%	80.9
Total Organic Carbon (TOC)	mg/Kg	15,300

3.B INITIAL ANALYSIS OF SITE GROUNDWATER (6/23/20) - MW-19S		
Parameters	***Units***	**RESULTS**
Alkalinity, Bicarbonate as CaCO3	mg/L	<20.0
Alkalinity, Carbonate as CaCO3	mg/L	65.4
Alkalinity, Hydroxide	mg/L	61.3
Aluminum	mg/L	0.339
Calcium	mg/L	46.2
Chloride	mg/L	13.8
Iron	mg/L	<0.050
Magnesium	mg/L	<0.050
Manganese	mg/L	<0.0050
Molybdenum	mg/L	0.445
Nitrate as N	mg/L	<0.10
pH	S.U.	10.4
Potassium	mg/L	43.3
Sodium	mg/L	766
Sulfate	mg/L	1,480

3.C ANALYSIS OF LEACHED COMPOUNDS IN WATER AFTER EXPOSURE TO SHALE										
		LEACH OF GROUNDWATER FROM MW-19S			LEACH OF DEIONIZED WATER WITH pH 7			LEACH OF DEIONIZED WATER WITH pH 12		
		CM-5, 12' LEACH 1	CM-5, 12' LEACH 2	CM-5, 12' LEACH 3	CM-5, 12' LEACH 1	CM-5, 12' LEACH 2	CM-5, 12' LEACH 3	CM-5, 12' LEACH 1	CM-5, 12' LEACH 2	CM-5, 12' LEACH 3
Parameters	***Units***	**7/8/2020 (16 to 18 Hours)**	**7/9/2020 (32 to 36 Hours)**	**7/10/2020 (48 to 54 Hours)**	**7/8/2020 (16 to 18 Hours)**	**7/9/2020 (32 to 36 Hours)**	**7/10/2020 (48 to 54 Hours)**	**7/8/2020 (16 to 18 Hours)**	**7/9/2020 (32 to 36 Hours)**	**7/10/2020 (48 to 54 Hours)**
Alkalinity, Bicarbonate as CaCO3	mg/L	<20.0	<20.0	24.8	684	711	676	1,830	1,840	1,690
Alkalinity, Carbonate as CaCO3	mg/L	69.5	43.9	27.8	<20.0	<20.0	<20.0	260	83.2	<60.0
Alkalinity, Hydroxide	mg/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<60.0	<60.0	<60.0
Aluminum	mg/L	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750	0.754	0.442	<0.0750
Calcium	mg/L	41.7	41.4	47.5	22.4	23.4	25.2	20.8	19.7	18.8
Chloride	mg/L	13.5	13.2	13.7	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
Iron	mg/L	<0.050	<0.050	0.0550	<0.050	<0.050	<0.050	<0.050	<0.050	0.0527
Magnesium	mg/L	3.78	3.78	4.89	2.98	3.68	4.33	0.259	0.341	0.283
Manganese	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Molybdenum	mg/L	0.310	0.324	0.366	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Nitrate as N	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.14	0.10	0.11	0.12
pH	S.U.	9.6	9.2	9.1	9.3	8.7	8.9	11.5	11.2	10.9
Potassium	mg/L	16.3	17.4	22.3	4.92	5.44	6.02	7.12	7.39	7.60
Sodium	mg/L	490	556	620	408	423	427	1,250	1,290	1,280
Sulfate	mg/L	1,500	1,180	1,360	15.9	24.3	35.2	23.7	53.0	89.3

Notes:

1. mg/L : milligrams per liter
2. meq/100g : millequivalents per 100 grams of soil
3. S.U. : Standard Units
4. % : percent
5. < : Analyte not detected at the laboratory method detection limit (MDL)

TABLE 2
COMPLETION DETAILS FOR MONITORING WELLS
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

		Well Location		Well Survey			Well Depth			Screen Details						
Monitoring Well	Date Installed	Northing	Easting	TOC Elevation (Feet, AMSL)	Post Repair TOC Elevation (Feet, AMSL) *	Surface Elevation (Feet, AMSL)	Feet Below TOC	Feet Below Surface	Elevation (Ft, AMSL)	Screen Length (Feet)	Top Screen (Feet below TOC)	Bottom Screen (Feet Below TOC)	Top Screen (Feet Below Surface)	Bottom Screen (Feet Below Surface)	Top Screen Elevation (Feet, AMSL)	Bottom Screen Elevation (Feet, AMSL)
MW-1	2/4/1987	256337.1746	2777504.738300	524	Not Applicable	521.4	227.6	225	296.4	30	197.6	227.6	195	225	326.4	296.4
MW-3	2/10/1987	256273.4462	2777508.291700	523.89	Not Applicable	520.49	32.4	29	491.49	5	27.4	32.4	24	29	496.49	491.49
MW-4	2/10/1987	257270.4206	2778325.938000	509.59	Not Applicable	506.57	32.52	29.5	477.07	5	27.52	32.52	24.5	29.5	482.07	477.07
MW-5	2/10/1987	257170.1887	2778696.228700	503.15	503.1	500.16	32.48	29.5	470.66	5	27.48	32.48	24.5	29.5	475.66	470.66
MW-5S	11/28/2016	257156.2600	2778700.510000	502.79	502.35	499.94	20.78	17.93	482.01	10	10.4	20.4	7.55	17.55	492.39	482.39
MW-6	2/11/1987	255928.6663	2778916.937500	505.26	Not Applicable	502.13	32.63	29.5	472.63	5	27.63	32.63	24.5	29.5	477.63	472.63
MW-7	2/12/1987	255351.3670	2778848.194100	488.94	Not Applicable	485.82	32.62	29.5	456.32	5	27.62	32.62	24.5	29.5	461.32	456.32
MW-7S	11/29/2016	255369.9400	2778839.450000	488.45	Not Applicable	486.21	18.82	16.58	469.63	10	8.47	18.47	6.23	16.23	479.98	469.98
MW-8	2/11/1987	25812.0491	2781839.5093	469.61	469.31	466.93	32.17	29.49	437.43	5	27.17	32.17	24.5	29.5	442.43	437.43
MW-9	2/11/1987	257369.4282	2782640.2528	450.42	Not Applicable	447.55	42.88	40	407.55	10	32.88	42.88	30	40	417.55	407.55
MW-10	2/11/1987	256856.8863	2783053.963200	434.4	Not Applicable	431.21	32.69	29.5	401.71	5	27.69	32.69	24.5	29.5	406.71	401.71
MW-11	2/11/1987	256382.5396	2782944.0493	434.32	434.01	431.12	32.7	29.5	401.62	5	27.7	32.7	24.5	29.5	406.62	401.62
MW-12	2/12/1987	256225.1991	2780966.5630	500.36	Not Applicable	497.24	32.62	29.5	467.74	5	27.62	32.62	24.5	29.5	472.74	467.74
MW-13	1/19/2016	256503.0610	2777205.6534	527.26	Not Applicable	524.45	39.5	36.69	487.76	10	29	39	26.19	36.19	498.26	488.26
MW-14A	1/8/2016	257049.1983	2777513.5758	521.25	521.23	518.52	28.4	25.66	492.85	10	17.9	27.9	15.16	25.16	503.35	493.35
MW-14B	11/18/2015	257039.0949	2777512.5955	521.01	520.95	518.56	40.5	38.05	480.51	10	30	40	27.55	37.55	491.01	481.01
MW-15A	1/8/2016	257115.3554	2778279.1851	514.2	Not Applicable	511.5	28.45	25.75	485.75	10	17.95	27.95	15.25	25.25	496.25	486.25
MW-15B	11/17/2015	257114.7900	2778289.9801	514.41	Not Applicable	511.53	42.37	39.49	472.04	10	31.87	41.87	28.99	38.99	482.54	472.54
MW-16	1/14/2016	256805.5370	2778847.8033	508.62	Not Applicable	505.69	23.4	20.47	485.22	10	12.9	22.9	9.97	19.97	495.72	485.72
MW-17	1/13/2006	256262.0942	2778831.1215	514.51	Not Applicable	511.52	23.5	20.51	491.01	10	13	23	10.01	20.01	501.51	491.51
MW-18	1/14/2016	256023.5727	2778818.4408	507.68	507.46	504.91	25.5	22.73	482.18	10	15	25	12.23	22.23	492.68	482.68
MW-19	1/14/2016	255669.3400	2778755.4359	493.52	Not Applicable	490.55	28.4	25.43	465.12	10	17.9	27.9	14.93	24.93	475.62	465.62
MW-19S	11/29/2016	255679.99	2778764.85	493.33	Not Applicable	491.03	17.84	15.54	475.49	10	7.46	17.46	5.16	15.16	485.87	475.87
MW-20	1/19/2016	255692.2176	2778182.0753	510.91	510.84	508.33	28.5	25.92	482.41	10	18	28	15.42	25.42	492.91	482.91
MW-21	1/18/2016	255755.9067	2777543.1530	517.11	517.02	514.15	33	30.04	484.11	10	22.5	32.5	19.54	29.54	494.61	484.61
MW-22A	1/13/2016	257374.1816	2779544.0452	478.17	478.02/478.09	475.23	28.45	25.51	449.72	10	17.95	27.95	15.01	25.01	460.22	450.22
MW-22B	12/16/2015	257372.8088	2779553.1993	477.71	477.69/477.65	475.15	43.5	40.94	434.21	10	33	43	30.44	40.44	444.71	434.71
MW-23A	1/12/2016	257815.1310	2781339.3990	469.7	Not Applicable	466.99	23.45	20.74	446.25	10	12.95	22.95	10.24	20.24	456.75	446.75
MW-23B	12/1/2015	257812.1219	2781349.4968	469.94	Not Applicable	466.99	33.5	30.54	436.44	10	23	33	20.04	30.04	446.94	436.94
MW-24	1/12/2016	257635.7440	2782273.0066	459.09	Not Applicable	456.45	27.35	24.71	431.74	10	16.85	26.85	14.21	24.21	442.24	432.24
MW-25R	11/29/2016	256180.88	2782685.73	452.04	Not Applicable	449.85	22.83	20.64	429.21	10	12.45	22.45	10.26	20.26	439.59	429.59
MW-26	1/19/2016	256082.9872	2781462.5377	499.66	Not Applicable	496.79	23.5	20.63	476.16	10	13	23	10.13	20.13	486.66	476.66
PZ-1	11/30/2015	256262.5822	2778817.0168	514.74	Not Applicable	512.12	35.5	32.87	479.24	10	25	35	22.37	32.37	489.74	479.74
PZ-2	12/2/2015	257300.6308	2780098.9270	465.49	Not Applicable	462.84	42.5	39.85	422.99	10	32	42	29.35	39.35	433.49	423.49
PZ-3	12/16/2015	257635.7634	2782283.5510	459.26	Not Applicable	456.32	39.5	36.55	419.76	10	29	39	26.05	36.05	430.26	420.26
PZ-4	1/12/2016	256144.4734	2782701.8060	452.82	Not Applicable	450.57	36.1	33.85	416.72	10	25.6	35.6	23.35	33.35	427.22	417.22
PZ-5	1/19/2016	256084.5306	2781471.6880	499.59	Not Applicable	496.81	78.5	75.72	421.09	10	68	78	65.22	75.22	431.59	421.59
PZ-6	1/7/2016	256512.2408	2777200.2173	527.02	Not Applicable	524.26	135.45	132.69	391.57	10	125.05	135.05	122.29	132.29	401.97	391.97
FO1-1	10/9/2019	256508.609	2781417.534	461.33	Not Applicable	458.1	53.78	52.2	407.55	45	8.58	53.58	7	52	452.75	407.75
FO2-1	10/10/2019	258185.840	2779107.828	488.34	Not Applicable	484.57	50.32	47.2	438.02	40	10.12	50.12	7	47	478.22	438.22
FO2-2	10/10/2019	257741.688	2779020.789	495.21	Not Applicable	492.13	57.88	55.5	437.33	40	17.68	57.68	15	55	477.53	437.53
FO3-1	10/9/2019	257978.259	2780272.746	467.18	Not Applicable	462.7	31.86	27.2	435.32	22	9.66	31.66	5	27	457.52	435.52
FO6-1	10/8/2019	258294.884	2782336.669	454.21	Not Applicable	450.5	21.9	18.2	432.31	12	9.7	21.7	6	18	444.51	432.51
FO6-2	10/8/2019	257866.950	2782458.650	453.98	Not Applicable	450.5	22.05	18.1	431.93	12	9.85	21.85	6	18	444.13	432.13
CM-1A	6/18/202	258272.938	2779102.820	488.07	Not Applicable	485.81	28.46	26.2	459.61	10	18.26	28.26	16	26	469.81	459.81
CM-1B	6/17/2020	258271.801	2779094.382	488.59	Not Applicable	485.86	49.53	46.8	439.06	10	38.73	48.73	36	46	449.86	439.86
CM-2	6/18/2020	257594.267	2778396.050	494.75	Not Applicable	491.85	28.9	26	465.85	10	17.9	27.9	15	25	476.85	466.85
CM-3A	6/17/2020	256776.681	2779941.812	501.94	Not Applicable	499.34	25.4	22.8	476.54	10	15.2	25.2	12.6	22.6	486.74	476.74
CM-3B	6/16/2020	256769.162	2779947.281	502.14	Not Applicable	499.14	59.2	56.2	442.94	10	49	59	46	56	453.14	443.14
CM-4A	6/16/2020	255718.581	2779886.395	487.81	Not Applicable	484.87	28.64	25.7	459.17	10	17.94	27.94	15.5	25.5	469.87	459.87
CM-4B	6/16/2020	255709.262	2779886.674	487.58	Not Applicable	484.81	48.97	46.2	438.61	10	38.77	48.77	36	46	448.81	438.81
CM-5A	6/15/2020	255057.902	2779128.231	483.24	Not Applicable	480.46	31.78	29	451.46	10	21.28	31.28	18.5	28.5	461.96	451.96
CM-5B	6/15/2020	255051.155	2779134.177	482.99	Not Applicable	480.41	51.08	48.5	431.91	10	40.58	50.58	38	48	442.41	432.41

Notes:

1. MW-1 through MW-26 as reported in Groundwater Monitoring Program for the Hugo Power Station CCR Units (Table 2 - Monitoring Well Construction Details), Burns and McDonnel, Revised January 2018. Top of Casing Elevations for MW-25 from Appendix in same report.
2. * : Repairs were made in December 2018 to casings at MW-5, MW-5S, MW-14A, MW-14B, MW-18, MW-20 and MW-21. Repaired casings were surveyed on December 19, 2018 (Heartland Surveying and Mapping, LLC).
3. For MW-8, the original TOC was 469.61 Ft, MSL. The casing was repaired on July 14, 2016 and 0.3 feet of casing removed to the TOC elevation listed above.
4. Repairs were made in December 2018 to casings at MW-11, MW-22A and MW-22B. Repaired casings for these wells were surveyed on December 19, 2018 (Heartland Surveying and Mapping, LLC).
5. The casings at MW-22A and MW-22B were repaired in June 2018 and surveyed to be 478.09 ft, MSL at MW-22A and 477.65 ft, MSL at MW-22B (Lemke Land Surveying, LLC, July 2020). Survey elevations for these wells from July 2020 are used in Groundwater Elevation calculations starting July 21, 2020.
6. FO1 through FO6 wells surveyed by Lemke Land Surveying LLC on 12/12/2019. CM-1A through CM-5B wells surveyed by Lemke Land Surveying LLC on July 8, 2020
7. AMSL: Feet above mean sea level
8. TOC: Top of casing

TABLE 3

REPORTED CONCENTRATIONS FOR TOTAL AND DISSOLVED MOLYBDENUM AND FOR MONITORED NATURAL ATTENUATION PARAMETERS FROM JUNE/JULY 2020 SAMPLING

WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Monitoring Well	Molybdenum (Total)	Molybdenum (Dissolved)	Calcium	Sodium	Potassium	Magnesium	Sulfate	Chloride	Fluoride	Total Alkalinity	Carbonate Alkalinity	Bicarbonate Alkalinity	Hydroxide Alkalinity	Ph (Lab)	pH (Field)	Oxidation Reduction Potential	Dissolved Oxygen	Sulfide	Nitrate - N	Total Iron	Dissolved Iron	Ferrous Iron	Boron	TDS	Turbidity	Specific Conductance
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L CaCO3	mg/L CaCO3	mg/L CaCO3	mg/L CaCO3	S.U.	S.U.	mV	mg/L	mg/L	mg/L as N	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	umhos/cm
MW-5S	0.00361(J)	0.00308(J)	68.2	277 (E)	3.48	5.16	408	19.5	0.824	412	15	397	<5	7.65	7.9	-48.2	1.89	<1	<0.03	<0.0120	<0.0120	0.029(J)	0.811	904	2.88	1665
MW-7S	0.00105(J)	0.000987(J)	160	313	5.33	17.1	970	18	0.479	264	<5	264	<5	7.55	7.37	-67.6	0.49	<1	<0.03	0.278	0.034(J)	0.306	1.33	1680	2.49	2097
MW-14A	0.00076(J)	0.000768(J)	280	382	7.66	26.6	1650	13.3	0.23	327	<5	327	<5	7.44	7.04	-45.7	0.79	<1	0.316	0.0771(J)	<0.0120	0.098	0.907	2780	4.71	3107
MW-15A	0.269	0.168	141	1040 (E)	8.24	16.5	1680	26.3	0.86	209	<5	209	<5	7.68	7.73	-50.3	1.39	1.12	<0.06	0.0535(J)	<0.0120	0.0410(J)	4.57	2,520	2.6	3337
MW-15B	0.0109	0.016	39.3	713	10.3	13.2	1280	60.1	1.23	680	38.1	642	<5	7.66	7.91	224.1	4.21	3	---	22.7	2.11	2.67	4.27	2,390	568	3513
MW-16	0.172	0.173	186	309	2.85	8.44	1030	14.7	0.694	232	<5	232	<5	7.6	7.66	-56.9	2.18	<1	<0.06	0.0358(J)	0.0160(J)	0.0380(J)	1.43	1,610	3.09	2438
MW-17	<0.0006	0.00123(J)	494	35.6	5.15	37.8	1390	4.29	0.211	284	<5	284	<5	7.38	6.8	-28.1	1.35	<1	<0.06	<0.0120	<0.0120	0.02(J)	0.652	2,230	2.28	2344
MW-18	0.194	0.18	21.6	376	15.9	0.141(J)	888	4.06	1.28	71	60.6	<5	10.4	9.35	10.65	-140.3	0.55	<1	<0.06	<0.0120	<0.0120	0.02(J)	5.49	1340	2.43	1998
MW-19S	0.402	0.373	43.6	644	35.2	0.0553(J)	1490	13.8	1.15	128	92.6	<5	35.1	10.2	10.97	-588.1	0.36	1.52	<0.06	0.0153(J)	<0.0120	0.043(J)	6.8	2,300	2.86	3309
MW-22A	<0.0006	0.000773(J)	754	202	21.7	126	2160	2.34	0.237	249	<5	249	<5	7.08	6.97	-36.5	3.35	1.52	<0.06	0.0509(J)	<0.0120	<0.02	2.82	3,390	9.49	3013
MW-22B	0.00878	0.0111	90.1	838	10.3	24.1	2180	55.5	1.14	333	<5	328	<5	7.57	7.95	180.5	5.05	4	---	11.7	<0.0120	3.06	2.97	3,000	926	4364
CM-1A	0.0088	0.00385(J)	452	178	12.4	65.7	1970	49.5	0.382	326	<5	326	<5	6.52	6.93	301.9	6	<1	---	5.34	<0.0120	0.114	0.748	2,980	31.4	3105
CM-1B	0.0133	0.019	233	877	19.7	50.8	2490	107	0.626	432	<5	432	<5	7.67	7.62	184.2	4.33	5	---	47.5	0.015(J)	26	3.86	3,490	>1,000	4900
CM-2	0.00209(J)	0.00158(J)	492	111	8.78	31.6	1680	3.79	0.558	337	<5	337	<5	6.66	7.02	244.3	4.62	<1	---	2.78	<0.0120	0.109	0.93	2,490	16	2713
CM-3A	0.0457	0.0445	50.9	429	6.13	6.26	554	52.9	0.425	---	---	---	---	8.76	NS	NS	NS	NS	1.67	2.78	<0.0120	NS	4.84	1,700	NS	NS
CM-3B	0.0327	0.0394	70	573	11.1	13.6	1090	48.9	1.9	---	---	---	---	8.11	NS	NS	NS	NS	<0.03	23.5	0.014(J)	NS	3.82	2240	NS	NS
CM-4A	0.0269	0.0529	103	443	14.3	16.7	1050	92.4	0.879	470	20	450	<5	7.82	7.6	238.4	2.68	4	---	40	0.0205(J)	1.92	3.03	1,900	692	2939
CM-4B	0.0307	0.0354	56.5	529	10.2	14	1360	69.9	1.01	436	15.7	420	<5	7.78	7.45	292.1	2.88	5	---	4.25	0.0123(J)	19.2	3.14	2,240	158	3331
CM-5A	0.0205	0.0352	102	448	13.3	15.8	808	93.9	1.09	451	7.91	443	<5	7.7	7.4	270.1	3.81	<1	---	28.4	<0.0120	0.561	3.92	1840	204	2617
CM-5B	0.04	0.0515	115	587	15.2	22	1470	107	0.636	421	22.6	398	<5	7.94	7.53	229	3.35	8	---	32.3	0.0246(J)	0.671	3.8	2,570	616	3617

Notes:

1. mg/L : milligrams per liter.
2. S.U. : Standard Units.
3. mV : millivolts.
4. NTU : Nephelometric Turbidity Unit.
5. < : Analyte not detected at the laboratory method detection limit (MDL).
6. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
7. E : Reported value above quantitation range
8. --- : no analysis performed.

TABLE 4 (PAGE 1 OF 2)
DEPTH TO GROUNDWATER MEASUREMENTS AND WATER TABLE ELEVATIONS
WESERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Monitoring Well	TOC Elevation (Ft, AMSL)	Post Repair TOC Elevation (Ft, AMSL)	5/23/2016		7/25/2016		9/26/2016		11/28/2016		12/8/2016		1/24/2017		3/28/2017		5/30/2017		8/3/2017		5/16/2018	
			Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)
MW-1	524	Not Applicable	90.03	433.97	91.2	432.8	92.19	431.81	92	432	---	---	92.14	431.86	92.14	431.86	91.95	432.05	91.85	432.15	91.12	432.88
MW-3	523.89	Not Applicable	24.56	499.33	25.92	497.97	26.26	497.63	26.91	496.98	---	---	25.63	498.26	26.02	497.87	26.4	497.49	24.88	499.01	25.2	498.69
MW-4	509.59	Not Applicable	31.5	478.09	30.89	478.7	30.36	479.23	33	476.59	---	---	32.85	476.74	32.15	477.44	31.46	478.13	30.84	478.75	32.65	476.94
MW-5	503.15	503.1	25.68	477.47	24.8	478.35	26	477.15	27.96	475.19	---	---	22.65	480.5	17.72	485.43	15.44	487.71	14.35	488.8	12.29	490.86
MW-5S	502.79	502.35	Not Installed								6.83	495.96	7.64	495.15	9.36	493.43	9.1	493.69	7.47	495.32	9.69	493.1
MW-6	505.26	Not Applicable	31.08	474.18	29.65	475.61	32.18	473.08	32.59	472.67	---	---	31.76	473.5	32.98	472.28	28.4	476.86	26.04	479.22	31.01	474.25
MW-7	488.94	Not Applicable	9.81	479.13	9.26	479.68	5.26	483.68	3.33	485.61	---	---	4.63	484.31	5.41	483.53	6.27	482.67	5.96	482.98	7.19	481.75
MW-7S	488.45	Not Applicable	Not Installed								4.04	484.41	3.69	484.76	3.41	485.04	5.45	483	5.81	482.64	5.5	482.95
MW-8	469.61	469.31	10.74	458.87	11.53	457.78	11.7	457.61	11.9	457.41	---	---	11.46	457.85	10.68	458.63	10.68	458.63	10.8	458.51	10.62	458.69
MW-9	450.42	Not Applicable	3.77	446.65	12.55	437.87	10.75	439.67	4.43	445.99	---	---	4.22	446.2	3.68	446.74	4.94	445.48	11.53	438.89	12.22	438.2
MW-10	434.4	Not Applicable	7.85	426.55	8.9	425.5	6.75	427.65	4.55	429.85	---	---	3.24	431.16	5.18	429.22	7.28	427.12	7.36	427.04	7.56	426.84
MW-11	434.32	434.01	8.3	426.02	9.28	425.04	9.16	425.16	8.61	425.71	---	---	7.49	426.83	7.46	426.86	7.9	426.42	8.35	425.97	7.46	426.86
MW-12	500.36	Not Applicable	29.6	470.76	29.3	471.06	29.06	471.3	32.7	467.66	---	---	30.2	470.16	29.65	470.71	29.15	471.21	28.75	471.61	8.81	491.55
MW-13	527.26	Not Applicable	25.13	502.13	25.46	501.8	26.07	501.19	25.48	501.78	---	---	26.86	500.4	25.95	501.31	26.11	501.15	26.05	501.21	25.64	501.62
MW-14A	521.25	521.23	14.72	506.53	16.45	504.8	15.7	505.55	15.85	505.4	---	---	14.59	506.66	15.98	505.27	15.35	505.9	15.03	506.22	15.92	505.33
MW-14B	521.01	520.95	31.09	489.92	27.07	493.94	24.05	496.96	21.9	499.11	---	---	20.4	500.61	19.22	501.79	18.75	502.26	18.72	502.29	17.72	503.29
MW-15A	514.2	Not Applicable	8.73	505.47	10.74	503.46	9.93	504.27	10.53	503.67	---	---	8.72	505.48	10.18	504.02	9.32	504.88	9.05	505.15	10.01	504.19
MW-15B	514.41	Not Applicable	31.26	483.15	24.59	489.82	20.88	493.53	18.53	495.88	---	---	17	497.41	16.85	497.56	15.08	499.33	14.72	499.69	13.59	500.82
MW-16	508.62	Not Applicable	4.81	503.81	6.73	501.89	6.3	502.32	4.36	504.26	---	---	2.91	505.71	2.9	505.72	5.5	503.12	5.24	503.38	5.8	502.82
MW-17	514.51	Not Applicable	14.07	500.44	15.67	498.84	15.8	498.71	16.08	498.43	---	---	14.52	499.99	15.7	498.81	15.23	499.28	14.35	500.16	14.5	500.01
MW-18	507.68	507.46	11.58	496.1	13.17	494.51	13.24	494.44	12.91	494.77	---	---	12.09	495.59	12.09	495.59	12.9	494.78	11.85	495.83	11.84	495.84
MW-19	493.52	Not Applicable	3.68	489.84	2.81	490.71	1.28	492.24	1.37	492.15	---	---	2.38	491.14	3.49	490.03	3.35	490.17	1.95	491.57	4.7	488.82
MW-19S	493.33	Not Applicable	Not Installed								3.5	489.83	2.78	490.55	2.66	490.67	3.93	489.4	3.59	489.74	3.67	489.66
MW-20	510.91	510.84	17.92	492.99	18.82	492.09	19.12	491.79	18.69	492.22	---	---	18.22	492.69	18.59	492.32	19.01	491.9	18.17	492.74	17.97	492.94
MW-21	517.11	517.02	22.94	494.17	23.28	493.83	23.84	493.27	23.54	493.57	---	---	23.62	493.49	23.92	493.19	24.02	493.09	24.65	492.46	23.04	494.07
MW-22A	478.17	478.02	14.25	463.92	15.85	462.32	16.02	462.15	16.63	461.54	---	---	15.78	462.39	14.94	463.23	15.04	463.13	15.23	462.94	14.75	463.42
MW-22B	477.71	477.69	24.87	452.84	24.38	453.33	21.23	456.48	20.45	457.26	---	---	20.14	457.57	19.8	457.91	19.35	458.36	18.93	458.78	18.01	459.7
MW-23A	469.7	Not Applicable	14.76	454.94	14.96	454.74	15	454.7	14.6	455.1	---	---	14.73	454.97	14.53	455.17	14.65	455.05	14.81	454.89	14.64	455.06
MW-23B	469.94	Not Applicable	15.89	454.05	15.96	453.98	15.42	454.52	15.44	454.5	---	---	15.09	454.85	15.58	454.36	15.95	453.99	15.87	454.07	16.11	453.83
MW-24	459.09	Not Applicable	17.06	442.03	15.28	443.81	15.14	443.95	14.79	444.3	---	---	14.16	444.93	14.61	444.48	14.99	444.1	19.9	439.19	14.51	444.58
MW-25	452.89	Not Applicable	11.65	441.24	11.54	441.35	10.89	442	11.29	441.6	Plugged											
MW-25R	452.04	Not Applicable	Not Installed								17.41	434.63	16.8	435.24	13.65	438.39	12.4	439.64	10.33	441.71	9.77	442.27
MW-26	499.66	Not Applicable	11.13	488.53	12.97	486.69	13.6	486.06	13.95	485.71	---	---	13.52	486.14	11.11	488.55	11.8	487.86	11.92	487.74	11.54	488.12
PZ-1	514.74	Not Applicable	14.31	500.43	15.85	498.89	16.02	498.72	16.25	498.49	---	---	14.58	500.16	15.93	498.81	15.53	499.21	14.61	500.13	14.79	499.95
PZ-2	465.49	Not Applicable	33.8	431.69	30.43	435.06	21.12	444.37	29.05	436.44	---	---	14.63	450.86	23.92	441.57	22.25	443.24	21.26	444.23	18.9	446.59
PZ-3	459.26	Not Applicable	17.43	441.83	15.44	443.82	15.35	443.91	14.96	444.3	---	---	14.47	444.79	14.88	444.38	15.25	444.01	19.84	439.42	14.63	444.63
PZ-4	452.82	Not Applicable	11.07	441.75	11.65	441.17	10.98	441.84	10.95	441.87	---	---	10.57	442.25	10.73	442.09	12.09	440.73	12.49	440.33	11.95	440.87
PZ-5	499.59	Not Applicable	69.53	430.06	64.33	435.26	60.49	439.1	61.62	437.97	---	---	59.23	440.36	57.86	441.73	57.07	442.52	56.72	442.87	56.14	443.45
PZ-6	527.02	Not Applicable	91.58	435.44	92.29	434.73	92.76	434.26	93.13	433.89	---	---	92.83	434.19	92.86	434.16	92.72	434.3	92.77	434.25	92.05	434.97
PZ-7	526.82	Not Applicable	92.94	433.88	93.3	433.52	93.5	433.32	99.93	426.89	Plugged											
FO1-1	461.33	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FO2-1	488.34	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FO2-2	495.21	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FO3-1	467.18	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FO6-1	454.21	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FO6-2	453.98	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. AMSL: Feet above mean sea level
2. TOC: Top of casing
3. Top of Casings as reported in Groundwater Monitoring Program for the Hugo Power Station CCR Units (Table 2 - Monitoring Well Construction Details), Burns and McDonnel, Revised January 2018. Top of Casing Elevations for MW-25 from Appendix in same report.
4. Post repair TOC elevations for these wells are used in Groundwater Elevation calculations starting in January 2019. For MW-8, the original TOC was 469.61 Ft, MSL. The casing was repaired on July 14, 2016 and 0.3 feet of casing removed to the TOC elevation listed above. Water level on 5/13/2016 measured off of unrepaired casing, all others off of repaired casing.
5. Repairs were made in December 2018 to casings at MW-11, MW-22A and MW-22B. Repaired casings for these wells were surveyed on December 19, 2018 (Heartland Surveying and Mapping, LLC), post repair TOC elevations for these wells are used in Groundwater Elevation calculations starting in January 2019.
6. Casings at MW-22A and MW-22B were damaged at the time of the 6/15/2020 sample event due to construction in the area and groundwater elevations could not be calculated.
7. --- : Depth to water measurements not available

TABLE 4 (PAGE 2 OF 2)
DEPTH TO GROUNDWATER MEASUREMENTS AND WATER TABLE ELEVATIONS
WESERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Monitoring Well	TOC Elevation (Ft, AMSL)	Post Repair TOC Elevation (Ft, AMSL)	7/25/2018		9/24/2018		1/7/2019		4/22/2019		9/30/2019		11/4/2019		12/12/2019		6/15/2020		7/21/2020		8/19/2020	
			Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)	Depth To Water (Ft TOC)	Groundwater Elevation (Ft, AMSL)
MW-1	524	Not Applicable	---	---	93	431	91.32	432.68	90.58	433.42	91.15	432.85	---	---	---	---	89.2	434.8	89.51	434.49	90.22	433.78
MW-3	523.89	Not Applicable	28.03	495.86	27.96	495.93	24.55	499.34	25.76	498.13	25.89	498	---	---	---	---	23.9	499.99	24.87	499.02	25.95	497.94
MW-4	509.59	Not Applicable	---	---	31.55	478.04	30.47	479.12	29.46	480.13	31.91	477.68	---	---	31.29	478.3	29.1	480.49	28.79	480.8	28.4	481.19
MW-5	503.15	503.1	---	---	12.7	490.45	10.47	492.63	10.05	493.05	11.53	491.57	---	---	10.9	492.2	11	492.1	11.15	491.95	11.38	491.72
MW-5S	502.79	502.35	8.3	494.49	6.35	496.44	7.11	495.24	10	492.35	6.26	496.09	---	---	6.51	495.84	8.6	493.75	8.13	494.22	7.76	494.59
MW-6	505.26	Not Applicable	---	---	28.09	477.17	23.72	481.54	20.67	484.59	31.31	473.95	---	---	---	---	23.21	482.05	22.28	482.98	21.74	483.52
MW-7	488.94	Not Applicable	---	---	4.55	484.39	4.25	484.69	6.45	482.49	5.67	483.27	---	---	---	---	6.97	481.97	7.2	481.74	6.68	482.26
MW-7S	488.45	Not Applicable	6.5	481.95	4.15	484.3	3.49	484.96	4.04	484.41	5.63	482.82	---	---	---	---	5.93	482.52	6.4	482.05	6.58	481.87
MW-8	469.61	469.31	12	457.31	12.47	456.84	9.45	459.86	10.15	459.16	11.38	457.93	---	---	10.06	459.25	10.26	459.05	11.07	458.24	11.65	457.66
MW-9	450.42	Not Applicable	13.5	436.92	5.19	445.23	3.79	446.63	5.87	444.55	16.15	434.27	---	---	11.52	438.9	18.62	431.8	18.3	432.12	18.65	431.77
MW-10	434.4	Not Applicable	9.3	425.1	6.67	427.73	3.09	431.31	7.43	426.97	7.66	426.74	---	---	4.5	429.9	9.45	424.95	9.74	424.66	9.2	425.2
MW-11	434.32	434.01	8.99	425.33	8.71	425.61	6.76	427.25	7.2	426.81	8.85	425.16	---	---	7.75	426.26	8.45	425.56	8.95	425.06	9.08	424.93
MW-12	500.36	Not Applicable	---	---	10.47	489.89	11.08	489.28	11.76	488.6	31.12	469.24	---	---	27.44	472.92	31.06	469.3	30.79	469.57	30.68	469.68
MW-13	527.26	Not Applicable	26.4	500.86	27.8	499.46	26.28	500.98	26.44	500.82	26.41	500.85	---	---	---	---	26.3	500.96	25.95	501.31	26.18	501.08
MW-14A	521.25	521.23	16.74	504.51	16.57	504.68	14.98	506.25	16.12	505.11	16.32	504.91	---	---	---	---	16.14	505.09	16.48	504.75	16.79	504.44
MW-14B	521.01	520.95	---	---	18.6	502.41	18.05	502.9	17.67	503.28	34.19	486.76	---	---	---	---	21.63	499.32	21.39	499.56	21.35	499.6
MW-15A	514.2	Not Applicable	11.02	503.18	11	503.2	8.89	505.31	10.38	503.82	10.64	503.56	---	---	---	---	10.5	503.7	11	503.2	11.43	502.77
MW-15B	514.41	Not Applicable	---	---	14	500.41	13.95	500.46	13.67	500.74	39.7	474.71	---	---	---	---	24.38	490.03	22.15	492.26	39	475.41
MW-16	508.62	Not Applicable	7.17	501.45	3.33	505.29	2.38	506.24	3.92	504.7	6.39	502.23	---	---	---	---	5.65	502.97	6.6	502.02	7.33	501.29
MW-17	514.51	Not Applicable	16.75	497.76	16.5	498.01	12.5	502.01	14.1	500.41	15.3	499.21	---	---	---	---	12.25	502.26	14.21	500.3	15.26	499.25
MW-18	507.68	507.46	14.09	493.59	14.48	493.2	9.91	497.55	11.25	496.21	12.27	495.19	---	---	---	---	9.68	497.78	11.45	496.01	12.44	495.02
MW-19	493.52	Not Applicable	---	---	1.31	492.21	2.85	490.67	5.1	488.42	1.52	492	---	---	---	---	4.09	489.43	3.15	490.37	2.49	491.03
MW-19S	493.33	Not Applicable	5.25	488.08	4.95	488.38	2.45	490.88	3.25	490.08	3.87	489.46	---	---	---	---	3.51	489.82	3.91	489.42	4.24	489.09
MW-20	510.91	510.84	19.81	491.1	19.78	491.13	17.42	493.42	18.18	492.66	18.68	492.16	---	---	---	---	17.45	493.39	18.09	492.75	18.77	492.07
MW-21	517.11	517.02	24.26	492.85	24.62	492.49	23.46	493.56	23.56	493.46	23.63	493.39	---	---	---	---	23.64	493.38	23.44	493.58	23.77	493.25
MW-22A	478.17	478.02 / 478.09	16.38	461.79	18.18	459.99	14.01	464.01	13.79	464.23	16.13	461.89	---	---	13.8	464.22	14.5	Damaged	15.26	462.83	15.87	462.22
MW-22B	477.71	477.69 / 477.65	---	---	18.18	459.53	17.56	460.13	17.51	460.18	31.58	446.11	---	---	23.19	454.5	18.56	Damaged	18.19	459.46	36.8	440.85
MW-23A	469.7	Not Applicable	16.2	453.5	14.66	455.04	14.64	455.06	14.74	454.96	14.73	454.97	---	---	14.91	454.79	15.62	454.08	15.86	453.84	16.3	453.4
MW-23B	469.94	Not Applicable	---	---	16.05	453.89	14.87	455.07	16.2	453.74	16.52	453.42	---	---	15.2	454.74	16.55	453.39	16.94	453	17.15	452.79
MW-24	459.09	Not Applicable	14.65	444.44	15.23	443.86	19	440.09	18.91	440.18	20.25	438.84	---	---	18.93	440.16	18.32	440.77	19.14	439.95	19.75	439.34
MW-25	452.89	Not Applicable	Plugged										---	---								
MW-25R	452.04	Not Applicable	10.56	441.48	9.84	442.2	12.11	439.93	11.76	440.28	15.73	436.31	N/A	N/A	10.73	441.31	11.25	440.79	14.14	437.9	14.7	437.34
MW-26	499.66	Not Applicable	---	---	14.19	485.47	10.72	488.94	10.8	488.86	12.91	486.75	N/A	N/A	10.82	488.84	11.2	488.46	11.46	488.2	12.62	487.04
PZ-1	514.74	Not Applicable	---	---	16.68	498.06	12.69	502.05	14.36	500.38	15.61	499.13	N/A	N/A	N/A	N/A	12.65	502.09	14.6	500.14	15.67	499.07
PZ-2	465.49	Not Applicable	---	---	18.94	446.55	18.82	446.67	18.22	447.27	18.44	447.05	N/A	N/A	18.66	446.83	18.11	447.38	18.1	447.39	18.25	447.24
PZ-3	459.26	Not Applicable	---	---	15.36	443.9	18.95	440.31	18.86	440.4	20.31	438.95	N/A	N/A	18.86	440.4	18.36	440.9	19.28	439.98	19.85	439.41
PZ-4	452.82	Not Applicable	---	---	11.95	440.87	10.87	441.95	11.65	441.17	12.83	439.99	N/A	N/A	11.21	441.61	12.57	440.25	13.13	439.69	13.35	439.47
PZ-5	499.59	Not Applicable	---	---	56.33	443.26	56.02	443.57	55.9	443.69	55.91	443.68	N/A	N/A	55.86	443.73	65.69	433.9	55.71	443.88	55.81	443.78
PZ-6	527.02	Not Applicable	---	---	93.01	434.01	92.68	434.34	91.94	435.08	91.7	435.32	N/A	N/A	N/A	N/A	90.7	436.32	90.7	436.32	91	436.02
PZ-7	526.82	Not Applicable	Plugged																			
FO1-1	461.33	Not Applicable	---	---	---	---	---	---	---	---	---	---	23.49	437.84	19.21	442.12	13.93	447.4	14.63	446.7	14.65	446.68
FO2-1	488.34	Not Applicable	---	---	---	---	---	---	---	---	---	---	10.19	478.15	10.23	478.11	11.39	476.95	11.26	477.08	11	477.34
FO2-2	495.21	Not Applicable	---	---	---	---	---	---	---	---	---	---	24.28	470.93	24.14	471.07	24.45	470.76	25.3	469.91	24.21	471
FO3-1	467.18	Not Applicable	---	---	---	---	---	---	---	---	---	---	9.24	457.94	10.42	456.76	10.05	457.13	10.21	456.97	9.2	457.98
FO6-1	454.21	Not Applicable	---	---	---	---	---	---	---	---	---	---	10.26	443.95	9.47	444.74	10.47	443.74	10.74	443.47	11.09	443.12
FO6-2	453.98	Not Applicable	---	---	---	---	---	---	---	---	---	---	10.95	443.03	10.98	443	10.7	443.28	10.83	443.15	11.1	442.88
CM-1A	488.07	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	13.79	474.28
CM-1B	488.59	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	42.43	446.16
CM-2	494.75	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	14.15	480.6
CM-3A	501.94	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	25	476.94
CM-3B	502.14	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	587.65	-85.51
CM-4A	487.81	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	26.04	461.77
CM-4B	487.58	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	44.39	443.19
CM-5A	483.24	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	29.26	453.98
CM-5B	482.99	Not Applicable	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	48.65	434.34

Notes:

1. AMSL: Feet above mean sea level
2. TOC: Top of casing
3. Top of Casings as reported in Groundwater Monitoring Program for the Hugo Power Station CCR Units (Table 2 - Monitoring Well Construction Details), Burns and McDonnel, Revised January 2018. Top of Casing Elevations for MW-25 from Appendix in same report.
4. Post repair TOC elevations for these wells are used in Groundwater Elevation calculations starting in January 2019. For MW-8, the original TOC was 469.61 Ft, MSL. The casing was repaired on July 14, 2016 and 0.3 feet of casing removed to the TOC elevation listed above. Water level on 5/13/2016 measured off of unrepaired casing, all others off of repaired casing.
5. Repairs were made in December 2018 to casings at MW-11, MW-22A and MW-22B. Repaired casings for these wells were surveyed on December 19, 2018 (Heartland Surveying and Mapping, LLC), post repair TOC elevations for these wells are used in Groundwater Elevation calculations starting in January 2019.
6. Casings at MW-22A and MW-22B were damaged at the time of the 6/15/2020 sample event due to construction in the area and groundwater elevations could not be calculated.
7. --- : Depth to water measurements not available

TABLE 5
SUMMARY OF HORIZONTAL HYDRAULIC CONDUCTIVITY VALUES
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Monitoring Well	Formation	Company Conducting Test	Horizontal Hydraulic Conductivity (cm/second)
MW-12 Rising Head	Caddo	ALTAMIRA	2.050E-07
MW-15A - Rising Head	Caddo	ALTAMIRA	3.118E-05
MW-15A - Falling Head	Caddo	ALTAMIRA	5.962E-05
MW-16 - Rising Head	Caddo	ALTAMIRA	5.233E-05
MW-16 - Falling Head	Caddo	ALTAMIRA	4.307E-05
MW-18 - Rising Head	Caddo	ALTAMIRA	3.020E-03
MW-18 - Falling Head	Caddo	ALTAMIRA	3.420E-04
MW-19S - Rising Head	Caddo	ALTAMIRA	3.020E-03
MW-19S - Falling Head	Caddo	ALTAMIRA	6.620E-04
MW-23A	Caddo	BURNS & McDONNELL	1.260E-05
MW-23B	Caddo	BURNS & McDONNELL	1.330E-07
MW-24	Caddo	BURNS & McDONNELL	7.770E-05
MW-25	Caddo	BURNS & McDONNELL	1.330E-06
MW-25R	Caddo	BURNS & McDONNELL	1.500E-05
MW-26 - Rising Head	Caddo	ALTAMIRA	8.960E-06
MW-26 - Falling Head	Caddo	ALTAMIRA	1.210E-05
PZ-2	Caddo	BURNS & McDONNELL	4.690E-08
PZ-4	Caddo	BURNS & McDONNELL	9.350E-08
PZ-5	Caddo	BURNS & McDONNELL	4.270E-07
MW-FO1-1 - Rising Head	Caddo	ALTAMIRA	4.450E-06
MW-FO1-1 - Falling Head	Caddo	ALTAMIRA	2.100E-06
CM-1A - Rising Head	Caddo	ALTAMIRA	8.824E-08
CM-1A - Falling Head	Caddo	ALTAMIRA	1.760E-06
CM-1B	Caddo	ALTAMIRA	6.989E-07
CM-2 - Rising Head	Caddo	ALTAMIRA	7.111E-08
CM-2 - Falling Head	Caddo	ALTAMIRA	1.610E-06
CM-3A- Rising Head	Caddo	ALTAMIRA	3.006E-06
CM-3B - Rising Head	Caddo	ALTAMIRA	1.094E-06
CM-4A - Rising Head	Caddo	ALTAMIRA	3.136E-07
CM-4B - Rising Head	Caddo	ALTAMIRA	3.950E-07
CM-5A - Rising Head	Caddo	ALTAMIRA	2.284E-07
CM-5B - Rising Head	Caddo	ALTAMIRA	7.620E-07
GEOMETRIC MEAN (CADDO FORMATION)			**3.89227E-06**
MW-8	Kiamichi	BURNS & McDONNELL	4.420E-05
MW-9	Kiamichi	BURNS & McDONNELL	1.300E-06
MW-10	Kiamichi	BURNS & McDONNELL	1.560E-07
MW-11	Kiamichi	BURNS & McDONNELL	2.870E-07
PZ-3	Kiamichi	BURNS & McDONNELL	3.230E-06
GEOMETRIC MEAN (KIAMICHI FORMATION)			**1.52727E-06**

GEOMETRIC MEAN (COMBINED)		**3.43004E-06**

Notes:

1. Source of Burns & McDonnel Data
   Aquifer Separation Evaluation - CCR Surface Impoundment (Burns & McDonnell; October 9, 2018)
2. Reported values for Hydraulic Conductivity are based on Slug Testing and are averages over those calculated using both Bouwer and Rice (1976) and Hvorsleve (1951) Methods for unconfined/semi-confined conditions.

APPENDIXES

APPENDIX A

TABLE OF GROUNDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-3 25-May-16	MW-3 27-Jul-16	MW-3 28-Sep-16	MW-3 1-Dec-16	MW-3 31-Jan-17	MW-3 5-Apr-17	MW-3 6-Jun-17	DUP 2 6-Jun-17	MW-3 8-Aug-17	MW-3 17-May-18	MW-3 (Shallow) 1-Aug-18	MW-3 (Deep) 9-Aug-18
Detection Monitoring Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Boron	None	1.896	Not Applicable	mg/L	1.09	1.17	1.10	1.70	1.28 J*	0.880	1.15	1.20	1.06	1.23	1.12	1.25
Calcium	None	670.30	Not Applicable	mg/L	255	296	242	405	227	357	315	309	371	227	205	255
Chloride	250	18.51	Not Applicable	mg/L	13.6	12.4	13.8	13.7	14.2 J*	14.9	13.7	13.3 J*	13.2	13.4	14.3	13.4
Fluoride	4	0.6359	Not Applicable	mg/L	0.211	0.442	0.407	0.392	0.399	0.300	0.384	0.354 J*	0.331	0.324	0.338	0.291
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	7.25	7.86	7.6	7.4	7.2	7.1	7.1	7.0	7.0	7.3	7.4	7.3
Sulfate	250	1,396	Not Applicable	mg/L	1,350	1,230	1,230	1,220	1,140	1,250	1,230	1,250	1,070	1,170	1,190	1,170
Total Dissolved Solids	500	2,191	Not Applicable	mg/L	2,030	2,060	1,960	1,990	2,080	2,090	2,150	2,200	2,090	2,180	2,150	2,160
Assessment Monitoring Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000500	<0.000500	<0.000800	<0.00400	<0.000800	<0.000800	<0.000800	<0.00400	<0.000800	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.00196 J	0.00117 J	0.00103 J	<0.00200	0.000602 J	0.00136 J	<0.000400	<0.00400	0.00172 J	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0122	0.0118	0.0114	0.0207	0.0115	0.0116	0.0114	0.0134	0.118	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.00100	<0.00100	<0.000100	<0.000500	<0.000100	<0.000100	<0.000100	<0.000500	<0.00100	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000400	<0.000400	<0.000100	<0.000500	<0.000100	<0.000100	<0.000100	<0.00100	<0.00100	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.000500	<0.000500	<0.000500	<0.00250	<0.000500	<0.000500	<0.000500	<0.00500	<0.000500	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.000500	<0.000500	0.000239 J	<0.000500	0.000168 J	0.000138 J	<0.000100	<0.00100	0.000153 J	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.211	0.442	0.407	0.392	0.399	0.300	0.384	0.354 J*	0.331	0.324	0.338	0.291
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000200	<0.000200	<0.000100	<0.000500	<0.000100	<0.000100	<0.000100	<0.000500	<0.000100	---	---	---
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.158	0.138	0.141	0.247 J	0.148	0.137	0.140	0.151 J	0.165	---	0.125	0.129
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.000500	<0.000500	<0.00100	<0.00500	<0.00100	<0.00100	<0.00100	<0.0100	<0.00100	---	<0.00100	<0.00100
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.000600	<0.000600	<0.000300	<0.00150	0.000345 J	<0.000300	0.00353	<0.00300	<0.000300	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000500	<0.000500	<0.000800	<0.00400	<0.000800	<0.000800	<0.000800	<0.00400	<0.000800	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.07 +/- 0.292	0.868 +/- 0.271	1.05 +/- 0.330	1.67 +/- 0.473	1.09 +/- 0.303	0.899 +/- 0.276	2.03 +/- 0.371	0.843 +/- 0.246	0.967 +/- 0.277	---	---	---
Other Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	299	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	23.1	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	8.45	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	697	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Temperature	None	Not Applicable	Not Applicable	°C	21.87	24.83	22.37	18.81	20.98	17.20	23.35	---	22.32	23.87	26.50	21.31
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.12	7.05	7.06	7.04	7.04	6.27	6.98	---	6.96	7.14	6.70	6.75
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,342	2,807	2,804	2,810	2,804	2,805	2,767	---	2,762	2,758	2,880	2,864
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.49	0.26	0.09	0.20	0.30	0.59	0.36	---	0.09	0.70	2.10	3.76
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-27.5	-74.7	-92.1	-245.4	-171.1	241.7	-45.0	---	46.8	-46.3	-11.5	25.0
Turbidity	None	Not Applicable	Not Applicable	NTU	0.89	0.18	0.18	0.91	0.36	0.15	0.44	---	0.33	0.29	0.02	0.02
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	24.56	25.92	26.26	26.91	25.63	26.02	26.40	---	24.88	25.20	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	33.53	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID:	MW-3	MW-3		MW-3	MW-3	MW-3
				Sample Date:	4-Oct-18	11-Jan-19		24-Apr-19	2-Oct-19	17-Jun-20
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Boron	None	1.896	Not Applicable	mg/L	1.06	1.05	1.00	1.39	1.06	1.16
Calcium	None	670.30	Not Applicable	mg/L	206	198	225	225	213	214
Chloride	250	18.51	Not Applicable	mg/L	13.8	13.4	16.3	13.0	13.7	13.7
Fluoride	4	0.6359	Not Applicable	mg/L	0.318	0.373	0.520	0.396 J	0.319	0.203
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	7.7	7.19	---	7.64	7.07	6.90
Sulfate	250	1,396	Not Applicable	mg/L	1,270	1,220	1,450	1,150	1,210	1240
Total Dissolved Solids	500	2,191	Not Applicable	mg/L	2,130	2,110	2,060	2,100	2,110	2,150
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.0008	<0.000400	<0.000400	<0.000400	0.000410 J	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.004	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Barium	2	Not Applicable	2 (MCL)	mg/L	0.00954 J	0.0101	0.011	0.0128	0.0112	0.0130
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.005	<0.000400	<0.000400	<0.000400	0.00142 J	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000162 J	<0.000200	0.000208 J	0.000232 J	0.000259 J	0.000289 J
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.318	0.373	0.520	0.396 J	0.319	0.203
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.0001	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.147 J	0.152	0.148	0.148	0.136	0.145
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0001	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.001	0.000613 J	0.000622 J	<0.000600	<0.000600	<0.000600
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.0003	<0.00110	<0.0011	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0008	0.000560 J	0.000499 J	<0.000200	0.000466 J	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.45 +/- 0.444	<0.67	---	<0.69	<0.79	1.02
Other Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5	<5	---	<5.00	<5.00	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	318	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	23.7	25.3	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	<0.05	0.47	0.488	1.57	0.2	<0.0300
Potassium	None	Not Applicable	Not Applicable	mg/L	---	8.17	8.40	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	388.0	429	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	2520.0	2730.0	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Field Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Temperature	None	Not Applicable	Not Applicable	°C	23.10	13.10	---	18.31	24.37	23.62
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.95	6.93	---	7.31	7.18	7.15
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,814	2,699	---	2,778	2,797	2,576
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.59	0.70	---	1.26	6.86	3.85
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-37.0	-12.0	---	-54.6	-34.4	-24.6
Turbidity	None	Not Applicable	Not Applicable	NTU	4.23	1.80	1.04	0.57	1.14	3.36
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	24.55	---	27.57	26.04	24.35
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

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APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-5S 13-Dec-16	DUP 3 13-Dec-16	MW-5S 25-Jan-17	MW-5S 3-Feb-17	MW-5S 29-Mar-17	MW-5S 7-Apr-17	MW-5S 1-Jun-17	MW-5S 9-Jun-17	MW-5S 14-Aug-17	MW-5S 22-May-18	MW-5S (Shallow) 1-Aug-18	MW-5S (Deep) 10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Boron	None	1.896	Not Applicable	mg/L	3.56	4.37	3.02	3.20	3.87	2.34	1.32	1.86	1.29	1.05	1.06	3.09
Calcium	None	670.30	Not Applicable	mg/L	32.9	28.1	27.8	29.9	30.8	37.9	54.7	58.2	46.6	74.7	59.1	24.9 J
Chloride	250	18.51	Not Applicable	mg/L	33.2	30.5	33.2	11.3	28.2	29.8	22.3	13.3	18.7	25.0	18.7	26.1
Fluoride	4	0.6359	Not Applicable	mg/L	1.84 J*	1.91	1.60	1.59	1.32	1.39	1.06	1.07	1.17	1.38	1.02	1.50
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	8.2	8.3	7.9	7.8	7.8	7.9	7.4	7.5	7.5	7.6	7.7	8.0
Sulfate	250	626	Not Applicable	mg/L	527	540	504	501	415	469	326	321	301	369	294	384
Total Dissolved Solids	500	1,334	Not Applicable	mg/L	1,230	1,180	1,200	1,210	1,070	1,060	948	1,010	980	950	880	1,150
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.00400	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.00400	<0.000800	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.00202 J	0.00132 J	0.00187 J	0.00209	0.00147 J	0.00117 J	0.00115 J	<0.00200	0.00564 J	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0267	0.0165	0.0212	0.0192	0.0144	0.0177	0.0183	0.0230	0.0186	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.000500	<0.000100	<0.000100	<0.000100	<0.00250	0.000419 U	<0.000100	<0.000500	<0.000100	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000500	<0.000100	<0.000100	<0.000100	0.000111 J	<0.000100	<0.000100	<0.000500	<0.000100	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.00250	0.000839 J	<0.000500	<0.00500	U (0.000520)	0.000761 J	<0.000500	<0.00250	U (0.00143)	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000833 J	<0.000100	0.000214 J	<0.00100	0.00109 J	0.000123 J	<0.000100	0.00122 J	0.000338 J	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	1.84 J*	1.91	1.60	1.59	1.32	1.39	1.06	1.07	1.17	1.38	1.02	1.50
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000500	<0.000100	0.000126 J	0.000238 J	0.000218 J	0.000177 J	0.000142 J	<0.000500	0.000110 J	---	---	---
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.0598 J	0.0582	0.0562	0.0617	0.0511	0.0523	0.0469 J	0.0588 J	0.0518	---	0.0500	0.0486
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.00880 J	0.00781	0.00745	0.00606	0.0118 J*	0.00722	0.00828	0.00980 J	0.00737	---	0.00497	0.00387
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.00150	<0.00150	<0.000300	0.000938 J	0.00234 J	<0.000300	0.000449 J	<0.00150	<0.000300	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.00400	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.00400	<0.000800	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.25 +/- 0.479	0.738 +/- 0.354	1.55 +/- 0.466	0.863 +/- 0.332	1.06 +/- 0.305	0.597 +/- 0.264	1.71 +/- 0.392	0.684 +/- 0.239	0.827 +/- 0.274	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	418	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	5.19	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	4.14	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	307	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Temperature	None	Not Applicable	Not Applicable	ºC	17.94	---	16.45	14.65	20.07	19.17	20.47	21.58	22.46	20.24	25.07	23.59
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.90	---	7.84	7.79	7.72	7.76	7.51	7.73	7.79	7.85	7.19	7.62
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	1,899	---	1,919	1,905	1,734	1,764	1,615	1,718	1,760	1,516	1,483	1,843
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.94	---	0.39	0.33	0.37	0.27	0.07	0.07	0.05	0.13	5.05	1.37
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-110.4	---	-157.0	-82.1	-61.6	-33.2	-79.7	27.3	21.5	-104.7	142.8	-40.1
Turbidity	None	Not Applicable	Not Applicable	NTU	37.0	---	4.09	2.45	0.83	1.98	1.52	1.01	1.14	0.41	0.02	1.12
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	6.83	---	7.64	8.82	9.36	9.36	9.10	9.10	7.47	9.69	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	20.80	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID:	MW-5S	MW-5S		MW-5S	MW-5S	MW-5S
				Sample Date:	2-Oct-18	10-Jan-19		23-Apr-19	2-Oct-19	18-Jun-20
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Boron	None	1.896	Not Applicable	mg/L	2.82	2.73	1.82	1.87	2.49	0.811
Calcium	None	670.30	Not Applicable	mg/L	25	27.7	27.8	57.0	22.5	68.2
Chloride	250	18.51	Not Applicable	mg/L	28.3	30.5	29.9	21.8	25.1	19.5
Fluoride	4	0.6359	Not Applicable	mg/L	1.54	1.54	1.50	1.11	1.54	0.824
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	8.7	7.65	---	8.11	7.55	7.65
Sulfate	250	626	Not Applicable	mg/L	447	457	472	394	434	408
Total Dissolved Solids	500	1,334	Not Applicable	mg/L	1,140	1,120	1,210	1,090	1,180	904
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.0008	0.00122 J	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.6610	0.000737 J	0.000765 J	0.000523 J	0.000736 J	<0.000400
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0120	0.0120	0.0116	0.0141	0.0093	0.0210
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.0005	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	0.832	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Fluoride	4	Not Applicable	4 (MCL)	mg/L	1.54	1.54	1.50	1.11	1.54	0.824
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.0001	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.0691 J	0.0644	0.0642	0.0604	0.0536	0.0490
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0001	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.005	0.00512	0.00335 J	0.00485 J	0.00315 J	0.00361 J
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.0003	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0008	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	0.611 +/- 0.249	<0.79	---	<0.64	1	1.25
Other Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5.00	<5.00	---	<5.00	<5.00	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	412
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	12.6	---	---	---	15
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	427	---	---	---	397
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<0.0120
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<0.0120
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.029(J)
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	5.73	5.58	---	---	5.16
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.00308(J)
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.089 J	0.964	0.916	0.665	0.212	<0.0300
Potassium	None	Not Applicable	Not Applicable	mg/L	---	4.49	4.27	---	---	3.48
Sodium	None	Not Applicable	Not Applicable	mg/L	---	405	257	---	---	277
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	1,730	1870	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<1
Field Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Temperature	None	Not Applicable	Not Applicable	°C	25.30	13.40	---	18.78	25.18	24.37
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.61	7.56	---	7.95	7.91	7.90
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	1,871	1,791	---	1,669	1,826	1,665
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.21	0.63	---	0.85	0.45	1.89
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-125.1	-30.9	---	19.7	-54.1	-48.2
Turbidity	None	Not Applicable	Not Applicable	NTU	3.30	4.51	1.27	1.16	0.94	2.88
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	7.11	---	12.41	11.54	10.06
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanaly
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

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APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID:	MW-7S	MW-7S	MW-7S	MW-7S	MW-7S	MW-7S	DUP 1	MW-7S	MW-7S	MW-7S	MW-7S (Shallow)	DUP1 (Shallow)	MW-7S (Deep)
				Sample Date:	13-Dec-16	25-Jan-17	3-Feb-17	29-Mar-17	7-Apr-17	31-May-17	31-May-17	9-Jun-17	10-Aug-17	17-May-18	3-Aug-18	3-Aug-18	10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE		VERIFICATION SAMPLE
Boron	None	1.896	Not Applicable	mg/L	3.80	0.891	0.557	<0.875	0.382	1.70	1.92	1.84	2.21	1.25	0.283	0.279	3.31
Calcium	None	670.30	Not Applicable	mg/L	53.8	349	267	411	415	71.0	168	175	80.6	178	90.3	88.8	142
Chloride	250	18.51	Not Applicable	mg/L	17.7	23.8	19.8	17.5	21.8	14.9	15.5	16.3	16.2	17.6	16.4	16.5	17.0
Fluoride	4	0.6359	Not Applicable	mg/L	1.02 J*	0.569	0.497	0.368	0.425	0.607	0.580	0.579	0.744	0.509	0.771	0.733	0.664
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	8.4	7.3	7.3	7.2	7.5	7.5	7.4	7.3	7.4	7.6	7.6	7.8	7.7
Sulfate	250	1,281	Not Applicable	mg/L	465	907	893	893	1120	587	606	619	450	860	545	545	623
Total Dissolved Solids	500	1,863	Not Applicable	mg/L	1,070	1,570	1,570	1,530	1,610	1,220	1,230	1,300	1,120	1,600	1,210	1,180	1,330
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE		VERIFICATION SAMPLE
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	0.00634 J	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.00400	<0.000800	---	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.00201 J	0.000728 J	0.000766 J	0.00176 J	0.00176 J	0.00137 J	0.00128 J	0.00310 J	0.00150 J	---	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0411	0.0462	0.0427	0.0360	0.0335	0.0292	0.0346	0.0446	0.0308	---	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.000500	<0.000100	<0.000100	<0.00250	<0.000100	<0.000100	<0.000100	<0.000500	<0.000100	---	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000500	<0.000100	<0.000100	0.000115 J	<0.000100	<0.000100	<0.000100	<0.000500	<0.000100	---	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	U (0.00333)	0.000680 J	<0.00500	<0.000500	<0.000500	0.000731 J	<0.000500	<0.00250	U (0.000637)	---	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.00120 J	0.000648 J	<0.00100	0.000735 J	0.000439 J	0.000349 J	0.000333 J	0.00208 J	0.000696 J	---	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	1.02 J*	0.569	0.497	0.368	0.425	0.607	0.580	0.579	0.744	0.509	0.771	0.733	0.664
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000500	0.000333 J	<0.000100	0.000157 J	<0.000100	<0.000100	<0.000100	<0.000500	<0.000100	---	---	---	---
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.0697 J	0.0462 J	0.0499 J	0.0395 J	0.0400 J	0.0637	0.0700	0.0766 J	0.0609	---	0.0667	0.0656	0.0613
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.00500	0.00174 J	0.00160 J	<0.00500	0.00153 J	0.00186 J	0.00179 J	<0.00500	0.00171 J	---	0.00127 J	0.00128 J	<0.00100
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	U (0.00158)	<0.000300	0.00103 J	<0.00150	<0.000300	<0.000300	<0.000300	<0.00150	<0.000300	---	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.00400	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.00400	<0.000800	---	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.13 +/- 1.07 U	1.51 +/- 0.445	1.15 +/- 0.362	0.649 +/- 0.257	0.808 +/- 0.292	0.531 +/- 0.268	0.559 +/- 0.233	0.952 +/- 0.279	0.891 +/- 0.247	---	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE		VERIFICATION SAMPLE
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	311	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	10.7	---	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	4.95	---	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	273	---	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE		VERIFICATION SAMPLE
Temperature	None	Not Applicable	Not Applicable	°C	16.83	14.77	15.53	18.89	16.83	21.67	---	19.85	24.46	19.60	29.34	---	25.21
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.88	7.17	7.20	7.18	7.22	7.27	---	7.19	7.22	7.40	6.92	---	7.22
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	1,614	2,010	2,029	2,216	2,205	1,925	---	1,929	1,680	2,101	1,822	---	1,932
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.47	0.43	0.19	0.27	0.25	0.09	---	0.05	0.08	0.22	1.61	---	2.95
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-165.8	-141.0	-164.4	-68.0	-104.0	-196.0	---	107.4	57.6	-58.8	-20.8	---	-30.7
Turbidity	None	Not Applicable	Not Applicable	NTU	81.8	33.7	3.34	1.12	8.31	1.82	---	1.12	3.45	2.29	3.37	---	1.76
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	4.04	3.69	4.50	3.41	3.41	5.45	---	5.45	5.81	5.50	---	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	18.84	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
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    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID:	MW-7S	MW-7S		MW-7S	MW-7S	MW-7S
				Sample Date:	4-Oct-18	10-Jan-19		23-Apr-19	1-Oct-19	17-Jun-20
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Boron	None	1.896	Not Applicable	mg/L	2.70	0.839	1.12	0.848	1.990	1.33
Calcium	None	670.30	Not Applicable	mg/L	76	277	293	271	81	160
Chloride	250	18.51	Not Applicable	mg/L	16.1	18.7	19.7	19.7	16.3	18.0
Fluoride	4	0.6359	Not Applicable	mg/L	0.764	0.422	0.350	0.376	0.729	0.479
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	8.0	7.34	---	7.82	7.39	7.55
Sulfate	250	1,281	Not Applicable	mg/L	1,600	1200	1,110	1,040	633	970
Total Dissolved Solids	500	1,863	Not Applicable	mg/L	1,230	1,670	1,890	1,890	1,270	1,680
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.0008	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.004	0.000413 J	<0.000400	0.00116 J	0.000412 J	0.000650 J
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0210	0.0371	0.0387	0.0372	0.0139	0.0244
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.005	<0.000400	<0.000400	<0.000400	0.000994 J	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000222 J	0.000270 J	0.000304 J	0.00153 J	<0.000200	0.000838 J
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.764	0.422	0.350	0.376	0.729	0.479
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.0001	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.0714 J	0.0558	0.0606	0.0593	0.0608	0.0681
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0001	<0.0000300	<0.0000300	<0.0000300	<0.0000300	0.0000350 J
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.01	0.00105 J	0.00107 J	0.000952 J	0.000798 J	0.00105 J
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.0003	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0008	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	2.07 +/- 0.453	1.34	---	0.9	<0.71	1.05
Other Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5	5.0 J	---	<5.00	<5.00	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	264
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	222	---	---	---	264
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.28
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.034(J)
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.31
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	19.0	18.7	---	---	17.10
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.000987(J)
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.118	0.557	0.644	<0.0300	<0.0300	<0.0300
Potassium	None	Not Applicable	Not Applicable	mg/L	---	4.67	4.79	---	---	5.33
Sodium	None	Not Applicable	Not Applicable	mg/L	---	274	294	---	---	313
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	1610.0	2,240	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<1
Field Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Temperature	None	Not Applicable	Not Applicable	°C	25.00	12.80	---	17.92	25.27	21.95
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.35	7.08	---	7.42	7.53	7.37
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	1,887	2,180	---	2,326	1,944	2,097
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.45	0.23	---	0.84	0.51	0.49
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-129.1	-6.3	---	-61.6	-133.8	-67.6
Turbidity	None	Not Applicable	Not Applicable	NTU	8.01	0.67	0.64	0.71	0.88	2.49
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	3.49	---	7.99	5.77	6.83
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	----	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

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APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-13 25-May-16	DUP-2 25-May-16	MW-13 26-Jul-16	MW-13 27-Sep-16	MW-13 29-Nov-16	MW-13 30-Jan-17	MW-13 30-Mar-17	MW-13 6-Jun-17	MW-13 4-Aug-17	MW-13 21-May-18	MW-13 (Shallow) 1-Aug-18	MW-13 (Deep) 9-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Boron	None	Background Well (Not Applicable)	Not Applicable	mg/L	1.38	1.40	1.10	1.36	1.41	1.43	2.00	1.34	1.24	1.30	1.41	3.86
Calcium	None		Not Applicable	mg/L	341	362	440	302	306	485	343	421	313	251	249	284
Chloride	250		Not Applicable	mg/L	13.7	13.5	13.1	14.0 J	12.5	12.6	12.2	13.0	12.1 J*	13.4	13.6	33.2
Fluoride	4		Not Applicable	mg/L	0.192	0.183	0.389	0.674	0.324	0.395	0.181	0.329	0.248 J*	0.281	0.364	0.743
pH (laboratory)	6.5 - 8.5		Not Applicable	S.U.	7.16	7.28	7.84	7.7	7.3	7.1	7.0	6.9	6.9	7.0	7.5	7.7
Sulfate	250		Not Applicable	mg/L	1,570	1,680 J*	1,450	1,360	1,340	1,320	1,360	1,320	1,350 J*	1,320	1,250	1,440
Total Dissolved Solids	500		Not Applicable	mg/L	2,220	2,190	2,340	2,380 J	2,230	2,230	2,250	2,410	2,370	2,400	2,130	2,560
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Antimony	0.006	Not Applicable	Background Well (Not Applicable)	mg/L	<0.000500	<0.000500	<0.000500	<0.000800	<0.000800	<0.000800	<0.00400	<0.000800	<0.000800	---	---	---
Arsenic	0.010	Not Applicable		mg/L	0.00394	0.00377	0.00244	0.00177 J	0.00180 J	0.00170 J	<0.00200	<0.000400	0.00570	---	---	---
Barium	2	Not Applicable		mg/L	0.0267	0.0263	0.0259	0.0198	0.0184	0.0182	0.0330	0.0168	0.0177	---	---	---
Beryllium	0.004	Not Applicable		mg/L	<0.00100	<0.00100	<0.00100	<0.000100	<0.000100	<0.000100	<0.000500	<0.000100	<0.000100	---	---	---
Cadmium	0.005	Not Applicable		mg/L	<0.000400	<0.000400	<0.000400	<0.000100	<0.000100	<0.000100	<0.000500	<0.000100	<0.000100	---	---	---
Chromium	0.1	Not Applicable		mg/L	<0.000500	0.000637 J	<0.000500	<0.000500	0.00109 J	<0.000500	<0.00250	<0.000500	<0.000500	---	---	---
Cobalt	None	Not Applicable		mg/L	<0.000500	0.000507 J	<0.000500	0.000376 J	0.000366 J	0.000329 J	<0.000500	0.000519 J	0.000275 J	---	---	---
Fluoride	4	Not Applicable		mg/L	0.192	0.183	0.389	0.674	0.324	0.395	0.181	0.329	0.248 J*	0.281	0.364	0.743
Lead	0.015	Not Applicable		mg/L	<0.000200	<0.000200	<0.000200	<0.000100	<0.000100	<0.000100	<0.000500	<0.000100	<0.000100	---	---	---
Lithium	None	Not Applicable		mg/L	0.176	0.179	0.184	0.156	0.156	0.173	0.0449 J	0.157	0.164	---	0.140	0.115
Mercury	0.002	Not Applicable		mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---
Molybdenum	None	Not Applicable		mg/L	0.00970	0.00920	0.00557	0.0290	0.00444	0.00393	0.00345	0.00316	0.00286	---	0.00211	0.00220
Selenium	0.05	Not Applicable		mg/L	<0.000600	<0.000600	<0.000600	<0.000300	0.000512 J	<0.000300	<0.00150	0.00402	U (0.00192)	---	---	---
Thallium	0.002	Not Applicable		mg/L	<0.000500	<0.000500	<0.000500	<0.000800	<0.000800	<0.000800	<0.00400	<0.000800	<0.000800	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable		pCi/L	1.96 +/- 0.373	1.57 +/- 0.321	1.50 +/- 0.327	1.43 +/- 0.352	1.75 +/- 0.486	1.41 +/- 0.357	1.73 +/- 0.350	1.75 +/- 0.389	1.51 +/- 0.320	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	307	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	26.4	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	8.32	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	349	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Temperature	None	Not Applicable	Not Applicable	ºC	21.68	---	21.60	21.30	20.26	20.49	19.38	22.73	22.75	21.37	27.06	25.52
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.08	---	7.23	7.02	6.99	6.96	7.05	6.97	6.94	7.07	6.72	6.49
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,507	---	2,939	2,622	3,002	2,967	3,006	2,990	2,920	2,887	3,010	3,213
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.41	---	0.28	0.09	0.35	0.33	0.30	0.18	0.09	1.25	2.22	1.37
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	0.6	---	-103.3	-136.8	-178.8	-179.1	-93.3	-10.6	-68.7	-48.9	49.1	187.6
Turbidity	None	Not Applicable	Not Applicable	NTU	4.12	---	1.91	0.26	1.14	0.50	1.38	1.93	0.87	0.28	0.02	0.02
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	25.13	---	25.46	26.07	25.48	26.86	25.95	26.11	26.05	25.64	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	39.46	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID:	MW-13	MW-13		DUP 2		MW-13	MW-13	MW-13
				Sample Date:	4-Oct-18	11-Jan-19				25-Apr-19	3-Oct-19	17-Jun-20
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	FILTERED	UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Boron	None	Background Well (Not Applicable)	Not Applicable	mg/L	2.01	2.14	1.67	1.76	1.72	3.07	2.01	1.39
Calcium	None		Not Applicable	mg/L	299	270	360	334	348	130	182	243
Chloride	250		Not Applicable	mg/L	12.8	15.1	13.7	13.8	13.1	28.2	17.3	13.8
Fluoride	4		Not Applicable	mg/L	0.285	0.342	0.990	0.310	0.444	0.652	0.422	0.231
pH (laboratory)	6.5 - 8.5		Not Applicable	S.U.	7.6	7.16	---	7.35	---	7.95	6.75	6.71
Sulfate	250		Not Applicable	mg/L	1,400	1,450	1,420	1,450	1,440	1,450	1,380	1,390
Total Dissolved Solids	500		Not Applicable	mg/L	2,350	2,350	2,220	2,270	2,260	2,590	2,350	2,450
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	FILTERED	UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Antimony	0.006	Not Applicable	Background Well (Not Applicable)	mg/L	<00008	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable		mg/L	<0.004	<0.000400	<0.000400	<0.000400	0.000412 J	0.000979 J	0.000401 J	<0.000400
Barium	2	Not Applicable		mg/L	0.0196 J	0.0140	0.0164	0.0152	0.0150	0.0146	0.0114	0.0116
Beryllium	0.004	Not Applicable		mg/L	<0.001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable		mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable		mg/L	<0.005	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Cobalt	None	Not Applicable		mg/L	<0.0001	<0.000200	0.000229 J	<0.000200	<0.000200	0.000265 J	<0.000200	<0.000200
Fluoride	4	Not Applicable		mg/L	0.285	0.342	0.990	0.310	0.444	0.652	0.422	0.231
Lead	0.015	Not Applicable		mg/L	<0.0001	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable		mg/L	0.174 J	0.170	0.194	0.181	0.176	0.131	0.139	0.156
Mercury	0.002	Not Applicable		mg/L	<0.00015	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable		mg/L	<0.01	0.00155 J	0.00178 J	0.00149 J	0.00176 J	0.00276 J	0.00210 J	0.000934 J
Selenium	0.05	Not Applicable		mg/L	0.000429 J	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable		mg/L	<0.0008	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable		pCi/L	1.46 +/- 0.346	2.12	---	1.14	---	1.65	1.81	2.09
Other Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	FILTERED	UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5	<5	---	<5	---	<5.00	6.00 J	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	<5	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	354	---	343	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	<5	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	27.0	30.7	30.4	29.6	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.061 J	<0.03	<0.03	<0.03	<0.03	<0.150	0.191	<0.0300
Potassium	None	Not Applicable	Not Applicable	mg/L	---	8.43	8.61	8.43	8.64	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	557	416	447	418	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	2570.0	3,090	---	2,960	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Field Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	FILTERED	UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Temperature	None	Not Applicable	Not Applicable	°C	25.70	12.40	---	---	---	20.41	27.00	21.69
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.41	7.39	---	---	---	7.80	7.63	7.48
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,728	3,569	---	---	---	3,688	3,751	3,474
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.41	0.66	---	---	---	1.68	2.61	1.18
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	30.1	-8.8	---	---	---	-119.2	-95.1	-41.6
Turbidity	None	Not Applicable	Not Applicable	NTU	5.63	2.27	0.76	---	---	4.66	1.28	4.95
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	26.28	---	---	---	26.80	26.68	26.40
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-14A 25-May-16	MW-14A 23-Aug-16	MW-14A 28-Sep-16	MW-14A 30-Nov-16	MW-14A 31-Jan-17	DUP-2 31-Jan-17	MW-14A 30-Mar-17	MW-14A 2-Jun-17	MW-14A 9-Aug-17	MW-14A 17-May-18	MW-14A (Shallow) 1-Aug-18	MW-14A (Deep) 9-Aug-18	DUP1 (Deep) 9-Aug-18
Detection Monitoring Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**	
Boron	None	Background Well (Not Applicable)	Not Applicable	mg/L	0.920	0.920	0.894	1.02	0.984	1.04	1.01	1.03	0.764	1.14	0.925	1.80	1.53
Calcium	None		Not Applicable	mg/L	500	380	327	328	544	503	451	530	672	313	341	746	358
Chloride	250		Not Applicable	mg/L	17.7	17.1	15.5	15.2	15.7	15.8	16.3	14.8	13.8	15.3	15.0	16.0	14.7
Fluoride	4		Not Applicable	mg/L	0.170	0.472	0.402	0.384	0.372	0.385	0.228	0.232	0.312	0.292	0.333	0.296	0.253
pH (laboratory)	6.5 - 8.5		Not Applicable	S.U.	7.12	7.7	7.6	7.6	7.1	7.1	7.1	7.0	6.9	7.4	7.3	7.1	7.2
Sulfate	250		Not Applicable	mg/L	2,020	1,670	1,730	1,600	1,590	1,610	1,710	1,440	1,420	1,790	1,580	1,600	1,510
Total Dissolved Solids	500		Not Applicable	mg/L	2,680	2,650	2,530	2,670	2,540	2,570	2,650	2,630	2,680	2,700	2,700	2,730	2,700
Assessment Monitoring Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**	
Antimony	0.006	Not Applicable	Background Well (Not Applicable)	mg/L	<0.000500	<0.000800	<0.000800	<0.00800	<0.000800	<0.000800	<0.00400	<0.000800	<0.000800	---	---	---	---
Arsenic	0.010	Not Applicable		mg/L	0.00363	0.000714 J	0.00171 J	<0.00400	0.00153 J	0.00173 J	<0.00200	0.00150 J	0.00306	---	---	---	---
Barium	2	Not Applicable		mg/L	0.0239	0.0180	0.0190	0.0156 J	0.0177	0.0179	0.0329	0.0179	0.182	---	---	---	---
Beryllium	0.004	Not Applicable		mg/L	<0.00100	<0.000100	<0.000100	<0.00100	<0.000100	<0.000100	<0.000500	<0.000100	<0.00100	---	---	---	---
Cadmium	0.005	Not Applicable		mg/L	<0.000400	<0.000100	<0.000100	<0.00100	<0.000100	<0.000100	<0.000500	<0.000100	<0.00100	---	---	---	---
Chromium	0.1	Not Applicable		mg/L	<0.000500	<0.000500	<0.000500	<0.00500	<0.000500	<0.000500	<0.00250	<0.000500	<0.000500	---	---	---	---
Cobalt	None	Not Applicable		mg/L	0.000730 J	0.000258 J	0.000708 J	<0.00100	0.000334 J	0.000342 J	<0.000500	<0.000100	0.000350 J	---	---	---	---
Fluoride	4	Not Applicable		mg/L	0.170	0.472	0.402	0.384	0.372	0.385	0.228	0.232	0.312	0.292	0.333	0.296	0.253
Lead	0.015	Not Applicable		mg/L	<0.000200	<0.000100	<0.000100	<0.00100	<0.000100	<0.000100	<0.000500	<0.000100	<0.000100	---	---	---	---
Lithium	None	Not Applicable		mg/L	0.167	0.147	0.147	0.175 J	0.160	0.164	0.235 J	0.147	0.160	---	0.149	0.328 J	0.134
Mercury	0.002	Not Applicable		mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---	---
Molybdenum	None	Not Applicable		mg/L	0.00477	0.00237	0.00524 J	<0.0100	0.00253	0.00238	<0.00500	0.00246	0.00223	---	<0.00100	<0.0100	0.00144 J
Selenium	0.05	Not Applicable		mg/L	<0.000600	0.000342 J	<0.000300	<0.00300	<0.000300	<0.000300	<0.00150	<0.000300	<0.000300	---	---	---	---
Thallium	0.002	Not Applicable		mg/L	<0.000500	<0.000800	<0.000800	<0.00800	<0.000800	<0.000800	<0.00400	<0.000800	<0.000800	---	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable		pCi/L	1.60 +/- 0.364	1.62 +/- 0.381	1.90 +/- 0.394	2.02 +/- 0.498	1.39 +/- 0.366	1.38 +/- 0.385	1.73 +/- 0.346	1.49 +/- 0.351	1.51 +/- 0.326	---	---	---	---
Other Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**	
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	280	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	24.4	---	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	7.88	---	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	518	---	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**	
Temperature	None	Not Applicable	Not Applicable	ºC	20.93	22.4	21.96	17.51	17.76	---	18.84	19.83	21.41	22.90	25.60	21.33	---
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.01	7.13	7.01	6.95	6.97	---	7.08	6.88	6.75	7.10	6.82	6.47	---
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,781	3,345	3,365	3,434	3,350	---	3,390	3,201	3,186	3,301	3,415	3,410	---
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.34	0.39	0.06	0.25	0.68	---	0.26	0.34	0.10	0.24	252.00	1.65	---
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	127.6	-26.6	-94.3	-219.1	-88.7	---	-77.1	-30.1	97.7	-48.5	0.2	68.3	---
Turbidity	None	Not Applicable	Not Applicable	NTU	6.74	0.79	0.27	0.68	0.26	---	0.16	0.40	0.71	0.37	1.53	0.02	---
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	14.72	16.45	15.70	15.85	14.59	---	15.98	15.35	15.03	15.92	---	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	28.34	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-14A 17-May-18	MW-14A 11-Jan-19		MW-14A 24-Apr-19	MW-14A 2-Oct-19	MW-14A 17-Jun-20
Detection Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) FILTERED**	**ASSESSMENT MON. #1 UNFILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Boron	None	Background Well (Not Applicable)	Not Applicable	mg/L	1.18	1.42	1.16	1.23	0.98	0.907
Calcium	None		Not Applicable	mg/L	319	402	388	314	306	280
Chloride	250		Not Applicable	mg/L	14.2	14.0	14.8	13.5	14.2	13.3
Fluoride	4		Not Applicable	mg/L	0.281	0.269	0.375	0.377 J	0.286	0.230
pH (laboratory)	6.5 - 8.5		Not Applicable	S.U.	7.6	7.28	---	7.61	7.18	7.44
Sulfate	250		Not Applicable	mg/L	1,650	1,660	1,630	1,540	1,580	1650
Total Dissolved Solids	500		Not Applicable	mg/L	2,710	2,590	2,580	2,680	2,750	2,780
Assessment Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) FILTERED**	**ASSESSMENT MON. #1 UNFILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Antimony	0.006	Not Applicable	Background Well (Not Applicable)	mg/L	<0.0008	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable		mg/L	<0.004	<0.000400	<0.000400	<0.000400	<0.000400	<0.00040
Barium	2	Not Applicable		mg/L	0.0232	0.017	0.0173	0.0147	0.0118	0.0132
Beryllium	0.004	Not Applicable		mg/L	<0.001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable		mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable		mg/L	<0.005	<0.000400	<0.000400	<0.000400	0.00110 J	<0.000400
Cobalt	None	Not Applicable		mg/L	0.000297 J	0.000348 J	0.000324 J	0.000425 J	<0.000200	<0.000200
Fluoride	4	Not Applicable		mg/L	0.281	0.269	0.375	0.377 J	0.286	0.230
Lead	0.015	Not Applicable		mg/L	<0.0001	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable		mg/L	0.161 J	0.166	0.172	0.155	0.154	0.151
Mercury	0.002	Not Applicable		mg/L	<0.00015	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable		mg/L	<0.01	0.00170 J	0.00143 J	0.00104 J	0.000709 J	0.000760 J
Selenium	0.05	Not Applicable		mg/L	<0.0003	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable		mg/L	<0.0008	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable		pCi/L	1.65 +/- 0.369	2.6	---	0.97	1.79	2.02
Other Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) FILTERED**	**ASSESSMENT MON. #1 UNFILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5	<5	---	<5.00	5.00 J	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	327
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	321	---	---	---	327
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.771(J)
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<0.0120
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.10
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	28.8	27.9	---	---	26.60
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.000768(J)
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.087 J	0.478	0.509	1.64	<0.0300	0.316
Potassium	None	Not Applicable	Not Applicable	mg/L	---	8.64	8.37	---	---	7.66
Sodium	None	Not Applicable	Not Applicable	mg/L	---	516	467	---	---	382
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	3000.0	3,270	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<1
Field Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) FILTERED**	**ASSESSMENT MON. #1 UNFILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Temperature	None	Not Applicable	Not Applicable	°C	23.10	16.20	---	17.75	24.4	21.00
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.93	6.90	---	7.28	7.1	7.04
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,491	3,251	---	3,386	3,435	3,107
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.31	0.19	---	1.45	0.62	0.79
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	13.1	19.5	---	4.6	27.7	-45.7
Turbidity	None	Not Applicable	Not Applicable	NTU	3.17	4.89	0.94	2.06	3.88	4.71
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	14.98	---	19.11	16.26	17.01
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-15A 26-May-16	MW-15A 23-Aug-16	MW-15A 28-Sep-16	MW-15A 30-Nov-16	DUP 1 30-Nov-16	MW-15A 30-Jan-17	MW-15A 30-Mar-17	MW-15A 1-Jun-17	MW-15A 9-Aug-17	MW-15A 24-May-18	MW-15A (Shallow) 1-Aug-18	MW-15A (Deep) 10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Boron	None	1.896	Not Applicable	mg/L	3.33	3.57	4.52	4.44	5.36	4.64	2.01	3.54	3.38	4.83	3.70	4.14
Calcium	None	670.30	Not Applicable	mg/L	152	154	181	209	279	151	117	183	156	160	93.4	129
Chloride	250	18.51	Not Applicable	mg/L	27.1	26.6	27.9	27.0	26.5	25.4	27.4	28.1	25.7	26.9	26.6	26.5
Fluoride	4	0.6359	Not Applicable	mg/L	1.23	1.32	1.49	1.32	1.33	1.40	1.15	1.09	1.37	1.76	1.20	1.17
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	7.66	8.1	8.0	7.6	7.7	7.6	7.4	7.5	7.5	7.6	7.8	7.8
Sulfate	250	1,824	Not Applicable	mg/L	1,450	1,570	1,580	1,630	1,610	1,580	1,760	1,610	1,720	1,690	1,510	1,490
Total Dissolved Solids	500	2,774	Not Applicable	mg/L	2,470	2,420	2,410	2,540	2,530	2,460	2,640	2,600	2,710	2,660	2,490	2,610
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000500	<0.000800	<0.000800	<0.00800	<0.00400	<0.000800	<0.00400	<0.000800	<0.00400	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.00242	0.00218	0.00205	<0.00400	0.00407 J	0.00156 J	<0.00200	0.00218	0.00259 J	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0269	0.0338	0.0273	0.0260	0.0383	0.0255	0.0167	0.0232	0.0217	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.00100	<0.000100	<0.000100	<0.00100	<0.000500	<0.000100	<0.000500	<0.000100	<0.000500	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000400	<0.000100	<0.000100	<0.00100	<0.000500	<0.000100	<0.000500	<0.000100	<0.000500	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	0.000638 J	<0.000500	<0.000500	<0.00500	<0.00250	<0.000500	<0.00250	<0.000500	<0.00250	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000664 J	0.000467 J	0.000659 J	<0.00100	0.000661 J	0.000346 J	<0.000500	0.000215 J	<0.000500	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	1.23	1.32	1.49	1.32	1.33	1.40	1.15	1.09	1.37	1.76	1.20	1.17
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	0.000264 J	<0.000100	<0.000100	<0.00100	<0.000500	<0.000100	<0.000500	<0.000100	<0.000500	---	---	---
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.0748	0.0646	0.0575	0.0630 J	0.0766 J	0.0590	0.0437 J	0.0552	0.0538 J	---	0.0669	0.0594
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	0.000175 J	<0.000150	<0.000100	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.306	0.208	0.256	0.276	0.343	0.261	0.182	0.235	0.255	---	0.202	0.182
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.000600	<0.000300	<0.000300	<0.00300	<0.00150	0.000357 J	<0.00150	0.000539 J	0.00161 J	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000500	<0.000800	<0.000800	<0.00800	<0.00400	<0.000800	<0.00400	<0.000800	<0.00400	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.01 +/- 0.268	0.846 +/- 0.371	0.636 +/- 0.292	1.38 +/- 0.431	1.33 +/- 0.426	1.21 +/- 0.359	1.36 +/- 0.333	1.86 +/- 0.390	2.19 +/- 0.392	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	130	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	9.36	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	5.28	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	541	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Temperature	None	Not Applicable	Not Applicable	ºC	20.05	24.8	21.87	18.20	---	20.43	19.34	20.24	22.68	21.24	25.05	23.28
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.73	7.72	7.69	7.59	---	7.50	7.60	7.47	7.42	7.72	7.42	7.43
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,050	3,373	3,442	3,430	---	3,488	3,520	3,498	3,524	3,505	3,548	3,578
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.16	0.37	0.06	0.33	---	0.29	0.22	0.08	0.06	0.14	1.62	1.23
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	66.1	-61.7	-96.7	-211.9	---	-140.6	-81.1	-82.3	43.1	-101.3	133.1	140.8
Turbidity	None	Not Applicable	Not Applicable	NTU	4.97	0.70	0.18	0.31	---	0.52	0.66	0.53	1.31	0.39	5.50	1.68
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	8.73	10.74	9.93	10.53	---	8.72	10.18	9.32	9.05	10.01	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	28.39	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID:	MW-15A	DUP 2	MW-15A		MW-15A	MW-15A	MW-15A
				Sample Date:	2-Oct-18	2-Oct-18	10-Jan-19		25-Apr-19	2-Oct-19	18-Jun-20
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1		ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Boron	None	1.896	Not Applicable	mg/L	3.76	3.77	3.52	5.48	3.61	3.19	4.57
Calcium	None	670.30	Not Applicable	mg/L	170	171	129	187	92.0	82.4	141
Chloride	250	18.51	Not Applicable	mg/L	26.6	26.5	26.3	26.9	21.9	25.9	26.3
Fluoride	4	0.6359	Not Applicable	mg/L	1.21	1.20	1.22	1.46	1.02	1.24	0.860
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	8.2	8.2	7.02	---	8.02	7.58	7.68
Sulfate	250	1,824	Not Applicable	mg/L	1,570	1,580	1,610	1,540	1,310	1,510	1,680
Total Dissolved Solids	500	2,774	Not Applicable	mg/L	2,650	2,570	2,590	2,640	2,570	2,500	2,520
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1		ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.0008	<0.0008	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.00179 J	0.00166 J	0.000626 J	0.00122 J	0.000663 J	0.000676 J	0.000965 J
Barium	2	Not Applicable	2 (MCL)	mg/L	0.02260	0.02290	0.023	0.0192	0.0217	0.0216	0.0291
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.0001	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.0001	<0.0001	0.000231 J	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	0.00119 J	<0.0005	<0.000400	<0.000400	<0.000400	<0.000400	0.000900 J
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000293 J	0.000210 J	<0.000200	0.000374 J	0.000231 J	0.000257 J	0.000402 J
Fluoride	4	Not Applicable	4 (MCL)	mg/L	1.21	1.20	1.22	1.46	1.02	1.24	0.860
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	0.000386 J	0.000145 J	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.0613	0.0598	0.0701	0.0582	0.0858	0.0743	0.111
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000100	<0.000100	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.233	0.228	0.205	0.244	0.219	0.196	0.269
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	0.000459 J	0.000353 J	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0008	<0.0008	0.000565 J	0.000375 J	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.28 +/- 0.294	1.66 +/- 0.358	1.46	---	<0.87	2.03	1.67
Other Parameters				***Units***	ASSESSMENT MON. #1		ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	9.51 J	7.46 J	7.00 J	---	<5.00	18.0	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	209
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	<5	---	---	---	<5
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	149	---	---	---	209
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	<5	---	---	---	<5
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	0.0535(J)
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	<0.0120
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	0.0410(J)
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	12.4	10.90	---	---	165
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	0.168
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.068 J	0.065 J	1.42	0.616	1.72	0.287	<0.0600
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	5.98	5.47	---	---	8.24
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	746	703	---	---	1,040
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	3,490	3,480	3,540	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	1.12
Field Parameters				***Units***	ASSESSMENT MON. #1		ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Temperature	None	Not Applicable	Not Applicable	°C	23.10	---	18.50	---	20.72	27.05	24.09
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.53	---	7.45	---	7.82	7.71	7.73
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,563	---	3,449	---	3,544	3,575	3,337
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.21	---	0.41	---	1.24	0.71	1.39
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-69.9	---	98	---	-22.1	-79.5	-50.3
Turbidity	None	Not Applicable	Not Applicable	NTU	4.11	---	1.13	1.09	0.55	0.84	2.60
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	---	8.89	---	13.25	10.54	11.19
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-16 1-Jun-16	MW-16 23-Aug-16	MW-16 29-Sep-16	MW-16 6-Dec-16	MW-16 1-Feb-17	MW-16 6-Apr-17	MW-16 7-Jun-17	MW-16 11-Aug-17	DUP 3 11-Aug-17	MW-16 22-May-18	MW-16 (Shallow) 1-Aug-18	MW-16 (Deep) 10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Boron	None	1.896	Not Applicable	mg/L	1.39	1.44	2.84	2.38	2.43	1.64	1.64	1.79	1.74	1.95	1.90	2.39 J
Calcium	None	670.30	Not Applicable	mg/L	365	242	192	311	153	241	357 J*	238	235	122	159	185
Chloride	250	18.51	Not Applicable	mg/L	<35.0	20.2	23.2	22.9	26.5	16.7 J*	15.3 J*	18.0	17.7	21.3	20.6	29.6
Fluoride	4	0.6359	Not Applicable	mg/L	0.843	1.02	1.36	0.936 J*	1.03	0.759 J*	0.721 J*	0.817	0.801	1.01	0.963	1.17
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	7.05	7.8	7.6	7.6	7.6	7.3	7.2	7.2	7.2	7.5	7.5	7.8
Sulfate	250	1,494	Not Applicable	mg/L	1,340	1,040	1,070	1,390	915	1,180	995	1,020	1,020	933	938	998
Total Dissolved Solids	500	1,883	Not Applicable	mg/L	1,790	1,780	1,760	1,790	1,860	1,740	1,690	1,710	1,730	1,820	1,810	1,930
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.00250	<0.000800	<0.000800	<0.00400	<0.000800	<0.000800	<0.00400	<0.000800	<0.000800	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.00250	0.00101 J	U (0.00164)	<0.00200	0.000757 J	0.00122 J	<0.00400	0.000409 J	0.000453 J	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0270	0.0291	0.0262	0.0461	0.0235	0.0246	0.0270	0.0240	0.0240	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.00500	<0.000100	<0.000100	<0.000500	<0.000100	U (0.000375)	<0.000500	<0.000100	<0.000100	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.00200	<0.000100	<0.000100	<0.000500	<0.000100	<0.000100	<0.00100	<0.000100	<0.000100	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	0.00604 J	<0.000500	0.0579	<0.00250	<0.000500	<0.000500	<0.00500	<0.000500	<0.000500	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.00250	0.000340 J	0.000498 J	<0.000500	<0.000100	<0.000100	<0.00100	0.000354 J	0.000343 J	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.843	1.02	1.36	0.936 J*	1.03	0.759 J*	0.721 J*	0.817	0.801	1.01	0.963	1.17
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000200	<0.000100	<0.000100	<0.000500	<0.000100	<0.000100	<0.000500	<0.000100	<0.000100	---	---	---
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.0495 J	0.0509	0.0470 J	0.0760 J	0.0632	0.0525	0.0534 J	0.0480 J	0.0472 J	---	0.0571	0.0491
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150 UJ	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.135 J	0.134	0.0949	0.170	0.114	0.177	0.218	0.181	0.181	---	0.145	0.154
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.00300	<0.000300	U (0.000418)	<0.00150	0.000307 J	<0.000300	<0.00300	<0.000300	<0.000300	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000500	<0.000800	<0.000800	<0.00400	<0.000800	<0.000800	<0.00400	<0.000800	<0.000800	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.28 +/- 0.305	1.01 +/- 0.359	1.11 +/- 0.324	0.925 +/- 0.572	1.09 +/- 0.398	0.504 +/- 0.260	0.608 +/- 0.256	1.55 +/- 0.391	0.994 +/- 0.366	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	<5.00	<5.00	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	238	215	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	<5.00	<5.00	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	----	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	----	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	----	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	10.3	10.1	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	----	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	3.33	3.28	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	272	270	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	----	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Temperature	None	Not Applicable	Not Applicable	ºC	18.90	23.5	21.62	16.91	19.27	17.92	20.46	24.61	---	22.87	23.70	23.74
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.24	7.33	7.32	7.14	7.49	7.23	7.10	7.09	---	7.57	7.11	7.30
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,066	2,327	2,492	2,395	2,620	2,275	2,256	2,330	---	2,463	2,436	2,678
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.38	2.53	0.31	0.25	0.59	0.81	0.04	0.16	---	0.37	1.59	2.70
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-47.3	46.0	-106.4	-135.8	-104.9	10.2	0.4	60.3	---	-83.7	186.4	150.4
Turbidity	None	Not Applicable	Not Applicable	NTU	2.18	0.85	0.33	0.98	0.18	0.63	0.61	1.11	---	1.21	3.49	2.96
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	4.81	6.73	6.30	4.36	2.91	2.90	5.50	5.24	---	5.80	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	23.40	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

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APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-16 2-Oct-18	MW-16 16-Jan-19		MW-16 23-Apr-19	MW-16 3-Oct-19	MW-16 18-Jun-20
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Boron	None	1.896	Not Applicable	mg/L	2.05	2.23	2.38	1.85	1.53	1.43
Calcium	None	670.30	Not Applicable	mg/L	221	215	215	192	149	186
Chloride	250	18.51	Not Applicable	mg/L	18.0	19.0	18.8	15.8	23.8	14.7
Fluoride	4	0.6359	Not Applicable	mg/L	0.832	0.82	1.11	0.741	1.07	0.694
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	8.2	7.33	---	7.88	7.01	7.60
Sulfate	250	1,494	Not Applicable	mg/L	959	1,020	1,030	974	1,020	1,030
Total Dissolved Solids	500	1,883	Not Applicable	mg/L	1,780	1,740	1,670	1,740	1,810	1,610
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.0008	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.002	<0.000400	<0.000400	<0.000400	0.000465 J	<0.000400
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0203	0.0226	0.0224	0.0178	0.0133	0.0142
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.0005	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.0025	<0.000400	<0.000400	<0.000400	<0.000400	0.000423 J
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000172 J	<0.000200	<0.000200	<0.000200	0.000375 J	<0.000200
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.832	0.82	1.11	0.741	1.07	0.694
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.0001	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.0607 J	0.0689	0.0632	0.0586	0.0424	0.0460
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000100	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.169	0.180	0.180	0.193	0.149	0.172
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.0003	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0008	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.07 +/- 0.288	1.01	---	<0.62	1	1.18
Other Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5.00	<5	---	<5.00	<5.00	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	232
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	256	---	---	---	232
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.0358(J)
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.0160(J)
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.0380(J)
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	10.2	10.2	---	---	8.44
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.17
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.133	<0.03	<0.03	0.854	<0.0300	<0.0600
Potassium	None	Not Applicable	Not Applicable	mg/L	---	4.18	4.07	---	---	2.85
Sodium	None	Not Applicable	Not Applicable	mg/L	---	405	394	---	---	309
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	2,240	2,340	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<1
Field Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Temperature	None	Not Applicable	Not Applicable	°C	25.40	14.80	---	19.31	24.89	21.90
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.53	7.21	---	7.56	7.82	7.66
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,816	2,273	---	2,330	2,836	2,438
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.25	1.37	---	0.83	3.67	2.18
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-131.8	278.9	---	28.7	-191.5	-56.9
Turbidity	None	Not Applicable	Not Applicable	NTU	2.89	6.82	1.03	2.53	1.48	3.09
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	2.38	---	7.59	6.61	6.76
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

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APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-17 1-Jun-16	MW-17 3-Aug-16	MW-17 30-Sep-16	MW-17 2-Dec-16	MW-17 1-Feb-17	MW-17 29-Mar-17	MW-17 1-Jun-17	MW-17 10-Aug-17	DUP 2 10-Aug-17	MW-17 21-May-18	MW-17 (Shallow) 1-Aug-18	MW-17 (Deep) 10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Boron	None	1.896	Not Applicable	mg/L	0.634	0.586	0.854	0.838 J	0.817	<0.875	0.713	0.666	0.640	0.588	0.659	0.845 J
Calcium	None	670.30	Not Applicable	mg/L	750	529	540	535	441	727	564	528	537	436	549	787
Chloride	250	18.51	Not Applicable	mg/L	4.08	3.64	3.46	5.58 J*	3.45	3.04	3.11	3.28	3.37	3.15	3.84	3.27
Fluoride	4	0.6359	Not Applicable	mg/L	0.322	0.365	0.580	0.480 J*	0.488	0.266	0.361	0.328	0.323	0.324	0.470	0.317
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	6.82	6.8	7.5	7.6	7.1	6.9	6.8	6.9	6.8	6.9	7.2	7.0
Sulfate	250	1,557	Not Applicable	mg/L	1,170	1,300	1,250	1,470	1,200	1,140	1,310	1,450	1,300	1,140	1,310	1,340
Total Dissolved Solids	500	2,343	Not Applicable	mg/L	1,980	2,070	1,980	2,260	2,050	1,870	2,180	2,140	2,140	2,360	2,340	2,380
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000500	<0.00100	<0.000800	<0.00800	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.00204	0.00154 J	0.00226	<0.00400	0.000663 J	0.00251	0.00154 J	<0.000400	<0.000400	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.00545	0.00299	0.00460 J	<0.00100	0.00344	U (0.00333)	0.00160 J	0.00236	0.00293	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.00100	<0.00200	<0.000100	<0.00100	<0.000100	<0.00250	<0.000100	<0.000100	<0.000100	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000400	<0.000800	<0.000100	<0.00100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.000500	<0.00100	<0.000500	<0.00500	0.00140 J	<0.000500	<0.000500	<0.000500	<0.000500	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.000500	<0.00100	0.000225 J	<0.00100	<0.000100	<0.000500	<0.000100	<0.000100	<0.000100	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.322	0.365	0.580	0.480 J*	0.488	0.266	0.361	0.328	0.323	0.324	0.470	0.317
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000200	<0.000200	<0.000100	<0.00100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	---	---	---
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.140	0.174	0.155 J	0.158 J	0.146	0.121	0.133	0.148	0.143	---	0.128	0.131
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.000840 J	<0.00100	0.00135 J	<0.0100	<0.00100	<0.00500	<0.00100	<0.00100	<0.00100	---	<0.00100	<0.00100
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.000600	<0.00120	U (0.000709)	<0.00300	0.000526 J	<0.00150	<0.000300	<0.000300	<0.000300	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000500	<0.00100	<0.000800	<0.00800	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	0.539 +/- 0.261	0.265 +/- 0.260 U	1.32 +/- 0.425	0.536 +/- 0.356	0.195 +/- 0.273 U	0.311 +/- 0.238 U	0.479 +/- 0.271	0.531 +/- 0.221	0.183 +/- 0.207 U	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	<5.00	<5.00	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	260	259	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	<5.00	<5.00	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	36.6	36.0	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	5.15	5.14	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	34.5	34.4	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Temperature	None	Not Applicable	Not Applicable	°C	20.98	23.28	20.36	19.58	21.96	20.30	20.57	21.98	---	20.98	25.04	22.30
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.91	6.71	6.83	6.79	6.84	6.88	6.68	6.69	---	6.92	6.64	6.80
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,052	2,230	2,402	2,405	2,386	2,396	2,443	2,417	---	2,416	2,606	2,569
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	1.07	3.66	0.43	0.95	0.63	0.79	0.22	0.29	---	0.21	5.57	4.59
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	42.5	4.0	-99.6	-183.4	-84.0	-55.9	-87.3	65.7	---	-49.2	172.9	209.4
Turbidity	None	Not Applicable	Not Applicable	NTU	0.53	0.92	0.40	0.43	0.11	0.21	0.24	0.81	---	0.52	4.63	14.5
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	14.07	15.67	15.80	16.08	14.52	15.70	15.23	14.35	---	14.50	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	23.44	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-17 3-Oct-18	MW-17 10-Jan-19		MW-17 25-Apr-19	MW-17 3-Oct-19	MW-17 18-Jun-20
Detection Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Boron	None	1.896	Not Applicable	mg/L	0.567	0.766	0.729	0.796	0.622	0.652
Calcium	None	670.30	Not Applicable	mg/L	461	591	499	499	555	494
Chloride	250	18.51	Not Applicable	mg/L	4.81	3.44	4.16	3.65	3.75	4.29
Fluoride	4	0.6359	Not Applicable	mg/L	0.393	0.337	0.270	0.392 J	0.370	0.211
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	7.5	6.59	---	7.53	6.37	7.38
Sulfate	250	1,557	Not Applicable	mg/L	821	1,480	1,200	1,100	1,310	1,390
Total Dissolved Solids	500	2,343	Not Applicable	mg/L	1,670	2,300	1,870	2,400	2,160	2,230
Assessment Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.0008	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.0004	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Barium	2	Not Applicable	2 (MCL)	mg/L	0.00231	<0.00190	0.00250 J	<0.00190	<0.00190	<0.00190
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	0.0022	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.0001	0.000238 J	<0.000200	0.000313 J	<0.000200	0.000281 J
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.393	0.337	0.270	0.392 J	0.370	0.211
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.0001	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.122	0.159	0.148	0.151	0.138	0.147
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000100	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.001	<0.000600	<0.000600	0.000671 J	<0.000600	<0.000600
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	0.000675 J	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0008	<0.000200	<0.000200	<0.000200	0.000539 J	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.27 +/- 0.335	<0.78	---	<0.75	<0.76	<0.68
Other Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	6.13 J	<5.00	---	<5.00	<5.00	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	284
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	280	---	---	---	284
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<0.0120
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<0.0120
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.02(J)
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	38.1	31.3	---	---	37.80
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.00123(J)
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.276	<0.03	0.519	<0.150	<0.0300	<0.0600
Potassium	None	Not Applicable	Not Applicable	mg/L	---	5.37	4.90	---	---	5.15
Sodium	None	Not Applicable	Not Applicable	mg/L	---	35.7	32.9	---	---	35.60
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	1,920	2,450	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<1
Field Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Temperature	None	Not Applicable	Not Applicable	°C	23.30	15.90	---	19.26	23.63	21.20
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.70	6.67	---	7.09	6.88	6.80
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,548	2,416	---	2,470	2,458	2,344
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.44	0.51	---	1.80	0.80	1.35
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	237.5	57.8	---	2.4	148.3	-28.1
Turbidity	None	Not Applicable	Not Applicable	NTU	5.4	1.24	0.69	0.63	0.65	2.28
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	12.50	---	15.54	15.59	13.00
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-18 1-Jun-16	MW-18 3-Aug-16	MW-18 30-Sep-16	DUP 2 30-Sep-16	MW-18 2-Dec-16	MW-18 31-Jan-17	MW-18 5-Apr-17	MW-18 7-Jun-17	MW-18 10-Aug-17	MW-18 18-May-18	MW-18 (Shallow) 2-Aug-18	MW-18 (Deep) 10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Boron	None	1.896	Not Applicable	mg/L	5.91	6.45	6.88	6.15	6.82	9.71	8.51	6.39	6.51	6.71	4.86	6.65
Calcium	None	670.30	Not Applicable	mg/L	39.7	36.9	34.7	35.8	34.5	34.1	30.5	37.3 J*	28.7	28.1	36.1	31.1
Chloride	250	18.51	Not Applicable	mg/L	6.77	6.71	6.67	6.80	6.02	6.31	5.94	5.54 J*	6.10	5.19	8.04	5.33
Fluoride	4	0.6359	Not Applicable	mg/L	1.15	1.26	1.49	1.60	1.38	1.29	1.43	1.38 J*	1.38	1.37	1.26	1.35
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	10.4	10.3	10	10.0	10.2	10.3	10.6	10.7	10.7	10.1	7.8	10.2
Sulfate	250	1,820	Not Applicable	mg/L	1,430	1,800	1,320	1,320	1,300	1,090	1,170	1,200	1,070	1,120	996	1,030
Total Dissolved Solids	500	2,006	Not Applicable	mg/L	2,000	1,910	1,870	1,860	1,860	1,830	1,800	1,850	1,850	1,740	1,660	1,730
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.00250	<0.00100	<0.000800	<0.000800	<0.00800	<0.000800	<0.000800	<0.00400	<0.000800	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.00331 J	0.00476	0.00296	0.00307	0.00402 J	0.00334	0.00295	<0.00400	0.00329	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.00489	0.00472	0.00551	0.00512 J	0.00232 J	0.00526	0.00375	0.00485 J	0.00402	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.00500	<0.00200	<0.000100	<0.000500	<0.00100	<0.000100	<0.000100	<0.000500	<0.000100	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.00200	<0.000800	<0.000100	<0.000100	<0.00100	0.000242 J	0.000123 J	<0.00100	<0.000100	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.00250	<0.00100	<0.000500	<0.00250	<0.00500	<0.000500	<0.000500	<0.00500	<0.000500	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.00250	<0.00100	<0.000100	<0.000100	<0.00100	<0.000100	<0.000100	<0.00100	<0.000100	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	1.15	1.26	1.49	1.60	1.38	1.29	1.43	1.38 J*	1.38	1.37	1.26	1.35
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000200	<0.000200	<0.000100	<0.000100	<0.00100	<0.000100	<0.000100	<0.000500	<0.000100	---	---	---
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	<0.0100	0.00315 J	<0.00300	<0.0150	<0.0300	0.00305 J	<0.00300	<0.0150	<0.00300	---	0.0144 J	<0.00300
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.430	0.433	0.392	0.417	0.434	0.403	0.400	0.442	0.390	---	0.113	0.319
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	0.00503 J	0.00399 J	0.00231	0.00317	0.00301 J	0.00268	0.00177 J	<0.00300	0.00278	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000500	<0.00100	<0.000800	<0.000800	<0.00800	<0.000800	<0.000800	<0.00400	<0.000800	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	0.201 +/- 0.213 U	0.206 +/- 0.318 U	0.449 +/- 0.289	0.550 +/- 0.308	0.201 +/- 0.260 U	0.00496 +/- 0.256 U	0.282 +/- 0.201 U	0.146 +/- 0.228 U	0.445 +/- 0.200	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	52.6	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	25.3	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<0.220	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	22.0	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	523	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Temperature	None	Not Applicable	Not Applicable	°C	19.74	24.14	19.59	---	18.78	18.45	18.46	22.50	22.11	21.12	24.10	22.37
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	10.88	10.45	10.95	---	10.88	10.67	10.60	10.55	10.54	10.74	9.71	10.41
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,622	2,884	2,900	---	2,854	2,764	2,698	2,685	2,716	2,530	2,568	2,658
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	2.65	0.15	0.05	---	0.20	0.21	0.09	0.06	0.03	0.17	4.03	0.90
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-22.2	-41.7	-100.0	---	-225.5	-192.6	62.6	-11.0	28.2	-139.8	-65.1	-119.7
Turbidity	None	Not Applicable	Not Applicable	NTU	0.33	0.61	0.33	---	0.15	0.39	0.36	1.03	1.21	0.22	0.02	0.02
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	11.58	13.17	13.24	---	12.91	12.09	12.09	12.90	11.85	11.84	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	25.46	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-18 3-Oct-18	MW-18 14-Jan-19		MW-18 25-Apr-19	MW-18 1-Oct-19	MW-18 17-Jun-20
Detection Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Boron	None	1.896	Not Applicable	mg/L	5.77	6.89	7.17	6.05	5.29	5.49
Calcium	None	670.30	Not Applicable	mg/L	25.1	31.8	30.8	33.1	25.6	21.6
Chloride	250	18.51	Not Applicable	mg/L	5.50	5.59	5.14	4.79	5.07	4.06
Fluoride	4	0.6359	Not Applicable	mg/L	1.37	1.32	1.44	1.25	1.47	1.28
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	9.8	10.4	---	10.2	10.3	9.35
Sulfate	250	1,820	Not Applicable	mg/L	1,090	1,110	1,120	933	1,020	888
Total Dissolved Solids	500	2,006	Not Applicable	mg/L	1,760	1,630	1,660	1,680	1,550	1,340
Assessment Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.0008	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.00319	0.00320	0.00325	0.00308	0.00264	0.00272
Barium	2	Not Applicable	2 (MCL)	mg/L	0.00374	0.00393 J	0.00407	0.00401	0.00327 J	0.00294 J
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.0001	0.000374 J	0.000431 J	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	0.000512 J	<0.00040	<0.00040	0.000477 J	<0.000400	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Fluoride	4	Not Applicable	4 (MCL)	mg/L	1.37	1.32	1.44	1.25	1.47	1.28
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.0001	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.0105 J	0.00290 J	0.00258 J	0.00173 J	0.00372 J	0.00226 J
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000100	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.330	0.333	0.332	0.342	0.257	0.194
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	0.0019 J	0.00506	0.00501	0.00577	0.00166 J	0.00370
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0008	0.000323 J	0.000563 J	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	0.387 +/- 0.253 U	<0.77	---	<0.77	<0.71	<0.74
Other Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	8.9 J	<5	---	<5.00	11.0 J	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	71
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	42.2	---	---	---	60.60
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	32.9	---	---	---	10.40
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<0.0120
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<0.0120
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.02(J)
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	0.244	0.175 J	---	---	0.141(J)
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.18
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.053 J	0.075 J	<0.03	<0.150	<0.0300	<0.0600
Potassium	None	Not Applicable	Not Applicable	mg/L	---	22.3	21.9	---	---	15.90
Sodium	None	Not Applicable	Not Applicable	mg/L	---	603	510	---	---	376
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	2,590	2,520	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<1
Field Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Temperature	None	Not Applicable	Not Applicable	°C	23.60	14.00	---	17.89	24.80	22.45
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	10.45	10.47	---	10.93	10.40	10.65
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,632	2,442	---	2,486	2,350	1,998
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.21	0.36	---	1.44	0.33	0.55
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	130.1	174.9	---	-152.8	-71.2	-140.3
Turbidity	None	Not Applicable	Not Applicable	NTU	2.04	2.79	1.47	0.49	0.92	2.43
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	9.91	---	11.72	12.39	9.89
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. °C : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-19S 13-Dec-16	MW-19S 26-Jan-17	DUP-1 26-Jan-17	MW-19S 3-Feb-17	MW-19S 28-Mar-17	MW-19S 7-Apr-17	MW-19S 31-May-17	MW-19S 9-Jun-17	MW-19S 10-Aug-17	MW-19S 18-May-18	DUP 1 18-May-18	MW-19S (Shallow) 2-Aug-18	MW-19S (Deep) 10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE		VERIFICATION SAMPLE
Boron	None	1.896	Not Applicable	mg/L	8.02	10.8	9.33	7.83	7.81	8.16	8.31	9.17	7.64	8.43	8.36	8.64	3.78
Calcium	None	670.30	Not Applicable	mg/L	71.7	47.2	43.8	51.8	51.9	72.5	51.3	71.5	41.3	45.7	44.0	35.0	24.8
Chloride	250	18.51	Not Applicable	mg/L	16.1	17.6	17.3	15.8	16.1	17.8	14.3	15.2	15.7	14.5	14.6	15.1	14.9
Fluoride	4	0.6359	Not Applicable	mg/L	1.44 J*	1.51	1.44	1.30	1.32	1.10	1.23	1.23	1.32	1.30	1.30	1.34	1.30
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	10.4	11.0	10.9	10.7	10.8	10.7	10.9	10.8	10.8	10.5	10.4	9.7	10.5
Sulfate	250	1,708	Not Applicable	mg/L	1,620	1,620	1,600	1,530	1,550	1,560	1,450	1,510	1,650	1,630	1,610	1,520	1,480
Total Dissolved Solids	500	2,505	Not Applicable	mg/L	2,420	2,420	2,530	2,460	2,460	2,340	2,420	2,410	2,440	2,560	2,480	2,390	2,440
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE		VERIFICATION SAMPLE
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.00400	<0.000800	<0.000800	<0.000800	<0.000800	<0.00400	<0.000800	<0.00400	<0.000800	---	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.00920 J	0.00730	0.00683	0.00728 J	0.00730	0.00837 J	0.00702	0.00681 J	0.00756	---	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0538	0.0192	0.0195	0.0215	0.0189	0.0249	0.0186	0.0233	0.0211	---	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.000500	<0.000100	<0.000100	<0.000100	<0.000100	<0.000500	<0.000100	<0.000500	<0.000100	---	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000500	<0.000100	<0.000100	<0.000100	0.000196 J	<0.000500	<0.000100	<0.000500	<0.000100	---	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.00250	<0.000500	<0.000500	U (0.00108)	<0.000500	<0.00250	<0.000500	<0.00250	<0.000500	---	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000568 J	<0.000100	<0.000100	0.000237 J	0.000103 J	<0.000500	<0.000100	0.000872 J	<0.000100	---	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	1.44 J*	1.51	1.44	1.30	1.32	1.10	1.23	1.23	1.32	1.30	1.30	1.34	1.30
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	0.000621 J	<0.000100	<0.000100	0.000589 J	<0.000100	<0.000500	<0.000100	<0.000500	0.000114 J	---	---	---	---
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	<0.0150	<0.00300	<0.00300	<0.00300	<0.00300	<0.0150	<0.00300	<0.0150	<0.00300	---	---	<0.00300	<0.00300
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150	0.000100 UJ	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.466	0.484	0.483	0.435	0.481	0.586	0.495	0.607	0.469	---	---	0.384	0.112
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	0.00616 J	0.0107	0.0105	0.00888 J	0.0116	0.0131	0.00879	0.0152	0.00349	---	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.00400	<0.000800	<0.000800	<0.000800	<0.000800	<0.00400	<0.000800	<0.00400	<0.000800	---	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.47 +/- 0.739	-0.0377 +/- 0.325 U	0.0518 +/- 0.264 U	0.483 +/- 0.372 U	0.287 +/- 0.277 U	0.121 +/- 0.235 U	0.136 +/- 0.226 U	0.202 +/- 0.190 U	0.296 +/- 0.222 U	---	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE		VERIFICATION SAMPLE
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	85.8	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	46.2	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<0.220	---	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	35.9	---	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	697	---	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE		VERIFICATION SAMPLE
Temperature	None	Not Applicable	Not Applicable	°C	17.71	15.41	---	15.44	18.96	18.56	21.58	20.76	24.37	20.38	---	26.67	24.71
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	11.14	11.16	---	11.16	11.09	11.08	10.80	10.95	10.72	11.09	---	10.55	10.56
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,576	3,585	---	3,389	3,602	3,575	3,546	3,526	3,552	3,530	---	3,587	3,563
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.37	0.26	---	0.18	0.22	0.18	0.02	0.02	0.02	0.24	---	4.64	1.32
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-347.7	-310.2	---	-267.7	-299.3	-270.6	-235.7	-125.3	-215.4	-312.1	---	-227.4	-249.0
Turbidity	None	Not Applicable	Not Applicable	NTU	103	1.10	---	0.32	0.34	0.40	0.62	0.43	1.26	0.47	---	0.02	4.16
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	3.50	2.78	---	3.45	2.66	2.66	3.93	3.93	3.59	3.67	---	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	17.88	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID:	MW-19S	MW-19S		MW-19S	MW-19S	MW-19S	DUP 2
				Sample Date:	3-Oct-18	15-Jan-19		25-Apr-19	1-Oct-19	17-Jun-20	
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4	
Boron	None	1.896	Not Applicable	mg/L	10.20	9.79	9.07	8.57	6.64	6.80	7.18
Calcium	None	670.30	Not Applicable	mg/L	35.3	50.0	49.6	52.4	40.4	43.6	42.1
Chloride	250	18.51	Not Applicable	mg/L	14.8	14.2	14.1	13.7	14.4	13.8	14.0
Fluoride	4	0.6359	Not Applicable	mg/L	1.24	1.27	1.59	1.13	1.37	1.15	1.04
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	9.9	10.4	---	10.5	10.6	10.2	9.88
Sulfate	250	1,708	Not Applicable	mg/L	1,950	1,640	1,580	1,520	1,580	1,490	1,590
Total Dissolved Solids	500	2,505	Not Applicable	mg/L	2,490	2,500	2,470	2,440	2,460	2,300	2,290
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4	
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.0008	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.008	0.00634	0.00643	0.00673	0.00624	0.00610	0.00577
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0106 J	0.0216	0.0201	0.0197	0.0164	0.0221	0.0177
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.002	<0.00100	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	0.000133 J	0.000386 J	0.000429 J	0.000219 J	0.000222 J	0.000387 J	0.000328 J
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.01	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000102 J	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Fluoride	4	Not Applicable	4 (MCL)	mg/L	1.24	1.27	1.59	1.13	1.37	1.15	1.04
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	0.000116 J	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	<0.06	0.00148 J	0.00128 J	0.00192 J	0.00169 J	0.00134 J	0.00114 J
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.439	0.472	0.463	0.462	0.377	0.402	0.394
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	0.00889	0.011	0.00631	0.0141	0.0124	0.00655	0.00640
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0008	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	0.933 +/- 0.391	<0.98	---	<0.79	<0.74	<0.73	<0.72
Other Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4	
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	26.2	25	---	21.0	23.0	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	128	130
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	59.8	---	---	---	92.6	98.7
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5	<5
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	81.2	---	---	---	35.1	31.4
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.0153(J)	<0.0120
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<0.0120	<0.0120
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.043(J)	0.330(J)
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	0.121 J	0.0852 J	---	---	0.0553(J)	0.0510(J)
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.4	0.383
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	<0.049	<0.03	0.117	<0.150	<0.0300	<0.0600	<0.0600
Potassium	None	Not Applicable	Not Applicable	mg/L	---	38.2	37.7	---	---	35.20	34.1
Sodium	None	Not Applicable	Not Applicable	mg/L	---	801	774	---	---	644	598
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	2470.0	3530	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	1.52	<1
Field Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4	
Temperature	None	Not Applicable	Not Applicable	°C	25.40	13.40	---	17.92	25.86	22.99	---
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	10.63	11.01	---	11.26	10.65	10.97	---
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,610	3,438	---	3,524	3,552	3,309	---
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.33	0.21	---	1.50	0.50	0.36	---
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	172.1	-162.0	---	-281.7	-252.4	-588.1	---
Turbidity	None	Not Applicable	Not Applicable	NTU	2.05	5.19	2.24	0.57	0.61	2.86	---
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	2.45	---	2.53	1.49	3.63	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. °C : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-20 31-May-16	MW-20 23-Aug-16	MW-20 29-Sep-16	DUP 1 29-Sep-16	MW-20 2-Dec-16	MW-20 31-Jan-17	MW-20 5-Apr-17	MW-20 7-Jun-17	MW-20 9-Aug-17	MW-20 21-May-18	MW-20 (Deep) 1-Aug-18
Detection Monitoring Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**VERIFICATION SAMPLE**
Boron	None	1.896	Not Applicable	mg/L	0.704	1.11	1.06	0.945	1.02	1.00	0.580	0.784	0.643	0.813	1.20
Calcium	None	670.30	Not Applicable	mg/L	434	563	416	391	451	528	583	611 J*	382	355	552
Chloride	250	18.51	Not Applicable	mg/L	5.99 J*	5.79	4.85	4.80	4.44	5.40	6.77	6.00 J*	5.08	6.14	4.96
Fluoride	4	0.6359	Not Applicable	mg/L	0.322 J*	0.410	0.424	0.416	0.397	0.362	0.248	0.340 J*	0.349	0.323	0.309
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	6.94	7.6	7.4	7.3	7.3	7.0	6.8	6.7	6.7	6.8	6.9
Sulfate	250	1,363	Not Applicable	mg/L	1,140	1,110	1,100	1,110	1,290	949	907	1,020	1,180	839	1,060
Total Dissolved Solids	500	2,066	Not Applicable	mg/L	1,710	1,980	1,860	1,810	1,980	1,870	1,750	1,770	1,760	1,760	1,980
Assessment Monitoring Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**VERIFICATION SAMPLE**
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000500	<0.000800	<0.000800	<0.000800	<0.00800	<0.000800	<0.000800	<0.00400	<0.000800	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.00222	0.00101 J	0.00198 J	0.00199 J	<0.00400	0.000732 J	0.00174 J	<0.00400	0.000598 J	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0136	0.0151	0.0116	0.0109	0.0100 J	0.0122	0.0108	0.0128	0.00216	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.00100	<0.000100	<0.000100	<0.000100	<0.00100	<0.000100	<0.000100	<0.000500	<0.000100	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000400	<0.000100	<0.000100	<0.000100	<0.00100	<0.000100	<0.000100	<0.00100	<0.000100	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.000500	<0.000500	<0.000500	<0.000500	<0.00500	<0.000500	<0.000500	<0.00500	<0.00250	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.000500	0.000327 J	0.000383 J	0.000366 J	<0.00100	0.000642 J	0.000215 J	<0.00100	<0.000500	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.322 J*	0.410	0.424	0.416	0.397	0.362	0.248	0.340 J*	0.349	0.323	0.309
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000200	<0.000100	<0.000100	<0.000100	<0.00100	<0.000100	<0.000100	<0.000500	<0.000500	---	---
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.123	0.117	0.124	0.114	0.126 J	0.120	0.0962	0.112 J	0.110 J	---	0.109
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000100	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.00120 J	0.00121 J	<0.00500	0.00126 J	<0.0100	<0.00100	<0.00100	<0.0100	<0.00500	---	<0.00100
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.000600	<0.000300	<0.000300	<0.000300	<0.00300	0.000633 J	<0.000300	<0.00300	<0.00150	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000500	<0.000800	<0.000800	<0.000800	<0.00800	<0.000800	<0.000800	<0.00400	<0.00400	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.04 +/- 0.357	1.61 +/- 0.395	1.10 +/- 0.359	1.66 +/- 0.377	1.46 +/- 0.421	0.863 +/- 0.381	1.29 +/- 0.322	0.969 +/- 0.294	0.670 +/- 0.261	---	---
Other Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**VERIFICATION SAMPLE**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	259	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	20.9	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	5.54	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	86.1	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**VERIFICATION SAMPLE**
Temperature	None	Not Applicable	Not Applicable	°C	21.43	21.4	18.92	---	17.06	19.18	18.75	20.84	21.17	20.26	21.05
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.85	6.94	6.79	---	6.75	6.76	6.67	6.69	6.62	6.89	6.51
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	1,742	2,245	2,332	---	2,364	2,259	2,057	2,088	2,083	1,999	2,345
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.47	1.76	0.05	---	0.25	0.21	0.35	0.07	0.10	0.27	1.43
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-4.6	935	-101.0	---	-211.5	-167.1	60.7	-7.7	62.1	-57.0	54.1
Turbidity	None	Not Applicable	Not Applicable	NTU	1.20	2.96	3.23	---	2.55	1.85	0.38	1.01	1.82	1.95	4.38
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	17.92	18.82	19.12	---	18.69	18.22	18.59	19.01	18.17	17.97	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	28.46	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID:	MW-20	MW-20		MW-20	MW-20	Dup 1	MW-20
				Sample Date:	4-Oct-18	10-Jan-19		23-Apr-19	30-Sep-19		17-Jun-20
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3		ASSESSMENT MON. #4
Boron	None	1.896	Not Applicable	mg/L	1.19	1.19	0.911	0.721	0.777	0.668	0.624
Calcium	None	670.30	Not Applicable	mg/L	448	398	386	327	368	331	320
Chloride	250	18.51	Not Applicable	mg/L	4.74	6.29	7.27	8.02	5.30	5.32	6.18
Fluoride	4	0.6359	Not Applicable	mg/L	0.326	0.298	0.304	0.294	0.340	0.311	0.220
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	7.4	7.17	---	7.35	6.67	6.76	6.55
Sulfate	250	1,363	Not Applicable	mg/L	1,110	977	892	794	1,060	1,080	870
Total Dissolved Solids	500	2,066	Not Applicable	mg/L	1,900	1,630	1,530	1,690	1,890	1,850	1,560
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3		ASSESSMENT MON. #4
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.0008	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.004	<0.000400	<0.000400	0.00107 J	<0.000400	<0.000400	<0.000400
Barium	2	Not Applicable	2 (MCL)	mg/L	0.014 J	0.01030	0.012	0.0131	0.0102	0.00931	0.0102
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.005	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.00102 J	0.000414 J	0.000442 J	0.000449 J	<0.000200	<0.000200	<0.000200
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.326	0.298	0.304	0.294	0.340	0.311	0.220
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.001	<0.000600	<0.000600	<0.000600	<0.000600	0.00964	<0.000600
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.121 J	0.0969	0.0959	0.0827	0.101	0.0944	0.0895
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.00015	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.001	0.000616 J	0.000663 J	0.000835 J	<0.000600	<0.000600	0.000727 J
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.0003	<0.0011	0.00142 J	<0.00110	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0008	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	0.888 +/- 0.291	<0.72	---	0.91	0.82	<0.74	<0.72
Other Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3		ASSESSMENT MON. #4
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5	<5.00	---	<5.00	<5.00	<5.00	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	359	---	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	29.2	26.3	---	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	<0.049	<0.03	<0.03	<0.0300	0.105	0.0616 J	<0.0300
Potassium	None	Not Applicable	Not Applicable	mg/L	---	6.72	6.01	---	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	70.2	84.7	---	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	2050.0	1,960	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Field Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3		ASSESSMENT MON. #4
Temperature	None	Not Applicable	Not Applicable	°C	24.90	15.20	---	21.57	23.46	---	22.06
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.71	6.65	---	7.00	6.83	---	6.86
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,330	1,979	---	1,937	2,240	---	1,795
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.86	0.46	---	1.08	0.56	---	1.11
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	29.7	-13.0	---	-4.3	-15.7	---	-32.8
Turbidity	None	Not Applicable	Not Applicable	NTU	8.14	37.70	2.09	0.38	2.90	---	4.04
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	17.42	---	20.72	19.81	---	18.15
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. °C : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-21 26-May-16	MW-21 27-Jul-16	DUP 1 27-Jul-16	MW-21 28-Sep-16	MW-21 1-Dec-16	MW-21 31-Jan-17	MW-21 5-Apr-17	MW-21 6-Jun-17	MW-21 8-Aug-17	MW-21 17-May-18	MW-21 (Deep) 10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**VERIFICATION SAMPLE**
Boron	None	1.896	Not Applicable	mg/L	2.90	2.76	2.86	2.59	3.98	4.41	3.43	3.36	3.07 J	2.95	2.99
Calcium	None	670.30	Not Applicable	mg/L	148	186	205	156	251	176	214	149	165	136	147
Chloride	250	18.51	Not Applicable	mg/L	22.9	22.2	21.8	23.1	22.3	21.5	20.5	21.4	17.8	22.0	21.9
Fluoride	4	0.6359	Not Applicable	mg/L	0.594	0.752	0.801	0.582	0.564	0.498	0.490	0.559	0.779	0.530	0.453
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	7.56	7.98	8.02	7.9	7.9	7.5	7.4	7.3	7.4	7.5	7.5
Sulfate	250	1,591	Not Applicable	mg/L	1,370	1,350	1,420	1,500	1,500	1,360	1,470	1,400	1,250	1,480	1,410
Total Dissolved Solids	500	2,546	Not Applicable	mg/L	2,410	2,380	2,360	2,510	2,430	2,440	2,320	2,430	2,320	2,570	2,560
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**VERIFICATION SAMPLE**
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000500	<0.000500	<0.000500	<0.000800	<0.00400	<0.000800	<0.000800	<0.000800	<0.000800	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.00259	0.00140 J	0.00154 J	0.00145 J	<0.00200	0.000960 J	0.00119 J	<0.000400	0.00155 J	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0144	0.0131	0.0128	0.0120	0.0202	0.0121	0.0114	0.0107	0.110	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.00100	<0.00100	<0.00100	<0.000100	<0.000500	<0.000100	<0.000100	<0.000100	<0.00100	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000400	<0.000400	<0.000400	<0.000100	<0.000500	<0.000100	<0.000100	<0.000100	<0.00100	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	0.000586 J	<0.000500	<0.000500	<0.000500	<0.00250	<0.000500	<0.000500	<0.000500	<0.000500	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000571 J	<0.000500	<0.000500	0.000403 J	0.000555 J	0.000434 J	0.000316 J	<0.000100	0.000281 J	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.594	0.752	0.801	0.582	0.564	0.498	0.490	0.559	0.779	0.530	0.453
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000200	<0.000200	<0.000200	<0.000100	<0.000500	<0.000100	<0.000100	<0.000100	<0.000100	---	---
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.163	0.129	0.126	0.130	0.224 J	0.143	0.137	0.131	0.147	---	0.121
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.00385	0.00193 J	0.00188 J	0.00212	<0.00500	0.00230	0.00200	0.00175 J	0.00152 J	---	<0.00100
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.000600	<0.000600	<0.000600	<0.000300	<0.00150	0.000512 J	<0.000300	0.00391	<0.000300	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000500	<0.000500	<0.000500	<0.000800	<0.00400	<0.000800	<0.000800	<0.000800	<0.000800	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.99 +/- 0.327	1.62 +/- 0.384	1.91 +/- 0.376	2.17 +/- 0.422	1.87 +/- 0.494	2.19 +/- 0.444	1.26 +/- 0.315	2.06 +/- 0.383	0.973 +/- 0.258	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**VERIFICATION SAMPLE**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	312	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	35.1	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	9.21	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	791	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**VERIFICATION SAMPLE**
Temperature	None	Not Applicable	Not Applicable	ºC	20.64	22.37	---	21.75	19.28	20.91	18.26	22.05	20.69	21.36	25.09
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.37	7.32	---	7.32	7.28	7.26	6.19	7.20	7.11	7.28	6.91
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,111	3,578	---	3,600	3,586	3,625	3,555	3,493	3,421	3,504	3,544
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.24	0.45	---	0.07	0.17	0.27	0.32	0.12	0.07	0.16	1.45
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	62.8	-72.7	---	-92.6	-239.0	-182.0	247.3	-12.6	59.8	-45.2	99.0
Turbidity	None	Not Applicable	Not Applicable	NTU	2.10	0.32	---	0.30	0.29	0.27	0.84	0.74	1.07	0.28	0.50
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	22.94	23.28	---	23.84	23.54	23.62	23.92	24.02	24.65	23.04	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	32.96	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

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APPENDIX A
GROUINDWATER SAMPLE DATA TO DATE FOR LANDFILL CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-21 3-Oct-18	MW-21 15-Jan-19		MW-21 24-Apr-19	DUP-2 24-Apr-19	MW-21 2-Oct-19	DUP-2 2-Oct-19	MW-21 17-Jun-20
Detection Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**		**ASSESSMENT MON. #3**		**ASSESSMENT MON. #4**
Boron	None	1.896	Not Applicable	mg/L	3.07	3.96	3.92	3.79	3.63	2.63	2.89	2.84
Calcium	None	670.30	Not Applicable	mg/L	152	187	187	145	142	146	155	139
Chloride	250	18.51	Not Applicable	mg/L	21.9	22.1	22.0	20.6	19.8	22.1	22.2	21.8
Fluoride	4	0.6359	Not Applicable	mg/L	0.458	0.438	2.05	0.513	0.505	0.537	0.509	0.524
pH (laboratory)	6.5 - 8.5	6.485 - 8.018	Not Applicable	S.U.	7.9	6.89	---	7.77	7.74	7.58	7.12	7.07
Sulfate	250	1,591	Not Applicable	mg/L	1,610	1,670	1,710	1,440	1,530	1,560	1,530	1,470
Total Dissolved Solids	500	2,546	Not Applicable	mg/L	2,650	2,740	2,720	2,550	2,650	2,700	2,720	2,470
Assessment Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**		**ASSESSMENT MON. #3**		**ASSESSMENT MON. #4**
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.0008	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.008	0.00329	0.00223	0.00112 J	0.00136 J	0.000638 J	0.000574 J	0.000551 J
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0137 J	0.0182	0.0176	0.0127	0.0117	0.00999	0.01110	0.0106
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.002	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.01	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000216 J	0.00175 J	0.00140 J	0.000407 J	0.000321 J	0.000227 J	<0.000200	<0.000200
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.458	0.438	2.050	0.513	0.505	0.537	0.509	0.524
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.0001	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.235 (UTL)	mg/L	0.164 J	0.157	0.160	0.140	0.134	0.118	0.129	0.140
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.00015	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.001	0.00161 J	0.00160 J	0.00131 J	0.00118 J	0.00105 J	0.00184 J	0.00103 J
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.0003	<0.0011	<0.0011	<0.00110	0.00111 J	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.0008	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	3.41 +/- 0.496	6.29	---	2.24	1.67	1.59	2.57	3.09
Other Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**		**ASSESSMENT MON. #3**		**ASSESSMENT MON. #4**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5	<5	---	<5.00	<5.00	<5.00	7.00 J	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	393	---	---	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	62.1	62.3	---	---	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.449	0.14	0.145	1.16	1.36	0.329	0.467	<0.150
Potassium	None	Not Applicable	Not Applicable	mg/L	---	12.0	11.8	---	---	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	684	688	---	---	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	3120.0	3610.0	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Field Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**		**ASSESSMENT MON. #3**		**ASSESSMENT MON. #4**
Temperature	None	Not Applicable	Not Applicable	ºC	24.00	13.80	---	18.12	---	24.38	---	23.17
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.13	7.10	---	7.42	---	7.29	---	7.23
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,627	3,585	---	3,533	---	3,633	---	3,352
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.43	0.59	---	1.23	---	0.64	---	0.65
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	45.9	-67.1	---	84.0	---	91.9	---	-38.0
Turbidity	None	Not Applicable	Not Applicable	NTU	2.38	3.30	1.11	0.44	---	0.26	---	2.04
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	23.46	---	25.72	---	23.66	---	23.89
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.

ALTAMIRA

APPENDIX B

TABLE OF GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID:	MW-8	MW-8	MW-8	MW-8	DUP 2	MW-8	MW-8	MW-8	MW-8	MW-8	DUP 2	MW-8 (Shallow)	MW-8 (Deep)	DUP2 (Deep)
				Sample Date:	6-Jun-16	2-Aug-16	4-Oct-16	7-Dec-16	7-Dec-16	2-Feb-17	6-Apr-17	8-Jun-17	14-Aug-17	24-May-18	24-May-18	2-Aug-18	10-Aug-18	10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1		EVALUATION SAMPLE	VERIFICATION SAMPLE	
Boron	None	Background Well (Not Applicable)	Not Applicable	mg/L	1.27	1.26	1.29	1.59	1.38	1.72	1.20	1.41	1.36	1.47	1.60	0.629	1.48	1.50
Calcium	None		Not Applicable	mg/L	701	629	644	676	623	550	906	747	754	603	676	375	748	690
Chloride	250		Not Applicable	mg/L	3.74	3.92	3.60 J*	3.91	3.50	3.41 J*	3.87	3.55	3.36	4.09	4.06	4.37	3.81	3.71
Fluoride	4		Not Applicable	mg/L	0.252	0.235	0.394 J*	0.382 J*	0.388 J*	0.429 J*	0.692	0.307	2.84	1.29	2.99	0.364	0.287	0.284
pH (laboratory)	6.5 - 8.5		Not Applicable	S.U.	7.63	8.0	7.0	7.4	7.4	7.0	6.9	6.8	6.9	6.8	7.5	7.5	7.0	7.0
Sulfate	250		Not Applicable	mg/L	1,940	1,690	1,800	1,830	1,830	1,560	1,620	1,660	1,530	1,610	1,900	918	1,620	1,570
Total Dissolved Solids	500		Not Applicable	mg/L	2,760	2,820	2,660	2,640	2,620	2,680	2,740	2,800	2,860	2,770	2,710	1,590	2,840	2,840
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1		EVALUATION SAMPLE	VERIFICATION SAMPLE	
Antimony	0.006	Not Applicable	Background Well (Not Applicable)	mg/L	<0.000500	<0.00100	<0.00400	<0.00400	<0.00400	<0.000800	<0.00400	<0.00400	<0.000800	---	---	---	---	---
Arsenic	0.010	Not Applicable		mg/L	0.00169 J	0.00152 J	<0.00200	<0.00200	<0.00200	0.000908 J	0.00338 J	0.00243 J	<0.00200	---	---	---	---	---
Barium	2	Not Applicable		mg/L	0.00490	0.00461	0.00618 J	0.00657 J	0.00962 J	0.00599	0.00541 J	0.00603 J	0.00540	---	---	---	---	---
Beryllium	0.004	Not Applicable		mg/L	<0.00100	<0.00200	<0.000500	<0.000500	<0.000500	<0.000100	<0.000500	<0.000500	<0.000100	---	---	---	---	---
Cadmium	0.005	Not Applicable		mg/L	<0.000400	<0.000800	<0.000500	<0.000500	<0.000500	<0.000100	0.000647 J	<0.000500	<0.000100	---	---	---	---	---
Chromium	0.1	Not Applicable		mg/L	<0.000500	<0.00100	<0.00250	<0.00250	<0.00250	<0.000500	<0.00250	<0.00250	U (0.000867)	---	---	---	---	---
Cobalt	None	Not Applicable		mg/L	0.000975 J	0.00103 J	0.00164 J	0.00200 J	0.00270 J	0.00171 J	0.00322 J	0.00228 J	0.00209	---	---	---	---	---
Fluoride	4	Not Applicable		mg/L	0.252	0.235	0.394 J*	0.382 J*	0.388 J*	0.429 J*	0.692	0.307	2.84	1.29	2.99	0.364	0.287	0.284
Lead	0.015	Not Applicable		mg/L	<0.000200	<0.000200	<0.000500	<0.000500	<0.000500	<0.000100	0.000942 J	<0.000500	<0.000100	---	---	---	---	---
Lithium	None	Not Applicable		mg/L	0.329	0.355	0.303	0.332	0.282	0.345	0.481	0.335	0.282	---	---	0.134	0.252	0.272
Mercury	0.002	Not Applicable		mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---	---	---
Molybdenum	None	Not Applicable		mg/L	<0.000500	<0.00100	<0.00500	<0.00500	<0.00500	<0.00100	<0.00500	<0.00500	<0.00100	---	---	<0.00100	<0.00100	<0.00100
Selenium	0.05	Not Applicable		mg/L	<0.000600	<0.00120	<0.00150	<0.00150	<0.00150	<0.000300	<0.00150	<0.00150	<0.000300	---	---	---	---	---
Thallium	0.002	Not Applicable		mg/L	<0.000500	<0.00100	<0.00400	<0.00400	<0.00400	<0.000800	<0.00400	<0.00400	<0.000800	---	---	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable		pCi/L	0.159 +/- 0.238 U	0.320 +/- 0.310 U	0.657 +/- 0.272	0.677 +/- 0.373	0.952 +/- 0.441	0.787 +/- 0.350	0.00926 +/- 0.253 U	0.279 +/- 0.208 U	0.815 +/- 0.324	---	---	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1		EVALUATION SAMPLE	VERIFICATION SAMPLE	
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	280	---	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	74.1	---	---	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	11.3	---	---	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	73.2	---	---	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1		EVALUATION SAMPLE	VERIFICATION SAMPLE	
Temperature	None	Not Applicable	Not Applicable	ºC	22.02	25.42	21.25	17.48	---	16.01	19.66	19.48	22.38	21.65	---	23.21	23.03	---
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.67	6.81	6.80	6.73	---	6.76	6.78	6.70	6.77	6.91	---	7.00	6.56	---
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,744	2,900	2,951	2,941	---	2,934	2,929	2,890	2,895	2,845	---	1,947	2,981	---
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.24	0.21	0.12	0.15	---	0.35	0.33	0.13	0.15	0.53	---	4.15	3.01	---
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-62.7	-2.1	-87.3	-132.3	---	-159.1	-22.3	61.0	9.4	-48.6	---	166.7	84.6	---
Turbidity	None	Not Applicable	Not Applicable	NTU	5.07	0.87	3.74	0.20	---	0.24	0.28	1.03	0.72	0.39	---	4.05	3.69	---
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	10.74	11.53	11.70	11.90	---	11.46	10.68	10.68	10.80	10.62	---	---	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	32.70	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
12. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-8 27-Sep-18	DUP 1 27-Sep-18	MW-8 8-Jan-19 UNFILTERED	MW-8 8-Jan-19 FILTERED	MW-8 24-Apr-19	MW-8 3-Oct-19	MW-8 16-Jun-20
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1		ASSESSMENT MON. #1 (RESAMPLE)		ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Boron	None	Background Well (Not Applicable)	Not Applicable	mg/L	1.26	1.35	1.61	1.46	1.33	0.88	1.08
Calcium	None		Not Applicable	mg/L	544	715	634	593	511	481	420
Chloride	250		Not Applicable	mg/L	3.91	3.83	3.68	3.72	3.96	3.87	3.72
Fluoride	4		Not Applicable	mg/L	0.293	0.306	0.294	0.118	0.382 J	0.3	0.299
pH (laboratory)	6.5 - 8.5		Not Applicable	S.U.	7.9	7.9	6.51	---	7.58	6.74	6.78
Sulfate	250		Not Applicable	mg/L	1,650	1,680	1,690	1,710	1,180	1,350	1,970
Total Dissolved Solids	500		Not Applicable	mg/L	2,760	2,760	2,550	2,600	2,380	2,240	2,540
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1		ASSESSMENT MON. #1 (RESAMPLE)		ASSESSMENT MON. #2	ASSESSMENT MON. #2	ASSESSMENT MON. #4
Antimony	0.006	Not Applicable	Background Well (Not Applicable)	mg/L	<0.00800	<0.00800	<0.0004	<0.0004	<0.000400	<0.000400	0.00160 J
Arsenic	0.010	Not Applicable		mg/L	<0.00400	<0.00400	0.000515 J	0.000428 J	0.00147 J	<0.000400	<0.000400
Barium	2	Not Applicable		mg/L	0.00726 J	0.00747 J	0.00588	0.00523	0.00560	0.00401	0.00503
Beryllium	0.004	Not Applicable		mg/L	<0.000100	<0.000100	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable		mg/L	<0.00100	<0.00100	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable		mg/L	0.00107 J	<0.005	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Cobalt	None	Not Applicable		mg/L	0.00169 J	0.00267 J	0.00130 J	0.00135 J	0.00172 J	0.00141 J	0.00170 J
Fluoride	4	Not Applicable		mg/L	0.293	0.306	0.294	0.118	0.382 J	0.300	0.299
Lead	0.015	Not Applicable		mg/L	0.000515 J	<0.001	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable		mg/L	0.208	0.347 J	0.376	0.359	0.279	0.217	0.236
Mercury	0.002	Not Applicable		mg/L	<0.000150	<0.000150	0.0000350 J	0.0000560 J	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable		mg/L	<0.00100	<0.01	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Selenium	0.05	Not Applicable		mg/L	<0.00300	0.00472 J	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable		mg/L	<0.000800	<0.000800	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable		pCi/L	0.644 +/- 0.223	0.772 +/- 0.235	<0.89	---	<0.78	<0.69	<0.72
Other Parameters				***Units***	ASSESSMENT MON. #1		ASSESSMENT MON. #1 (RESAMPLE)		ASSESSMENT MON. #2	ASSESSMENT MON. #2	ASSESSMENT MON. #4
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5	<5	<5	---	<5.00	6.00 J	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	<5	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	301	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	<5	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	83	81.2	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	<0.049	<0.049	<0.03	0.106	<0.150	0.243	<0.0300
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	12.1	11.8	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	81.0	78.9	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	2,950	2,940	2,870	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Field Parameters				***Units***	ASSESSMENT MON. #1		ASSESSMENT MON. #1 (RESAMPLE)		ASSESSMENT MON. #2	ASSESSMENT MON. #2	ASSESSMENT MON. #4
Temperature	None	Not Applicable	Not Applicable	ºC	20.60	---	18.10	---	18.63	24.60	22.25
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.69	---	6.64	---	7.04	6.79	6.85
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,912	---	2,884	---	2,893	3,000	2,685
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.93	---	0.65	---	1.61	0.70	0.99
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	153.9	---	157.0	---	75.9	72.1	-32.3
Turbidity	None	Not Applicable	Not Applicable	NTU	197.00	---	0.92	---	1.91	1.74	2.64
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft		---	9.45	---	13.08	11.49	11.09
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-9 6-Jun-16	MW-9 2-Aug-16	MW-9 5-Oct-16	MW-9 8-Dec-16	MW-9 2-Feb-17	MW-9 6-Apr-17	DUP 3 6-Apr-17	MW-9 8-Jun-17	MW-9 7-Aug-17	MW-9 24-May-18	MW-9 (Shallow) 2-Aug-18	MW-9 (Deep) 10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Boron	None	1.935	Not Applicable	mg/L	0.0318 J	0.0589 J	0.322 J	0.0838 J	<0.175	0.0364	0.0596 J	0.0561 J	0.0528 J*	0.217	0.0420 J	<0.0350
Calcium	None	961.40	Not Applicable	mg/L	41.1	54.9	159	20.5	26.6	28.3	28.9	33.7	32.8	33.5	31.5	4.82
Chloride	250	11.6	Not Applicable	mg/L	1.42	1.86	0.743 J	3.38	5.72	3.93	3.95	3.40	3.08	2.48	3.25	2.43
Fluoride	4	2.84	Not Applicable	mg/L	0.189	0.175	0.337 J*	0.360	0.275	0.242	0.237	0.185	0.214 J*	0.231	0.272	0.231
pH (laboratory)	6.5 - 8.5	8	Not Applicable	S.U.	7.14	8.3	7.9	7.7	7.7	7.3	7.3	7.0	7.0	7.7	7.3	7.7
Sulfate	250	2,156	Not Applicable	mg/L	14.1	16.0	18.1	21.4	19.8	13.4	13.0	11.5	15.5	21.3	25.5	33.9
Total Dissolved Solids	500	244	Not Applicable	mg/L	163	216	158	151	167	164	164	189	209	199	173	206
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000500	<0.00100	<0.00400	<0.000800	0.00108 J	<0.000800	<0.000800	<0.000800	<0.000800	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.000776 J	0.00191 J	0.00438 J	0.000828 J	0.000651 J	0.000787 J	0.000694 J	0.000869 J	0.00147 J	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0447	0.0446	0.151	0.0304	0.0284	0.0364	0.0375	0.0327	0.0546 J*	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.00100	<0.00200	<0.000500	0.000155 J	<0.000100	U (0.000503)	U (0.000511)	<0.000100	0.000246 J	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000400	<0.000800	<0.000500	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	0.00230	<0.00100	0.00622 J	U (0.00483)	0.00288	0.00460	0.00451	0.00163 J	0.00577	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.000500	<0.00100	0.00179 J	0.000531 J	0.000204 J	0.000349 J	0.000357 J	0.000346 J	0.000547 J	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.189	0.175	0.337 J*	0.360	0.275	0.242	0.237	0.185	0.214 J*	0.231	0.272	0.231
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	0.000495 J	<0.000200	0.000934 J	0.00106 J	0.000556 J	0.000872 J	0.000873 J	0.000281 J	0.00118 J	---	---	---
Lithium	None	Not Applicable	0.4282 (UTL)	mg/L	<0.0100	0.00214 J	<0.0150	0.00368 J	<0.00300	<0.00300	<0.00300	<0.00300	0.00422 J*	---	<0.00300	<0.00300
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.000500	<0.00100	<0.00500	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	---	<0.00100	<0.00100
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.000600	0.00135 J	<0.000300	U (0.000973)	0.000636 J	<0.000300	<0.000300	0.000403 J	0.000470 J	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000500	<0.00100	<0.00400	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	0.0807 +/- 0.312 U	0.112 +/- 0.250 U	0.575 +/- 0.291	1.44 +/- 1.38 U	0.180 +/- 0.504 U	0.486 +/- 0.461 U	-0.0852 +/- 0.379 U	0.202 +/- 0.198 U	0.621 +/- 0.396	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	104	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	2.64	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	0.887 J	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	19.5	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Temperature	None	Not Applicable	Not Applicable	ºC	22.30	23.74	21.80	16.41	16.18	16.94	---	22.33	24.14	22.30	24.21	21.97
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.54	7.13	7.21	7.30	7.44	7.20	---	7.01	6.67	7.42	6.62	7.15
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	263	372	254	207	229	230	---	262	314	251	394	423
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	1.52	0.24	0.08	3.02	1.82	0.22	---	0.04	2.16	3.52	3.16	1.79
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-52.6	-28.3	-116.0	-131.7	-124.8	-29.0	---	53.2	51.4	-1.6	235.2	214.3
Turbidity	None	Not Applicable	Not Applicable	NTU	27.0	3.09	11.4	55.9	24.8	44.5	---	23.1	82.1	19.8	11.5	11.0
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	3.77	12.55	10.75	4.43	4.22	3.68	---	4.95	11.53	12.22	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	43.28	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID:	MW-9	MW-9		MW-9	MW-9	MW-9	DUP 1
				Sample Date:	28-Sep-18	9-Jan-19		24-Apr-19	3-Oct-19	16-Jun-20	
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4	
Boron	None	1.935	Not Applicable	mg/L	0.0457 J	0.0309	0.0244	0.0692	0.0655	0.0446	0.0630
Calcium	None	961.40	Not Applicable	mg/L	18.0	25.8	25.5	25.6	36.8	36.0	33.5
Chloride	250	11.6	Not Applicable	mg/L	2.35	2.79	2.73	1.14	1.35	0.883	0.958
Fluoride	4	2.84	Not Applicable	mg/L	0.354	0.199	0.159	0.184	0.161	0.134	0.132
pH (laboratory)	6.5 - 8.5	8	Not Applicable	S.U.	8.0	6.71	---	7.74	6.44	6.48	6.24
Sulfate	250	2,156	Not Applicable	mg/L	19.6	13.0	13.0	13.6	10.5	6.36	5.90
Total Dissolved Solids	500	244	Not Applicable	mg/L	139	168	100	184	182	170	152
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4	
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000800	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.000508 J	0.000690 J	<0.000400	0.000973 J	0.000780 J	0.000645 J	0.000677 J
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0226	0.0331	0.0210	0.0507	0.0327	0.0418	0.0382
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	0.000124 J	0.000201 J	<0.000200	0.000217 J	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000100	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	0.00200	0.00276 J	<0.000400	0.00390 J	<0.000400	0.000441 J	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000208 J	0.000352 J	<0.000200	0.000516 J	0.000210 J	0.000328 J	0.000311 J
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.354	0.199	0.159	0.184	0.161	0.134	0.132
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	0.000462 J	0.000850 J	<0.000600	0.00120 J	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.4282 (UTL)	mg/L	<0.00300	0.00188 J	<0.00100	0.00389 J	0.00118 J	0.00189 J	0.00163 J
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000100	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.00100	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	0.000327 J	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000800	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	0.406 +/- 0.245	<0.69	---	<0.99	0.81	<0.72	<0.89
Other Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4	
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	13.0 J	7 J	---	8.00 J	6.00 J	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	77	---	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	2.51	2.23	---	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.429	0.479	0.458	0.422	0.0302 J	0.119	0.0997 J
Potassium	None	Not Applicable	Not Applicable	mg/L	---	0.591	0.267	---	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	13.9	14.2	---	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	197	175	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Field Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4	
Temperature	None	Not Applicable	Not Applicable	ºC	20.90	14.5	---	18.5	25.86	24.73	---
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.76	6.65	---	6.79	10.65	6.88	---
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	203	170.9	---	203.1	3,552	258	---
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	2.45	2.82	---	2.29	0.50	0.39	---
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	325.8	252.1	---	46.7	-252.4	245.5	---
Turbidity	None	Not Applicable	Not Applicable	NTU	26.0	69.1	4.76	71.1	0.61	32.1	---
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft		3.79	---	19.00	16.24	19.11	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID:	MW-10	DUP 3	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10	MW-10 (Shallow)	MW-10 (Deep)
				Sample Date:	6-Jun-16	6-Jun-16	2-Aug-16	5-Oct-16	9-Dec-16	2-Feb-17	7-Apr-17	8-Jun-17	14-Aug-17	24-May-18	2-Aug-18	10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Boron	None	1.935	Not Applicable	mg/L	3.05	3.14	2.86	2.82	2.78	4.01	3.72 J*	3.83	3.22	3.95	0.407	3.54
Calcium	None	961.40	Not Applicable	mg/L	245	224	152	139	153	166	246	174	134	152	134	152
Chloride	250	11.6	Not Applicable	mg/L	33.4 H	41.9	37.1	34.4	36.5	31.7	42.0	34.0	27.7	39.9	36.5	35.6
Fluoride	4	2.84	Not Applicable	mg/L	0.805	0.809	1.06	1.21 J*	1.21	1.17	1.08	1.01	0.954	1.75	1.04	1.00
pH (laboratory)	6.5 - 8.5	8	Not Applicable	S.U.	7.52	7.61	7.5	7.7	7.8	7.3	7.4	7.3	7.0	7.9	7.6	7.6
Sulfate	250	2,156	Not Applicable	mg/L	943 J*	1,400	912	959	1,220	861	1,070	872	988	1,050	918	882
Total Dissolved Solids	500	1,632	Not Applicable	mg/L	1,610	1,580	1,540	1,540	1,520	1,570	1,530	1,560	1,520	1,570	1,490	1,550
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000500	<0.000500	<0.000500	<0.000800	<0.00400	<0.000800	<0.00400	<0.000800	<0.000800	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.000792 J	0.000865 J	0.00115 J	0.00133 J	<0.00200	0.00102 J	<0.00200	0.00155 J	0.00378 J	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0268	0.0257	0.0229	0.0210	0.0224	0.0241	0.0339 J*	0.0226	0.0225	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.00100	<0.00100	<0.00100	<0.000100	<0.000500	<0.000100	<0.000500	<0.000100	<0.000100	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000400	<0.000400	<0.000400	<0.000100	<0.000500	<0.000100	<0.000500	<0.000100	<0.000100	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.000500	0.000501 J	<0.000500	0.00320	<0.00250	<0.000500	0.00502 J	<0.000500	U (0.00111)	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.000500	<0.000500	<0.000500	0.000222 J	<0.000500	0.000365 J	<0.000500	0.000345 J	0.000424 J	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.805	0.809	1.06	1.21 J*	1.21	1.17	1.08	1.01	0.954	1.75	1.04	1.00
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000200	<0.000200	<0.000200	<0.000100	<0.000500	0.000163 J	<0.000500	<0.000100	<0.000100	---	---	---
Lithium	None	Not Applicable	0.4282 (UTL)	mg/L	0.0673	0.0682	0.0627	0.0646	0.0605 J	0.0669	0.0908 J	0.0610	0.0654	---	0.0607	0.0579
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000100	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.00219	0.00197 J	0.00156 J	0.00143 J	<0.00500	0.00163 J	<0.00500	0.00199 J	0.00190 J	---	0.00219	0.00198 J
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.000600	<0.000600	<0.000600	0.000386 J	<0.00150	0.000332 J	<0.00300	<0.000300	<0.000300	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000500	<0.000500	<0.000500	<0.000800	<0.00400	<0.000800	<0.00400	<0.000800	<0.000800	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.26 +/- 0.315	0.881 +/- 0.248	0.945 +/- 0.304	1.48 +/- 0.362	1.11 +/- 0.402	1.57 +/- 0.440	1.08 +/- 0.301	0.774 +/- 0.234	1.12 +/- 0.306	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	107	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	44.9	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	11.2	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	282	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Temperature	None	Not Applicable	Not Applicable	ºC	20.76	---	22.35	22.95	14.55	15.10	17.67	22.39	22.70	21.58	25.75	22.84
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.36	---	7.45	7.46	7.12	7.30	7.29	7.31	7.28	7.67	7.18	7.27
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,031	---	2,068	2,129	2,104	2,084	2,087	2,072	2,072	2,051	2,079	2,085
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.57	---	0.09	0.05	0.25	1.83	1.29	0.15	0.13	1.75	3.56	3.72
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-24.2	---	-6.6	-107.8	-142.5	-123.8	33.1	72.0	8.3	-34.6	177.1	153.0
Turbidity	None	Not Applicable	Not Applicable	NTU	0.57	---	2.39	1.75	2.94	1.94	0.44	0.68	0.53	0.91	0.02	0.84
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	7.85	---	8.90	6.75	4.55	3.24	5.18	7.28	7.36	7.56	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	33.77	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-10 28-Sep-18	MW-10 9-Jan-19		MW-10 23-Apr-19	DUP-1 23-Apr-19	MW-10 30-Sep-19	MW-10 16-Jun-20
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2		ASSESSMENT MON. #3	ASSESSMENT MON. #4
Boron	None	1.935	Not Applicable	mg/L	3.04	3.71	3.40	3.38	3.48	2.71	2.87
Calcium	None	961.40	Not Applicable	mg/L	109	155	151	154	146	141	129
Chloride	250	11.6	Not Applicable	mg/L	35.3	36.8	35.6	33.0	6.84	34.8	35.9
Fluoride	4	2.84	Not Applicable	mg/L	1.06	1.08	1.15	0.992	<0.250	1.11	1.09
pH (laboratory)	6.5 - 8.5	8	Not Applicable	S.U.	8.2	7.21	---	7.94	7.96	7.22	7.12
Sulfate	250	2,156	Not Applicable	mg/L	835	990 B	1,010 B	976	189	938	1,030
Total Dissolved Solids	500	1,632	Not Applicable	mg/L	1,510	1,450	1,500	1,560	1,620	1,530	1,580
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2		ASSESSMENT MON. #3	ASSESSMENT MON. #4
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000800	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.000400	0.000979 J	0.000841 J	0.000645 J	0.000688 J	0.000575 J	0.000731 J
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0207	0.0237	0.0227	0.0266	0.0252	0.0224	0.0251
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.000100	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000100	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	0.000518 J	<0.000400	<0.000400	0.000471 J	<0.000400	<0.000400	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000151 J	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Fluoride	4	Not Applicable	4 (MCL)	mg/L	1.06	1.08	1.15	0.992	<0.250	1.11	1.09
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000100	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.4282 (UTL)	mg/L	0.0593	0.0705	0.0687	0.0756	0.0734	0.0639	0.0665
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000100	<0.0000300	0.0000460 J	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.00162 J	0.00198 J	0.00193 J	0.00263 J	0.00209 J	0.00182 J	0.00202 J
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.000300	<0.0011	<0.0011	0.00180 J	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000800	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.12 +/- 0.314	0.97	---	<0.66	0.77	<0.7	1.31
Other Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2		ASSESSMENT MON. #3	ASSESSMENT MON. #4
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5.00	<5.00	---	<5.00	<5.00	6.00 J	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	112	---	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	55.4	53	---	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.35	1.42	1.36	1.37	0.261 J	0.244	<0.0600
Potassium	None	Not Applicable	Not Applicable	mg/L	---	13.2	12.8	---	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	299	288	---	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	2,020	2080	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---
Field Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2		ASSESSMENT MON. #3	ASSESSMENT MON. #4
Temperature	None	Not Applicable	Not Applicable	ºC	22.10	14.90	---	18.20	---	26.33	21.86
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.40	7.36	---	7.82	---	7.43	7.57
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,109	2,034	---	2,079	---	2,102	1,967
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.44	2.62	---	6.38	---	1.20	3.58
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	101.2	229.1	---	127.6	---	35.2	-12.7
Turbidity	None	Not Applicable	Not Applicable	NTU	6.98	0.76	0.40	0.42	---	1.37	2.09
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	---	3.09	---	18.05	---	13.01	11.39
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID:	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	DUP 3	MW-11	MW-11	MW-11 (Shallow)	MW-11 (Deep) Verification
				Sample Date:	7-Jun-16	1-Aug-16	5-Oct-16	9-Dec-16	2-Feb-17	7-Apr-17	8-Jun-17	8-Jun-17	14-Aug-17	24-May-18	2-Aug-18	10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Boron	None	1.935	Not Applicable	mg/L	2.82	2.65	2.87	2.51	0.758	3.11	3.47	3.52 J*	3.13	3.82	0.344	3.09
Calcium	None	961.40	Not Applicable	mg/L	70.9	67.3	51.6	56.1	58.4	57.1	58.7	58.2	45.4	54.9	44.4	54.9
Chloride	250	11.6	Not Applicable	mg/L	61.6	55.9	60.1	59.3	52.7	56.3	58.0	52.4	49.5	56.6	58.4	62.2
Fluoride	4	2.84	Not Applicable	mg/L	1.25	1.49	1.73 J*	1.52	1.59	1.68	1.47	1.49 J*	1.45	2.20	1.53	1.51
pH (laboratory)	6.5 - 8.5	8	Not Applicable	S.U.	7.78	7.6	7.8	8.0	7.8	7.9	7.3	7.4	7.3	8.0	7.7	7.8
Sulfate	250	2,156	Not Applicable	mg/L	854	669	654	675	588	702	637	564	673	644	636	647
Total Dissolved Solids	500	1,328	Not Applicable	mg/L	1,270	1,280	1,270	1,220	1,220	1,200	1,250	1,240	1,200	1,290	1,240	1,260
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000500	<0.000500	<0.000800	0.00438 J	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.000665 J	<0.00250	0.000659 J	<0.00200	0.000506 J	0.000563 J	0.000853 J	0.000658 J	0.00308 J	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0262	0.0233	0.0204	0.0191	0.0221	0.0217	0.0190	0.0193 J*	0.0196	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.00100	<0.00100	<0.000100	<0.000500	<0.000100	0.000361 U	<0.000100	<0.000100	<0.000100	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000400	<0.000400	<0.000100	<0.000500	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.000500	<0.000500	<0.000500	<0.00250	<0.000500	<0.000500	0.000614 J	0.00138 J	U (0.00121)	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.000500	<0.000500	<0.000100	<0.000500	<0.000100	<0.000100	0.000172 J	<0.000100	0.000187 J	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	1.25	1.49	1.73 J*	1.52	1.59	1.68	1.47	1.49 J*	1.45	2.20	1.53	1.51
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000200	<0.000200	<0.000100	<0.000500	<0.000100	<0.000100	<0.000100	0.00107 J	<0.000100	---	---	---
Lithium	None	Not Applicable	0.4282 (UTL)	mg/L	0.0600	0.0738	0.0567	0.0486 J	0.0562	0.0549	0.0508	0.0508 J*	0.0505	---	0.0511	0.0513
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.00291	0.00264	0.00262	<0.00500	0.00274	0.00225	0.00275	0.00481	0.00272	---	0.00293	0.00331
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.000600	<0.00300	<0.000300	<0.00150	<0.000300	<0.000300	0.000432 J	<0.000300	<0.000300	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000500	<0.000500	<0.000800	<0.00400	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	0.546 +/- 0.247	0.924 +/- 0.297	0.752 +/- 0.307	1.40 +/- 0.419	0.480 +/- 0.310	0.708 +/- 0.264	0.338 +/- 0.211	0.661 +/- 0.250	1.01 +/- 0.296	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	171	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	16.3	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	7.16	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	352	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE	VERIFICATION SAMPLE
Temperature	None	Not Applicable	Not Applicable	ºC	19.87	23.27	21.85	16.16	16.01	19.80	20.53	---	21.68	21.01	25.94	20.89
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	7.21	7.19	7.65	7.63	7.68	7.60	7.34	---	7.62	7.71	7.17	7.56
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	1,811	1,945	1,907	1,890	1,867	1,865	1,858	---	1,886	1,865	1,934	1,942
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	2.16	1.00	0.02	0.13	2.31	2.65	0.32	---	0.33	1.69	2.52	1.28
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-9.8	16.3	-119.9	-142.1	-120.8	-20.8	116.2	---	5.0	-189.7	176.9	56.4
Turbidity	None	Not Applicable	Not Applicable	NTU	1.35	1.40	1.02	1.04	0.69	1.14	0.97	---	3.30	0.31	0.41	3.85
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	8.30	9.28	9.16	8.61	7.49	7.46	7.90	---	8.35	7.46	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	32.79	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-11 28-Sep-18	MW-11 15-Jan-19		MW-11 23-Apr-19	MW-11 30-Sep-19	MW-11 16-Jun-20
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Boron	None	1.935	Not Applicable	mg/L	3.16	3.18	3.25	3.29	2.38	2.47
Calcium	None	961.40	Not Applicable	mg/L	36.0	47.6	54.1	57.6	46.8	44.5
Chloride	250	11.6	Not Applicable	mg/L	53.9	56.3	56.2	57.2	56.1	57.5
Fluoride	4	2.84	Not Applicable	mg/L	1.55	1.45	0.561	1.53	1.59	1.57
pH (laboratory)	6.5 - 8.5	8	Not Applicable	S.U.	8.4	7.69	---	8.12	6.95	7.23
Sulfate	250	2,156	Not Applicable	mg/L	639	637	633	659	681	718
Total Dissolved Solids	500	1,328	Not Applicable	mg/L	1,230	1,220	1,200	1,220	1,250	1,260
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000800	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.000400	0.000481 J	<0.000400	<0.000400	<0.000400	<0.000400
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0153	0.0213	0.0216	0.0232	0.0171	0.0214
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.000100	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000100	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.000500	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.000100	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Fluoride	4	Not Applicable	4 (MCL)	mg/L	1.55	1.45	0.561	1.53	1.59	1.57
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000100	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.4282 (UTL)	mg/L	0.0443	0.0599	0.0641	0.0675	0.0532	0.0550
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000100	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.00252	0.00333 J	0.00317 J	0.00338 J	0.00340 J	0.00307 J
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.000300	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000800	0.000329 J	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.14 +/- 0.315	<0.94	---	<0.67	<0.71	0.77
Other Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5.00	<5	---	<5.00	<5.00	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	187	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	18.3	19.5	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.355	0.668	0.66	1.70	0.379	1.15
Potassium	None	Not Applicable	Not Applicable	mg/L	---	7.90	7.81	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	356	360	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	1,840	1,850	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Field Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Temperature	None	Not Applicable	Not Applicable	ºC		11.90	---	18.23	23.81	20.40
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.		7.67	---	8.03	7.65	7.72
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm		1,844	---	1,869	1,915	1,798
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L		0.71	---	4.86	3.29	3.00
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV		315.2	---	-67.1	-81.6	-25.6
Turbidity	None	Not Applicable	Not Applicable	NTU		9.03	1.15	1.14	3.09	2.73
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft		6.76	---	14.50	12.68	10.98
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-22A 2-Jun-16	MW-22A 1-Aug-16	DUP 3 1-Aug-16	MW-22A 3-Oct-16	MW-22A 6-Dec-16	MW-22A 1-Feb-17	MW-22A 5-Apr-17	MW-22A 7-Jun-17	MW-22A 11-Aug-17	MW-22A 22-May-18	MW-22A (Deep) 10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	VERIFICATION SAMPLE
Boron	None	Background Well (Not Applicable)	Not Applicable	mg/L	1.69	1.43	1.40	1.11	1.74	1.48	2.11	1.39	1.77	1.74	2.18
Calcium	None		Not Applicable	mg/L	624	853	848	762	832	577	933	942 J*	559	636	697
Chloride	250		Not Applicable	mg/L	3.33	2.86	2.82	2.33	2.39	2.49	2.21 J*	2.12 J*	2.28	2.60	2.41
Fluoride	4		Not Applicable	mg/L	0.376	0.368	0.314	0.625	0.402 J*	0.415	0.279 J*	0.305 J*	0.341	2.24	0.315
pH (laboratory)	6.5 - 8.5		Not Applicable	S.U.	6.99	7.0	7.0	6.8	7.2	6.9	6.9	7.0	6.8	7.0	7.1
Sulfate	250		Not Applicable	mg/L	1,810 J*	1,770	1,770	1,810	1,850	1,710	1,930	1,900	2,030	1,940	1,860
Total Dissolved Solids	500		Not Applicable	mg/L	3,060	2,870	3,050	2,820	2,720	2,910	2,900	2,990	3,030	3,090	3,050
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	VERIFICATION SAMPLE
Antimony	0.006	Not Applicable	Background Well (Not Applicable)	mg/L	<0.00250	<0.000500	<0.000500	<0.00160	<0.00400	<0.000800	<0.000800	<0.00800	<0.000800	---	---
Arsenic	0.010	Not Applicable		mg/L	0.00255 J	0.00412	0.00417	0.00324 J	0.00241 J	0.00154J	0.00324	<0.00400	0.000670 J	---	---
Barium	2	Not Applicable		mg/L	0.0167	0.0200	0.0229	0.0262	0.0338	0.0177	0.0164	0.0103 J	0.0114	---	---
Beryllium	0.004	Not Applicable		mg/L	<0.00500	<0.00100	<0.00100	<0.000200	<0.000500	<0.000100	U (0.000409)	<0.00100	<0.000100	---	---
Cadmium	0.005	Not Applicable		mg/L	<0.00200	<0.000400	<0.000400	<0.000200	<0.000500	<0.000100	<0.000100	<0.00100	<0.000100	---	---
Chromium	0.1	Not Applicable		mg/L	0.00315 J	<0.000500	0.000726 J	<0.00100	<0.00250	0.000677 J	<0.000500	<0.00500	<0.000500	---	---
Cobalt	None	Not Applicable		mg/L	<0.00250	0.000998 J	0.00106 J	0.000582 J	0.000578 J	0.000381 J	0.000153 J	<0.00100	0.000158 J	---	---
Fluoride	4	Not Applicable		mg/L	0.376	0.368	0.314	0.625	0.402 J*	0.415	0.279 J*	0.305 J*	0.341	2.24	0.315
Lead	0.015	Not Applicable		mg/L	<0.00100	<0.000200	0.000231 J	<0.000100	<0.000500	0.000127 J	<0.000100	<0.00100	0.000105 J	---	---
Lithium	None	Not Applicable		mg/L	0.342	0.290	0.288	0.337	0.351	0.276	0.303	0.245 J	0.298	---	0.329
Mercury	0.002	Not Applicable		mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150 UJ	<0.000150	<0.000150	<0.000150	<0.000150	---	---
Molybdenum	None	Not Applicable		mg/L	<0.00250	0.000562 J	0.000653 J	<0.00200	<0.00500	<0.00100	<0.00100	<0.0100	<0.00100	---	<0.00100
Selenium	0.05	Not Applicable		mg/L	<0.00300	<0.000600	<0.000600	0.000622 J	<0.00150	0.000443 J	<0.00300	<0.00300	<0.000300	---	---
Thallium	0.002	Not Applicable		mg/L	<0.00250	<0.000500	<0.000500	<0.00160	<0.00400	<0.000800	<0.000800	<0.00800	<0.000800	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable		pCi/L	0.842 +/- 0.297	0.629 +/- 0.286	0.177 +/- 0.245 U	1.05 +/- 0.299	1.01 +/- 0.400	0.430 +/- 0.299 U	0.220 +/- 0.228 U	0.277 +/- 0.212 U	0.496 +/- 0.345 U	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	VERIFICATION SAMPLE
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	231	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	87.1	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	14.4	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	140	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	VERIFICATION SAMPLE
Temperature	None	Not Applicable	Not Applicable	ºC	19.36	23.71	---	21.52	15.93	19.96	18.01	20.23	23.05	20.84	24.37
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.98	6.93	---	6.83	6.77	6.80	6.80	6.85	6.76	7.01	7.02
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,799	3,075	---	3,156	3,172	3,176	3,138	3,178	3,218	3,135	3,244
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	2.02	0.40	---	0.27	0.40	0.34	2.10	1.58	0.43	2.18	2.72
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	138.0	-9.7	---	-76.3	-133.1	-95.1	77.9	4.2	64.2	-14.8	-30.2
Turbidity	None	Not Applicable	Not Applicable	NTU	2.80	10.5	---	1.45	0.77	0.51	0.72	0.81	5.72	2.09	3.67
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	14.25	15.85	---	16.02	16.63	15.78	14.94	15.04	15.23	14.75	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	28.43	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-22A 3-Oct-18	MW-22A 16-Jan-19		MW-22A 25-Apr-19	MW-22A 30-Sep-19	MW-22A 18-Jun-20
Detection Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Boron	None	Background Well (Not Applicable)	Not Applicable	mg/L	1.45	1.78	1.64	1.88	1.49	2.82
Calcium	None		Not Applicable	mg/L	702	643	613	507	481	754
Chloride	250		Not Applicable	mg/L	2.40	2.24	2.24	2.56	2.39	2.34
Fluoride	4		Not Applicable	mg/L	0.329	0.299	0.464	0.374 J	0.364	0.237
pH (laboratory)	6.5 - 8.5		Not Applicable	S.U.	7.4	6.49	---	7.61	6.74	7.08
Sulfate	250		Not Applicable	mg/L	1,830	1,990	1,920	1,740	1,880	2,160
Total Dissolved Solids	500		Not Applicable	mg/L	1,910	3,000	3,010	3,170	3,030	3,390
Assessment Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Antimony	0.006	Not Applicable	Background Well (Not Applicable)	mg/L	<0.0008	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable		mg/L	0.000486 J	0.000642 J	0.000760 J	0.000612 J	0.00142 J	0.00134 J
Barium	2	Not Applicable		mg/L	0.00897	0.00592	0.00370 J	0.00618	0.00690	0.00796
Beryllium	0.004	Not Applicable		mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable		mg/L	<0.0001	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable		mg/L	0.000707 J	<0.000400	<0.000400	<0.000400	<0.000400	0.000771 J
Cobalt	None	Not Applicable		mg/L	<0.0001	0.000770 J	0.000259 J	0.000251 J	0.000946 J	<0.000200
Fluoride	4	Not Applicable		mg/L	0.329	0.299	0.464	0.374 J	0.364	0.237
Lead	0.015	Not Applicable		mg/L	<0.0001	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable		mg/L	0.305	0.294	0.289	0.345	0.256	0.501
Mercury	0.002	Not Applicable		mg/L	<0.000100	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable		mg/L	<0.001	<0.000600	0.000822 J	<0.000600	0.000787 J	<0.000600
Selenium	0.05	Not Applicable		mg/L	0.000335 J	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable		mg/L	<0.0008	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable		pCi/L	1.04 +/- 0.320	0.71	---	<0.84	<0.72	1
Other Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	6.24 J	<5	---	<5.00	15.0	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	249
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	256	---	---	---	249
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	<5
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.0509(J)
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<0.0120
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	<0.02
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	107	101	---	---	126
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	0.000773(J)
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.458	<0.03	<0.03	<0.150	0.198	<0.0600
Potassium	None	Not Applicable	Not Applicable	mg/L	---	17.8	16.7	---	---	21.7
Sodium	None	Not Applicable	Not Applicable	mg/L	---	169	165	---	---	202
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	3,180	3170	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	1.52
Field Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Temperature	None	Not Applicable	Not Applicable	ºC	20.90	13.60	---	17.89	22.78	23.52
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.75	6.75	---	7.19	7.02	6.97
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,277	3,181	---	3,208	3,236	3,013
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.44	0.90	---	4.05	1.23	3.35
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	275.1	275.6	---	43.2	-110.1	-36.5
Turbidity	None	Not Applicable	Not Applicable	NTU	2.71	51.50	4.90	3.81	1.89	9.49
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft		14.01	---	18.09	17.79	16.15
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-23A 6-Jun-16	MW-23A 3-Aug-16	MW-23A 3-Oct-16	DUP 3 3-Oct-16	MW-23A 7-Dec-16	MW-23A 1-Feb-17	MW-23A 6-Apr-17	MW-23A 8-Jun-17	MW-23A 14-Aug-17	MW-23A 23-May-18	MW-23A (Shallow) 2-Aug-18	MW-23A (Deep) 10-Aug-18
Detection Monitoring Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Boron	None	Background Well (Not Applicable)	Not Applicable	mg/L	1.12	1.23	1.48	1.52	1.52	1.66	1.17	1.21 J*	1.24	1.81	1.14	2.36
Calcium	None		Not Applicable	mg/L	716	593	605	573	661	555	484	827	527	659	553	659
Chloride	250		Not Applicable	mg/L	11.4	11.1	11.6	11.6	9.99	10.1	9.23	10.4	9.60	12.8	9.78	10.7
Fluoride	4		Not Applicable	mg/L	0.737	0.312	0.671	0.575	0.451 J*	0.483	0.331	0.322 J*	1.50	1.35	0.385	0.368
pH (laboratory)	6.5 - 8.5		Not Applicable	S.U.	6.98	8.0	6.9	6.8	7.5	7.0	6.9	6.8	6.9	6.9	7.1	7.0
Sulfate	250		Not Applicable	mg/L	2310	1,820	1,810	1,990	2,070	1,740	1,720	1,850	1,560	1,880	1,690	1,740
Total Dissolved Solids	500		Not Applicable	mg/L	2960	3,080	3,040	3,080	2,950	2,950	2,850	2,990	3,050	3,080	2,830	2,850
Assessment Monitoring Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Antimony	0.006	Not Applicable	Background Well (Not Applicable)	mg/L	<0.000500	<0.00100	<0.00160	<0.00160	<0.00400	<0.000800	<0.00400	<0.000800	<0.000800	---	---	---
Arsenic	0.010	Not Applicable		mg/L	0.00228	0.00237 J	0.00277 J	0.00255 J	<0.00200	0.00163 J	0.00213 J	0.00321 J*	0.00262 J	---	---	---
Barium	2	Not Applicable		mg/L	0.0119	0.00998	0.0141	0.0129	0.0117	0.00789	0.0209	0.00589 J*	0.00510	---	---	---
Beryllium	0.004	Not Applicable		mg/L	<0.00100	<0.00200	<0.000200	<0.000200	<0.000500	<0.000100	<0.000500	<0.000100	<0.000100	---	---	---
Cadmium	0.005	Not Applicable		mg/L	<0.000400	<0.000800	<0.000200	<0.000200	<0.000500	<0.000100	<0.000500	<0.000100	<0.000100	---	---	---
Chromium	0.1	Not Applicable		mg/L	<0.000500	<0.00100	<0.00100	<0.00100	<0.00250	<0.000500	0.00376 J	<0.000500	U (0.00133)	---	---	---
Cobalt	None	Not Applicable		mg/L	0.000570 J	<0.00100	0.000903 J	0.000785 J	0.000996 J	0.000647 J	0.000806 J	<0.000100	0.000927 J	---	---	---
Fluoride	4	Not Applicable		mg/L	0.737	0.312	0.671	0.575	0.451 J*	0.483	0.331	0.322 J*	1.50	1.35	0.385	0.368
Lead	0.015	Not Applicable		mg/L	<0.000200	<0.000200	<0.000200	<0.000200	<0.000500	<0.000100	0.000631 J	<0.000100	0.000224 J	---	---	---
Lithium	None	Not Applicable		mg/L	0.261	0.261	0.311	0.305	0.264	0.277	0.269	0.231 J*	0.228	---	0.211	0.270
Mercury	0.002	Not Applicable		mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---
Molybdenum	None	Not Applicable		mg/L	<0.000500	<0.00100	<0.00200	<0.00200	<0.00500	<0.00100	0.00559 J	<0.00100	<0.00100	---	<0.00100	<0.00100
Selenium	0.05	Not Applicable		mg/L	<0.000600	0.00141 J	0.000640 J	<0.000600	<0.00150	<0.000300	<0.00150	0.000740 J	<0.000300	---	---	---
Thallium	0.002	Not Applicable		mg/L	<0.000500	<0.00100	<0.00160	<0.00160	<0.00400	<0.000800	<0.00400	<0.000800	<0.000800	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable		pCi/L	1.26 +/- 0.325	1.18 +/- 0.374	1.10 +/- 0.309	0.765 +/- 0.284	0.547 +/- 0.335	1.14 +/- 0.370	0.558 +/- 0.262	0.539 +/- 0.250	0.995 +/- 0.311	---	---	---
Other Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	292	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	86.5	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	13.4	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	126	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	**INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND**									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Temperature	None	Not Applicable	Not Applicable	ºC	21.37	22.68	21.63	---	17.67	19.13	20.24	19.12	22.10	20.98	24.05	24.44
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.68	6.79	6.81	---	6.76	6.83	6.84	6.76	6.81	6.96	6.74	6.97
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2969	3,154	3,269	---	3,209	3,224	3,171	3,152	3,153	3,160	3,075	3,081
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.45	0.30	0.31	---	0.77	1.19	1.10	1.58	0.50	1.75	1.60	2.83
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-52.2	20.4	-75.9	---	-116.2	-87.5	-9.9	70.3	19.6	-28.1	185.2	-40.2
Turbidity	None	Not Applicable	Not Applicable	NTU	6.36	5.00	4.82	---	2.34	0.55	1.92	1.53	1.09	3.12	26.1	39.7
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	14.76	14.96	15.00	---	14.60	14.73	14.53	14.65	14.81	14.64	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	23.41	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-23A 26-Sep-18	MW-23A 8-Jan-19		MW-23A 24-Apr-19	MW-23A 3-Oct-19	MW-23A 16-Jun-20
Detection Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Boron	None	Background Well (Not Applicable)	Not Applicable	mg/L	1.52	1.41	1.41	1.42	1.01	1.12
Calcium	None		Not Applicable	mg/L	546	651	605	534	521	465
Chloride	250		Not Applicable	mg/L	10.4 J*	10.7	10.6	11.6	12.6	12.5
Fluoride	4		Not Applicable	mg/L	0.363 J*	0.361	1.49	0.486 J	0.402	0.374
pH (laboratory)	6.5 - 8.5		Not Applicable	S.U.	7.2	6.66	---	7.54	6.79	6.58
Sulfate	250		Not Applicable	mg/L	1,770	1,860	1,870	1,770	1,790	1,850
Total Dissolved Solids	500		Not Applicable	mg/L	2,980	2,700	2,780	3,280	2,990	2,970
Assessment Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Antimony	0.006	Not Applicable	Background Well (Not Applicable)	mg/L	<0.000800	<0.0004	<0.0004	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable		mg/L	0.000642 J	0.00106 J	0.000812 J	0.00206	<0.000400	0.000721 J
Barium	2	Not Applicable		mg/L	0.00489	0.00440	0.00439	0.00467	0.00298 J	0.00298 J
Beryllium	0.004	Not Applicable		mg/L	<0.000100	<0.0002	<0.0002	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable		mg/L	<0.000100	<0.0002	<0.0002	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable		mg/L	0.000785 J	<0.0004	<0.0004	<0.000400	0.000700 J	0.000552 J
Cobalt	None	Not Applicable		mg/L	0.000176 J	0.000377 J	0.000597 J	0.000515 J	<0.000200	0.000286 J
Fluoride	4	Not Applicable		mg/L	0.363 J*	0.361	1.49	0.486 J	0.402	0.374
Lead	0.015	Not Applicable		mg/L	<0.000100	<0.0006	<0.0006	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable		mg/L	0.152	0.294	0.297	0.282	0.206	0.227
Mercury	0.002	Not Applicable		mg/L	<0.000100	<0.0000300	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable		mg/L	<0.00100	<0.0006	<0.0006	<0.000600	<0.000600	<0.000600
Selenium	0.05	Not Applicable		mg/L	<0.000300	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable		mg/L	<0.000800	<0.0002	<0.0002	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable		pCi/L	0.821 +/- 0.269	<0.73	---	<0.75	<0.77	1.26
Other Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5.00	<5.00	---	<5.00	<5.00	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	310	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	104	104	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.053 J	<0.03	<0.03	<0.150	<0.0300	<0.0300
Potassium	None	Not Applicable	Not Applicable	mg/L	---	15.5	15.2	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	153	152	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	3,200	3140.0	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Field Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Temperature	None	Not Applicable	Not Applicable	ºC	21.30	18.1	---	18.95	23.4	21.52
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.80	6.69	---	7.15	6.69	6.87
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,246	3240	---	3,167	3,544	3,011
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L		1.17	---	4.19	0.54	2.34
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV		95.2	---	68.6	33.0	-28.3
Turbidity	None	Not Applicable	Not Applicable	NTU		1.42	---	3.35	1.80	8.11
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft		14.64	---	16.76	14.84	16.23
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-24 6-Jun-16	MW-24 2-Aug-16	MW-24 4-Oct-16	MW-24 8-Dec-16	MW-24 2-Feb-17	DUP-3 2-Feb-17	MW-24 6-Apr-17	MW-24 8-Jun-17	MW-24 7-Aug-17	MW-24 23-May-18	MW-24 (Shallow) 2-Aug-18	MW-24 (Deep) Verification 10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Boron	None	1.935	Not Applicable	mg/L	1.09	0.999	1.03	1.21 J*	1.30 J*	1.55	1.19 J*	1.48 J*	1.13 J*	1.05	0.112	0.377
Calcium	None	961.40	Not Applicable	mg/L	674	581	499	609	802	726	940	715	531	787	573	31.1
Chloride	250	11.6	Not Applicable	mg/L	18.3	15.4	19.0 J*	14.7	16.6	15.8	14.6	15.5	12.5	19.1	24.9	22.3
Fluoride	4	2.84	Not Applicable	mg/L	0.160	0.325	0.360 J*	0.344 J*	0.428 J*	0.417 J*	0.257	0.228 J*	0.313 J*	2.12	0.277	0.246
pH (laboratory)	6.5 - 8.5	8	Not Applicable	S.U.	6.86	8.0	7.0	7.6	7.0	7.0	6.9	6.7	6.7	7.0	7.2	7.0
Sulfate	250	2,156	Not Applicable	mg/L	2,470	1,890	1,850	2,110	1,900	1,880	1,970	1,820	1,700	2,030	1,930	1,910
Total Dissolved Solids	500	3,333	Not Applicable	mg/L	3,200	3,140	3,010	3,030	3,030	2,980	3,200	3,140	3,170	3,230	3,180	3,270
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000500	<0.00100	<0.00400	U (0.00451)	<0.000800	<0.000800	<0.00400	<0.00800	<0.000800	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	0.00158 J	0.00122 J	<0.00200	<0.00200	<0.00200	0.00117 J	<0.00200	<0.00400	0.00443	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.00438	0.00360	0.00400 J	0.00763 J	U (0.00512)	0.00761	0.00617 J	0.00724 J	0.00646 J*	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.00100	<0.00200	<0.000500	0.000551 J	<0.000100	<0.000100	<0.000500	<0.00100	<0.000100	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000400	<0.000800	<0.000500	<0.000500	<0.000100	<0.000100	<0.000500	<0.00100	<0.00100	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.000500	<0.00100	<0.00250	<0.00250	<0.00250	<0.000500	0.00578 J	<0.00500	<0.000500	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.000500	<0.00100	<0.000500	0.000693 J	<0.000500	0.000260 J	<0.000500	<0.00100	0.000577 J	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.160	0.325	0.360 J*	0.344 J*	0.428 J*	0.417 J*	0.257	0.228 J*	0.313 J*	2.12	0.277	0.246
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000200	<0.000200	<0.000500	<0.000500	<0.000100	<0.000100	<0.000500	<0.00100	<0.000100	---	---	---
Lithium	None	Not Applicable	0.4282 (UTL)	mg/L	0.369	0.347	0.328	0.319 J	0.371 J*	0.385	0.392 J*	0.383 J	0.348 J*	---	0.363	0.338
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	<0.000150	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.000500	<0.00100	<0.00500	<0.00500	<0.00500	<0.00100	<0.00500	<0.0100	<0.00100	---	<0.00100	<0.00100
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.000600	<0.00120	<0.00150	<0.00150	<0.00150	0.000459 J	0.00300 J	<0.00300	0.000447 J	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000500	<0.00100	<0.00400	<0.00400	<0.000800	<0.000800	<0.00400	<0.00800	<0.000800	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	0.446 +/- 0.263	0.758 +/- 0.381	0.910 +/- 0.342	0.721 +/- 0.369	0.728 +/- 0.295	0.547 +/- 0.306	0.769 +/- 0.265	0.819 +/- 0.291	1.32 +/- 0.332	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	284	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	85.1	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	10.1	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	213	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									**DETECTION MON. #1**	**EVALUATION SAMPLE**	**VERIFICATION SAMPLE**
Temperature	None	Not Applicable	Not Applicable	ºC	21.10	23.03	22.15	15.30	16.72	---	18.99	20.76	21.68	21.61	24.93	21.92
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.67	6.94	6.83	6.79	6.79	---	6.82	6.73	6.67	6.90	6.62	6.58
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,239	3,360	3,487	3,454	3,469	---	3,460	3,426	3,362	3,356	3,546	3,538
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.56	0.38	0.08	0.17	0.29	---	0.36	0.22	0.10	0.46	1.21	1.35
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-45.5	-0.5	-87.3	-181.7	-168.4	---	-22.4	62.4	39.4	-53.5	156.0	136.5
Turbidity	None	Not Applicable	Not Applicable	NTU	0.67	0.55	0.22	0.32	0.21	---	0.23	0.74	0.38	1.53	0.64	0.16
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	17.06	15.28	15.14	14.79	14.16	---	14.61	14.99	19.90	14.51	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	27.32	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
20. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-24	MW-24		DUP 1		MW-24	MW-24	MW-24
					27-Sep-18	9-Jan-19				24-Apr-19	3-Oct-19	16-Jun-20
Detection Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Boron	None	1.935	Not Applicable	mg/L	0.143	1.27	1.52	1.41	1.37	1.42	0.987	1.09
Calcium	None	961.40	Not Applicable	mg/L	61.7	533	697	671	685	530	532	450
Chloride	250	11.6	Not Applicable	mg/L	18.2	15.2	14.1	13.5	14.0	13.8	14.8	13.3
Fluoride	4	2.84	Not Applicable	mg/L	0.266	0.267	0.186	0.254	0.152	0.337 J	0.169	0.231
pH (laboratory)	6.5 - 8.5	8	Not Applicable	S.U.	8.0	6.55	---	6.55	---	7.48	6.77	6.56
Sulfate	250	2,156	Not Applicable	mg/L	1,950	2,230	2,090	2,120	2,080	1,850	1,880	1,990
Total Dissolved Solids	500	3,333	Not Applicable	mg/L	3,290	2,940	3,000	2,850	3,100	3,160	3,080	3,120
Assessment Monitoring Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000800	<0.000400	<0.000400	<0.0000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.000400	0.000548 J	0.000587 J	0.000625 J	0.000686 J	0.00153 J	<0.000400	<0.000400
Barium	2	Not Applicable	2 (MCL)	mg/L	0.00109 J	0.00782	0.00806	0.00878	0.00842	0.00899	0.00878	0.00853
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.000100	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000100	<0.000200	<0.000200	<0.000200	<0.0002	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.000500	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	<0.000100	0.00102 J	0.000967 J	0.000906 J	0.000867 J	0.00102 J	0.000794 J	0.000877 J
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.266	0.267	0.186	0.254	0.152	0.337 J	0.169	0.231
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000100	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Lithium	None	Not Applicable	0.4282 (UTL)	mg/L	0.0398 J*	0.376	0.408	0.322	0.320	0.376	0.277	0.295
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.0000300	<0.0000300	0.0000350 J	0.0000450 J	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.00100	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600	<0.000600
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	U (0.000308)	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000800	0.000503 J	<0.0002	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	0.829 +/- 0.228	0.63	---	<0.7	---	<0.71	<0.71	1.16
Other Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	<5.00	<5	---	<5	---	<5.00	6.00 J	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	<5	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	303	---	309	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	<5	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	96.7	111	115	111	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	0.366	<0.03	<0.03	<0.03	<0.03	<0.150	<0.0300	<0.0300
Potassium	None	Not Applicable	Not Applicable	mg/L	---	10.8	12.0	13.0	12.6	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	223	267	274	272	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	3,500	3390	---	3370	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---
Field Parameters				***Units***	ASSESSMENT MON. #1	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED	ASSESSMENT MON. #1 (RESAMPLE) FILTERED	ASSESSMENT MON. #2	ASSESSMENT MON. #3	ASSESSMENT MON. #4
Temperature	None	Not Applicable	Not Applicable	ºC	21.10	15.70	---	---	---	19.5	23.2	22.47
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.71	6.67	---	---	---	6.72	6.79	6.85
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,509	3,346	---	---	---	3,386	3,554	3,124
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.19	0.65	---	---	---	0.80	0.55	1.05
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	130.0	280.0	---	---	---	635	79.1	-34.4
Turbidity	None	Not Applicable	Not Applicable	NTU	3.45	---	---	---	---	0.33	1.60	2.31
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft		19.00	---	---	---	19.75	20.44	18.68
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-25R 13-Dec-16	MW-25R 26-Jan-17	MW-25R 3-Feb-17	MW-25R 29-Mar-17	DUP 1 29-Mar-17	MW-25R 7-Apr-17	MW-25R 31-May-17	MW-25R 9-Jun-17	MW-25R 14-Aug-17	MW-25R 24-May-18	MW-25R (Shallow) 2-Aug-18	DUP2 (Shallow) 2-Aug-18	MW-25R (Deep) 10-Aug-18
Detection Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE		VERIFICATION SAMPLE
Boron	None	1.935	Not Applicable	mg/L	2.41	2.61	2.59	1.20	1.20	0.633	0.937	0.967	1.15	1.20	0.303	0.395	3.38
Calcium	None	961.40	Not Applicable	mg/L	435	368	261	485	499	430	332	372	348	477	327	321	423
Chloride	250	11.6	Not Applicable	mg/L	11.4	12.8	11.8	10.9	10.8	11.8	9.12	9.79	10.4	11.4	29.8	30.8	28.5
Fluoride	4	2.84	Not Applicable	mg/L	0.616 J*	0.433	0.608	0.337	0.288	0.271	0.336	0.354	0.284	1.74	0.488	0.486	0.450
pH (laboratory)	6.5 - 8.5	8	Not Applicable	S.U.	7.8	7.2	7.2	6.9	6.9	7.2	6.8	6.8	6.7	7.5	7.2	7.2	7.2
Sulfate	250	2,156	Not Applicable	mg/L	1,260	935	1,060	846	869	886	708	671	681	1,010	1,370	1,380	1,480
Total Dissolved Solids	500	2,328	Not Applicable	mg/L	2,100	1,720	1,840	1,730	1,730	1,430	1,470	1,440	1,390	1,700	2,470	2,390	2,580
Assessment Monitoring Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE		VERIFICATION SAMPLE
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.00400	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.00400	<0.000800	---	---	---	---
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.00200	0.000954 J	0.00146 J	0.00270	0.00265	0.00137 J	0.00108 J	0.00269 J	<0.00200	---	---	---	---
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0404	0.0206	0.0298	0.00812	0.00805	0.00575	0.00656	0.0150	0.00505	---	---	---	---
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.000500	<0.000100	<0.000500	<0.000100	<0.000100	<0.000100	0.000109 J	<0.000500	<0.000100	---	---	---	---
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000500	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000500	<0.000100	---	---	---	---
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.00250	<0.000500	<0.00500	<0.00500	<0.00500	0.00145 U	0.00168 J	0.00649 J	U (0.00201)	---	---	---	---
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.00176 J	0.000456 J	0.00140 J	0.000353 J	0.000385 J	0.000254 J	<0.000100	0.00243 J	0.000749 J	---	---	---	---
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.616 J*	0.433	0.608	0.337	0.288	0.271	0.336	0.354	0.284	1.74	0.488	0.486	0.450
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	<0.000500	0.000414 J	0.00831	0.000437 J	0.000430 J	0.000466 J	0.000480 J	0.0141	0.000202 J	---	---	---	---
Lithium	None	Not Applicable	0.4282 (UTL)	mg/L	0.127 J	0.104	0.137	0.103	0.103	0.0728	0.0895	0.0777 J	0.0621	---	0.135	0.149	0.146
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000150	<0.000150	<0.000150	0.000100 UJ	0.000100 UJ	<0.000100	<0.000150	<0.000150	<0.000150	---	---	---	---
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	<0.00500	0.00120 J	0.00145 J	<0.00100	<0.00100	<0.00100	0.00124 J	<0.00500	0.00327	---	0.00155 J	0.00172 J	0.00212
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.00150	<0.000300	0.000378 J	0.000607 J	0.000537 J	<0.000300	<0.000300	<0.00150	<0.000300	---	---	---	---
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.00400	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.000800	<0.00400	<0.000800	---	---	---	---
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	2.11 +/- 0.519	0.870 +/- 0.378	0.813 +/- 0.338	0.614 +/- 0.235	0.459 +/- 0.246	0.532 +/- 0.278	0.0415 +/- 0.194 U	0.296 +/- 0.215 U	0.893 +/- 0.290	---	---	---	---
Other Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE		VERIFICATION SAMPLE
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	350	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	<5.00	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	29.2	---	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	7.32	---	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	93.3	---	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	---	---	---	---	---	---	---	---	---	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Field Parameters				***Units***	INITIAL EIGHT SAMPLES TO ESTABLISH BACKGROUND									DETECTION MON. #1	EVALUATION SAMPLE		VERIFICATION SAMPLE
Temperature	None	Not Applicable	Not Applicable	ºC	17.64	13.38	14.65	19.41	---	17.30	21.42	22.14	21.70	21.72	22.19	---	24.95
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.83	6.90	6.87	6.85	---	6.90	6.70	6.75	6.77	6.88	6.54	---	6.73
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	2,198	2,188	2,202	1,956	---	1,824	1,791	1,798	1,832	2,014	2,956	---	3,132
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	2.05	2.26	2.32	3.71	---	1.72	0.51	0.12	0.21	0.16	1.53	---	1.72
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	-93.8	-229.0	-60.0	-30.2	---	-72.5	-156.6	34.6	11.8	-81.5	196.3	---	148.0
Turbidity	None	Not Applicable	Not Applicable	NTU	29.7	2.71	4.82	97.3	---	17.7	41.1	3.15	2.84	0.43	3.11	---	3.82
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft	17.41	16.80	17.40	13.65	---	13.65	12.40	12.40	10.33	9.77	---	---	---
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	22.86	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX B
GROUNDWATER SAMPLE DATA TO DATE FOR SURFACE IMPOUNDMENT CCR UNIT
WESTERN FARMERS ELECTRIC COOPERATIVE - HUGO POWER STATION

Parameters	MCL or SMCL	Established Background (Det. Mon.)	Established GWPS (Ass. Mon.)	Sample ID: / Sample Date:	MW-25R 28-Sep-18	MW-25R 9-Jan-19		MW-25R 23-Apr-19	MW-25R 30-Sep-19	MW-25R 16-Jun-20
Detection Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Boron	None	1.935	Not Applicable	mg/L	1.55	1.24	1.29	0.944	1.07	0.997
Calcium	None	961.40	Not Applicable	mg/L	347	463	449	413	308	343
Chloride	250	11.6	Not Applicable	mg/L	16.3 J*	8.72	9.17	7.31	8.85	5.43
Fluoride	4	2.84	Not Applicable	mg/L	0.496	0.348	0.441	0.365	0.409	0.282
pH (laboratory)	6.5 - 8.5	8	Not Applicable	S.U.	7.6	6.96	---	7.47	6.48	6.59
Sulfate	250	2,156	Not Applicable	mg/L	1,230	1,060	1,090	952	1,030	820
Total Dissolved Solids	500	2,328	Not Applicable	mg/L	2,180	1,780	1,670	1,910	1,820	1,630
Assessment Monitoring Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Antimony	0.006	Not Applicable	0.006 (MCL)	mg/L	<0.000800	<0.000400	<0.000400	<0.000400	<0.000400	<0.000400
Arsenic	0.010	Not Applicable	0.01 (MCL)	mg/L	<0.00200	0.000825 J	0.000552 J	0.000630 J	<0.000400	0.000472 J
Barium	2	Not Applicable	2 (MCL)	mg/L	0.0113	0.00398 J	0.00361 J	0.00244 J	0.00514	<0.00190
Beryllium	0.004	Not Applicable	0.004 (MCL)	mg/L	<0.000100	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Cadmium	0.005	Not Applicable	0.005 (MCL)	mg/L	<0.000100	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Chromium	0.1	Not Applicable	0.1 (MCL)	mg/L	<0.000500	0.000691 J	<0.000400	<0.000400	<0.000400	<0.000400
Cobalt	None	Not Applicable	0.006 (ACL)	mg/L	0.000436 J	0.000503 J	<0.000200	0.000344 J	<0.000200	<0.000200
Fluoride	4	Not Applicable	4 (MCL)	mg/L	0.496	0.348	0.441	0.365	0.409	0.282
Lead	0.015	Not Applicable	0.015 (MCL)	mg/L	0.000229 J	0.000829 J	<0.000600	0.000819 J	<0.000600	<0.000600
Lithium	None	Not Applicable	0.4282 (UTL)	mg/L	0.141	0.0985	0.113	0.077	0.132	0.0596
Mercury	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000100	0.0000560 J	<0.0000300	<0.0000300	<0.0000300	<0.0000300
Molybdenum	None	Not Applicable	0.1 (ACL)	mg/L	0.00186 J	0.00134 J	0.00113 J	<0.000600	<0.000600	0.00101 J
Selenium	0.05	Not Applicable	0.05 (MCL)	mg/L	<0.000300	<0.0011	<0.0011	<0.00110	<0.00110	<0.00110
Thallium	0.002	Not Applicable	0.002 (MCL)	mg/L	<0.000800	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
Ra-226 + Ra-228 (combined)	5	Not Applicable	5 (MCL)	pCi/L	1.94 +/- 0.367	<0.71	---	1.06	0.87	<0.77
Other Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Chemical Oxygen Demand (COD)	None	Not Applicable	Not Applicable	mg/L	5.28 J	<5	---	5.00 J	<5.00	---
Total Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Carbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---
Bicarbonate Alkalinity as CaCO3	None	Not Applicable	Not Applicable	mg/L	---	375	---	---	---	---
Hydroxide Alkalinity	None	Not Applicable	Not Applicable	mg/L	---	<5	---	---	---	---
Iron, Total	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Iron, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Iron, Ferrous	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Magnesium	None	Not Applicable	Not Applicable	mg/L	---	49.4	46.6	---	---	---
Molybdenum, Dissolved	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Nitrate as N	10	Not Applicable	Not Applicable	mg/L	<0.248	<0.03	<0.03	<0.0600	0.354	1.74
Potassium	None	Not Applicable	Not Applicable	mg/L	---	8.59	8.78	---	---	---
Sodium	None	Not Applicable	Not Applicable	mg/L	---	134	131	---	---	---
Specific Conductance (laboratory)	None	Not Applicable	Not Applicable	umhos/cm	2,540	2160.0	---	---	---	---
Sulfide	None	Not Applicable	Not Applicable	mg/L	---	---	---	---	---	---
Field Parameters				***Units***	**ASSESSMENT MON. #1**	**ASSESSMENT MON. #1 (RESAMPLE) UNFILTERED**	**FILTERED**	**ASSESSMENT MON. #2**	**ASSESSMENT MON. #3**	**ASSESSMENT MON. #4**
Temperature	None	Not Applicable	Not Applicable	ºC	22.10	18.20	---	20.39	26.24	21.15
pH	6.5 - 8.5	Not Applicable	Not Applicable	S.U.	6.77	6.79	---	7.02	6.89	6.80
Specific Conductance	None	Not Applicable	Not Applicable	µmhos/cm	3,212	2,326	---	2,191	2,239	1,861
Dissolved Oxygen	None	Not Applicable	Not Applicable	mg/L	0.40	3.00	---	1.43	3.86	1.40
Oxidation-Reduction Potential	None	Not Applicable	Not Applicable	mV	33.0	135.2	---	100.3	62.7	-37.1
Turbidity	None	Not Applicable	Not Applicable	NTU	12.10	17.00	---	12.1	33.8	6.26
Depth to Water from TOC	None	Not Applicable	Not Applicable	ft		12.11	---	14.83	16.40	12.25
Total Depth from TOC	None	Not Applicable	Not Applicable	ft	---	---	---	---	---	---

Notes:

1. MCL : Maximum Contaminant Level: Values obtained from EPA Primary/Secondary Drinking Water Standards.
   The MCL value for lead is the EPA's Action Level.
2. mg/L : milligrams per liter.
3. pCi/L : picoCuries per liter.
4. S.U. : Standard Units.
5. ºC : degrees Celsius.
6. µmhos/cm : micromhos per centimeter.
7. mV : millivolts.
8. NTU : Nephelometric Turbidity Unit.
9. < : Analyte not detected at the laboratory method detection limit (MDL).
10. J : Result is less than the Reporting Limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
11. Cells shaded in blue indicate results that are above the laboratory MDL.
19. The sulfate value for sample MW-25R collected June 9, 2017 was originally reported by the laboratory as 331 mg/L. The laboratory reprepared and analyzed the sample. The value for sulfate on this table is the result of the reanalysis.
13. --- : no analysis performed.
14. Data validation based on USEPA "National Functional Guidelines", OSWER 9355.0-132, EPA-540-R-014-002, Revision August 2014 for Organics and OSWER 9355.0-131, EPA-540-R-013-001, Revision August 2014 for Inorganics.
    U ( ) : The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
    UJ : The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
    J* : The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
    R : The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
15. TOC : Top of Casing.
16. ft : feet.
17. Water levels for Sampling (November-December 2016) were collected on November 28, 2016 with the exception of the new wells (MW-5S, MW-7S, MW-19S, MW-25R) where water levels were taken on December 8, 2016.
18. New pumps were installed in MW-5S, MW-7S, MW-19S, and MW-25R in January 2017.
19. H : Analyzed outside of holding time.

APPENDIX C

ODEQ APPROVAL LETTER

SCOTT A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

KEVIN STITT
Governor

April 28, 2020

Certified Mail
Return Receipt Requested

Mr. Kent Fletcher, Environmental Coordinator
Western Farmers Electric Cooperative
P.O. Box 429
Anadarko, Oklahoma 73005-0429

Re: Plan and Schedule for Analyzing SSIs for Molybdenum, Western Farmers Electric Cooperative Hugo Plant CCR Landfill, Choctaw County, Permit No. 3512008

Dear Mr. Fletcher:

The Department of Environmental Quality (DEQ) received the Plan and Schedule for Analyzing SSIs for Molybdenum (Plan) for the Western Farmers Electric Cooperative (WFEC) Hugo Facility (Facility). The Plan, dated March 4, 2020, was prepared by Altamira-US, LLC on behalf of WFEC. The Plan was submitted to comply with Oklahoma Administrative Code (OAC) 252:517-9-7(a) and DEQ's letter dated December 2, 2019. At the request of DEQ, a potentiometric surface map was provided via electronic mail on April 21, 2020.

During the January 2019 assessment monitoring event and April 2019 resampling event, Appendix B constituents were found to be at statistically significant levels (SSLs) above the groundwater protection standard (GWPS). Molybdenum at MW-15A, MW-16, MW-18, and MW-19S exceeded the GWPS during both events. It is noted that cobalt exceeded the GWPS in MW-21 and MW-7S during the January and April 2019 sampling events, respectively, but did not exhibit repeat exceedances. All monitoring wells exhibiting exceedances over GWPS are associated with the Facility's landfill; no exceedances above GWPS occurred at the surface impoundment.

WFEC submitted an Alternate Source Demonstration (ASD) dated September 30, 2019 regarding the exceedances for cobalt and molybdenum. DEQ's December 2, 2019 response agreed that sources other than the CCR unit may be causing the cobalt exceedances, but further action would be required to address the molybdenum exceedances in accordance with OAC 252:517-9-7(a).

The subject Plan includes a conceptual site model detailing the geologic/hydrogeologic setting, groundwater characteristics and quality, nearby groundwater use, and potential receptors. The Plan also addresses OAC 252:517-9-7(a) by providing a plan and schedule for analyzing the extent of the molybdenum exceedances.

It is proposed to install an additional five (5) shallow and four (4) deep downgradient monitoring wells to delineate the extent of molybdenum exceedances. The Plan states that the new monitoring wells will be installed within 45 days of DEQ approval of the Plan, with development and groundwater sampling to occur thereafter.

On March 30, 2020, DEQ granted a 60-day extension to groundwater sampling due to the ongoing COVID-19 situation. The timelines set forth in the Plan may begin at the end of the 60-day extension, or on May 30, 2020. This would set the 90-day deadline for completing the Assessment of Corrective Measures (ACM) at August 30, 2020. The completed ACM should summarize the initial findings of groundwater sampling and include the information required by OAC 252:517-9-7(c).

The Plan meets the requirements of OAC 252:517-9-7. DEQ considers the potential receptors of concern and exposure pathways analysis to be preliminary; more information needs to be collected during the ACM sampling events. Additionally, please add magnesium and potassium to the list of parameters to be analyzed in samples taken during ACM.

Should you have any questions regarding this letter, please contact Jeff Biddick at (405) 702-5141.

Sincerely,

Hillary Young

Hillary Young, P.E.
Chief Engineer
Land Protection Division

HY/jb

cc: Gerald Butcher, Western Farmers' Electric Cooperative
Christopher Schaefer, Cardinal Engineering, Inc.

APPENDIX D

BORING LOGS AND MONITORING WELL INSTALLATION DETAILS FOR CM-1A/1B, CM-2, CM-3A/3B, CM-4A/4B AND CM-5A/5B

LOG OF BORING NO. (CM-1A / CM-1B)

OWNER: WESTERN FARMERS ELECTRIC COOPERATVE

SITE: HUGO POWER STATION

PROJECT: WFEE160020

LITHOLOGY	DESCRIPTION GROUND SURFACE ELEV.	DEPTH (FT)	SAMPLES: NUMBER	RECOVERY	SAMPLE INTERVAL	FIELD SCREEN RESULTS	REMARKS
	SANDY CLAY (CH) –black/brown, moist, plastic, fossils noted - damp between 2.75 and 3 feet		1	3.5'	0-3.5'	NA	
	NO RECOVERY	5'					
		10'					
	SILTY CLAY (CH) – grey moist, plastic, fossils noted						
	SILTY CLAY (CH) – orange with grey and white mottling, moist, plastic, meadium stiff, weathered shale noted	11.5'	2	6.5'	10-16.5'	NA	
	NO RECOVERY	15'					
		20'					
	SILTY CLAY (CH) – light brown with black and orange mottline, moist, stiff, plastic		3	8.5'	20-28.5'	NA	
		25'					
	SHALE – black, hard	26'					
	LIMESTONE – tan, mixed with weathered shale	27'					
	NO RECOVERY	30'					

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The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOR1EHOLE DIA : 6.25"
WELL DIA: 2"

WATER LEVEL OBSERVATIONS
None During Drilling

ALTAMIRA
formerly known as Enwiro Clean Cardinal

BORING STARTED 06/17/20	
BORING COMPLETED 06/17/20	
INSPECTOR:AJ	DRILLER: Environmental Works
RIG: GeoProbe 8150 / Sonic	FORMEAN: Daniel

LOG OF BORING NO. (CM-1A / CM-1B)

OWNER: WESTERN FARMERS ELECTRIC COOPERATVE

SITE: HUGO POWER STATION

PROJECT: WFEE160020

LITHOLOGY	DESCRIPTION GROUND SURFACE ELEV.	DEPTH (FT)	SAMPLES: NUMBER	SAMPLES: RECOVERY	SAMPLES: SAMPLE INTERVAL	SAMPLES: FIELD SCREEN RESULTS	REMARKS
	SHALE –grey, hard, trace fossils	30'	4	5.2'	30-35.2'	NA	
	NO RECOVERY	35'	NO RECOVERY				
	SHALE – black, hard	38'					
		40'	5	8'	38-46'	NA	
	NO RECOVERY	45'	NO RECOVERY				
	END OF BORINGS **CM-1A AT 26 FEET** **CM-1B AT 47 FEET**						

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 6.25"
WELL DIA: 2"

WATER LEVEL OBSERVATIONS
None During Drilling

ALTAMIRA
formerly known as Enviro Clean Cardinal

BORING STARTED 06/17/20	
BORING COMPLETED 06/17/20	
INSPECTOR:AJ	DRILLER: Environmental Works
RIG: GeoProbe 8150 / Sonic	FORMEAN: Daniel

LOG OF BORING NO. (CM-2)

PAGE 1 OF 1

OWNER: WESTERN FARMERS ELECTRIC COOPERATVE

SITE: HUGO POWER STATION

PROJECT: WFEE160020

LITHOLOGY	DESCRIPTION GROUND SURFACE ELEV.	DEPTH (FT)	SAMPLES: NUMBER	RECOVERY	SAMPLE INTERVAL	FIELD SCREEN RESULTS	REMARKS
	GRAVELY CLAY (CH) –dark brown with orange and black mottling, moist, medium stiff, plastic - Becomes stiff at 3 feet - Limestone at 6-6.5 ft - Weathered black shale 8.5-9.5 ft	5'	1	9.5'	0-9.5'	NA	
	NO RECOVERY	10'	NO RECOVERY				
	12'						
	SHALE – brown/orange, fossils noted - limestone at 12.5-13 ft	15'	2	8'	10-18'	NA	
	NO RECOVERY	20'	NO RECOVERY				
	20'						
	SHALE – black, hard		3	4'	20-24'	NA	
	NO RECOVERY	25'	NO RECOVERY				
	END OF BORING **CM-2 AT 26 FEET**						

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 6.25"
WELL DIA: 2"

WATER LEVEL OBSERVATIONS	BORING STARTED 06/18/20	
None During Drilling	BORING COMPLETED 06/18/20	
	INSPECTOR:AJ	DRILLER: Environmental Works
	RIG: GeoProbe 8150 / Sonic	FORMEAN: Daniel

ALTAMIRA
Formerly Known as Enviro Clean Control

LOG OF BORING NO. (CM-3A / CM-3B)

OWNER: WESTERN FARMERS ELECTRIC COOPERATVE

SITE: HUGO POWER STATION

PROJECT: WFEE160020

LITHOLOGY	DESCRIPTION GROUND SURFACE ELEV.	DEPTH (FT)	SAMPLES: NUMBER	SAMPLES: RECOVERY	SAMPLES: SAMPLE INTERVAL	SAMPLES: FIELD SCREEN RESULTS	REMARKS
	LIMESTONE –white, weathered, fossiliferous		1	7.6’	0-7.6’	NA	
		5’					
	- brown sandy clay, plastic at 7.5 feet						
	NO RECOVERY			NO RECOVERY			
	10’	10’					
	SHALE – black, hard, fossiliferous		2	8’	10-18’	NA	
		15’					
	NO RECOVERY			NO RECOVERY			
		20’					
	SHALE – black, hard, fossiliferous		3	10’	20-30’	NA	
	- limestone between 26 and 26.5 ft	25’					
		30’					

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The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 6.25”
WELL DIA: 2”

WATER LEVEL OBSERVATIONS
None During Drilling

ALTAMIRA
formerly known as Enviro Clean Cardinal

BORING STARTED 06/16/20	
BORING COMPLETED 06/16/20	
INSPECTOR:AJ	DRILLER: Environmental Works
RIG: GeoProbe 8150 / Sonic	FORMEAN: Daniel

LOG OF BORING NO. (CM-3A / CM-3B)

OWNER: WESTERN FARMERS ELECTRIC COOPERATVE

SITE: HUGO POWER STATION

PROJECT: WFEE160020

LITHOLOGY	DESCRIPTION GROUND SURFACE ELEV.	DEPTH (FT)	SAMPLES: NUMBERTY	RECOVERY	SAMPLE INTERVAL	FIELD SCREEN RESULTS	REMARKS
	SHALE – black, hard, trace fossils	30'					
			4	9.5'	30-39.5'	NA	
		35'					
	- white limestone between 37.2 and 37.5 ft						
	NO RECOVERY	40'	NO RECOVERY				
			5	4.5'	40-44.5'	NA	
	SHALE – black, hard, fossiliferous						
	NO RECOVERY	45'	NO RECOVERY				
	SHALE – black, hard, fossiliferous						
			6	10'	45-55'	NA	
		50'					
	NO RECOVERY	55'	NO RECOVERY				
	END OF BORINGS **CM-3A AT 23 FEET** **CM-3B AT 56 FEET**						

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 6.25"
WELL DIA: 2"

WATER LEVEL OBSERVATIONS
None During Drilling

ALTAMIRA
formerly known as Enviro Clean Cardinal

BORING STARTED 06/16/20	
BORING COMPLETED 06/16/20	
INSPECTOR:AJ	DRILLER: Environmental Works
RIG: GeoProbe 8150 / Sonic	FORMEAN: Daniel

LOG OF BORING NO. (CM-4A / CM-4B)

OWNER: WESTERN FARMERS ELECTRIC COOPERATVE

SITE: HUGO POWER STATION

PROJECT: WFEE160020

LITHOLOGY	DESCRIPTION	DEPTH (FT)	SAMPLES: NUMBERTY	RECOVERY	SAMPLE INTERVAL	FIELD SCREEN RESULTS	REMARKS
	GROUND SURFACE ELEV.						
	LIMESTONE –tan to white, weathered, fossiliferous - Light grey, sandy clay, med. Stiff, plastic, between 2.8 and 3.8 feet		1	6'	0-6'	NA	
	5'	5'					
	SHALE – black/grey, hard						
	NO RECOVERY		NO RECOVERY				
	10'	10'					
	SHALE – black, hard, fossiliferous - whtie limestone between 14.8 and 15.1 feet		2	9.5'	10-19.5'	NA	
		15'					
	NO RECOVERY		NO RECOVERY				
	SHALE – black, hard, fossiliferous - very fossiliferous between 21.5 and 22 feet - very fossiliferous between 22.7 and 23 feet - very fossiliferous between 23.5 and 24 feet	20'	3	10	20-30'	NA	
		25'					
		30'					

CONTINUED ON NEXT PAGE

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 6.25"
WELL DIA: 2"

WATER LEVEL OBSERVATIONS	BORING STARTED 06/16/20	
None During Drilling	BORING COMPLETED 06/16/20	
	INSPECTOR:AJ	DRILLER: Environmental Works
	RIG: GeoProbe 8150 / Sonic	FORMEAN: Daniel

ALTAMIRA
formerly known as Envtro Clean Cardinal

LOG OF BORING NO. (CM-4A / CM-4B)

OWNER: WESTERN FARMERS ELECTRIC COOPERATVE

SITE: HUGO POWER STATION

PROJECT: WFEE160020

LITHOLOGY	DESCRIPTION GROUND SURFACE ELEV.	DEPTH (FT)	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES SAMPLE INTERVAL	SAMPLES FIELD SCREEN RESULTS	RESULTS
	SHALE – black, hard	30'					
			4	7'	30-37'	NA	
	- fossiliferous between 34.7 and 36 feet - white limestone between 36 and 36.5 ft	35'					
	NO RECOVERY		NO RECOVERY				
		40'					
	SHALE – black, hard		5	6.2'	40-46.2'	NA	
	- white limestone between 44.3 and 44.8 feet	45'					
	END OF BORINGS **CM-4A AT 26 FEET** **CM-4B AT 46.2 FEET**						

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 6.25"
WELL DIA: 2"

WATER LEVEL OBSERVATIONS	BORING STARTED 06/16/20	
None During Drilling	BORING COMPLETED 06/16/20	
	INSPECTOR:AJ	DRILLER: Environmental Works
	RIG: GeoProbe 8150 / Sonic	FORMEAN: Daniel

ALTAMIRA
formerly known as Enviro Clean Cardinal

LOG OF BORING NO. (CM-5A / CM-5B)

OWNER: WESTERN FARMERS ELECTRIC COOPERATVE

SITE: HUGO POWER STATION

PROJECT: WFEE160020

LITHOLOGY	DESCRIPTION GROUND SURFACE ELEV.		DEPTH (FT)	SAMPLES: NUMBERITY	RECOVERY	SAMPLE INTERVAL	FIELD SCREEN RESULTS	REMARKS
	LIMESTONE –brown weathered, fossiliferous							
	LIMESTONE – white, fossiliferous	1.5'		1	9'	0-9'	NA	
	SHALE – grey, hard, plastic	3.3'						
	LIMESTONE – white, fossiliferous - grey shale between 5.3 and 5.8 feet	4.4'	5'					
	SHALE – black, hard, fossiliferous	7.2'						
	NO RECOVERY		10'	NO RECOVERY				
	SHALE – black, hard, fossiliferous			2	2.8'	10-12.8'	NA	
	NO RECOVERY		15'	NO RECOVERY				
	SHALE – black, hard, fossiliferous		20'	3	9'	16-25'	NA	
	NO RECOVERY		25'	NO RECOVERY				
	SHALE – black, hard, fossiliferous		30'	4	9.6'	26-35.6'	NA	

CONTINUED ON NEXT PAGE

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 6.25"
WELL DIA: 2"

WATER LEVEL OBSERVATIONS	BORING STARTED 06/15/20	
None During Drilling	BORING COMPLETED 06/15/20	
	INSPECTOR:AJ	DRILLER: Environmental Works
	RIG: GeoProbe 8150 / Sonic	FORMEAN: Daniel

ALTAMIRA
formerly known as Enviro Clean Cardinal

LOG OF BORING NO. (CM-5A / CM-5B)

OWNER: WESTERN FARMERS ELECTRIC COOPERATVE

SITE: HUGO POWER STATION

PROJECT: WFEE160020

LITHOLOGY	DESCRIPTION GROUND SURFACE ELEV.	DEPTH (FT)	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES SAMPLE INTERVAL	SAMPLES FIELD SCREEN RESULTS	RESULTS
	SHALE – black, hard, fossiliferous	30'					
			4	7'	30-37'	NA	
		35'					
	NO RECOVERY		NO RECOVERY				
	SHALE – black, hard, fossiliferous		5	5'	35.6-40.6'	NA	
		40'					
			6	7'	40.6-47.6'	NA	
		45'					
	NO RECOVERY		NO RECOVERY				
	END OF BORINGS **CM-5A AT 29 FEET** **CM-5B AT 48.5 FEET**						

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 6.25"
WELL DIA: 2"

WATER LEVEL OBSERVATIONS
None During Drilling

ALTAMIRA
formerly known as Enviro Clean Cardinal

BORING STARTED 06/15/20	
BORING COMPLETED 06/15/20	
INSPECTOR:AJ	DRILLER: Environmental Works
RIG: GeoProbe 8150 / Sonic	FORMEAN: Daniel

CM - 1A

ABOVE GRADE–MONITORING WELL INSTALLATION RECORD

TOP OF CASING ELEVATION _____ FEET AMSL

GROUND LEVEL ELEVATION _____ FEET AMSL

TIME DRILLING STOPPED: 8 18

TIME WELL INSTALLATION BEGAN: 8 18

TIME WELL INSTALLATION FINISHED: 934

OBSERVATIONS

TOTAL STRING - S/U

SETTING DEPTH

WELL COMPLETION MATERIALS:

LENGTH OF SCREEN USED: 10 FT.

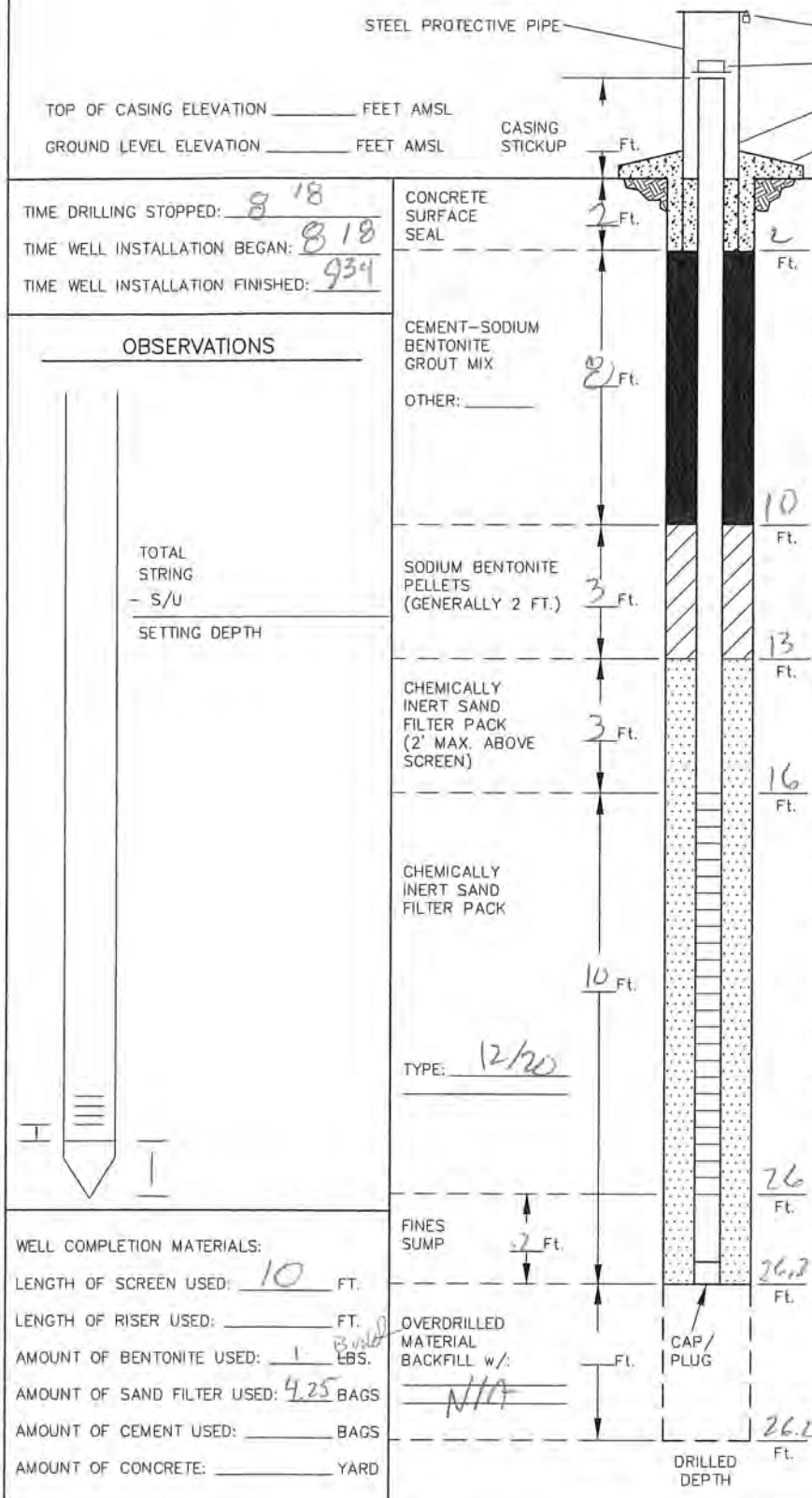
LENGTH OF RISER USED: _____ FT.

AMOUNT OF BENTONITE USED: 1 (Bulk) LBS.

AMOUNT OF SAND FILTER USED: 4.25 BAGS

AMOUNT OF CEMENT USED: _____ BAGS

AMOUNT OF CONCRETE: _____ YARD



SPECIFICATIONS

LOCK: YES ☐ NO ☐

RISER CAP w/VENT: YES ☒ NO ☐

WEEP HOLE: YES ☐ NO ☒

CONCRETE PAD: YES ☒ NO ☐ SIZE _____

1. TYPE OF CASING: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL _____ ☐ OTHER _____ ☐
2. TYPE OF CASING/SCREEN JOINTS: SCREW COUPLE ☒ OTHER _____ ☐
3. TYPE OF WELL SCREEN: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL ☐ OTHER _____ ☐
4. DIAMETER OF CASING AND WELL SCREEN: (I.D.): RISER 2 INCHES, SCREEN 2 INCHES
5. SLOT SIZE OF SCREEN: _____
6. TYPE OF SCREEN PERFORATION: FACTORY SLOTTED ☒ OTHER ☐ _____
7. INSTALLED PROTECTOR PIPE w/LOCK: YES ☒ NO ☐
8. BOREHOLE DIAMETER = 6.25 INCHES
9. WERE DRILLING ADDITIVES USED? YES ☒ NO ☐ BENTONITE ☐ WATER ☒ AIR ☐ GALLONS / VOLUME USED: _____
10. WAS CONDUCTOR CASING USED? YES ☐ NO ☒ TYPE OF CONDUCTOR CASING? STEEL ☐ PVC ☐ DEPTH: _____ TO N/A FEET DIAMETER OF CONDUCTOR CASING: _____
11. INITIAL WATER LEVEL: _____
12. STABILIZED WATER LEVEL: _____
13. HOW WAS WELL DEVELOPED? BAILING ☐ PUMPING ☐ AIR SURGING (AIR OR NITROGEN) ☐ OTHER ☐ _____
14. TIME SPENT ON WELL DEVELOPMENT? _____ / _____ MINUTES/HOURS
15. APPROXIMATE WATER VOLUME REMOVED? _____ GALLONS
16. WATER CLARITY BEFORE DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
17. WATER CLARITY AFTER DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
18. WATER ODOR? IF YES, DESCRIBE: _____
19. WATER COLOR? IF YES, DESCRIBE: _____
20. WATER LEVEL SUMMARY (FROM TOP OF CASING)
    BEFORE DEVELOPMENT _____ FT. DATE _____
    AFTER DEVELOPMENT _____ FT. DATE _____
    WATER LEVEL _____ FT. DATE _____
    _____ FT. DATE _____
21. SAMPLING METHOD: _____

ENVIRO CLEAN CARDINAL

3700 West Robinson St., Suite 200 • Norman, Oklahoma 73072 • 405-701-5058

www.EnviroCleanPS.com

WELL NUMBER: CM-1A

JOB NAME/NUMBER : WFEC

LOCATION: Fort Towson

INSTALLATION DATE: 6/18/20

COMPANY REPRESENTATIVE: Alyse Adamson

DRILLING CONTRACTOR: Environmental Works

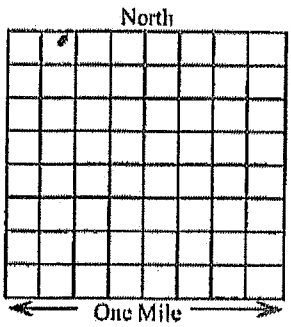
DRILLING METHOD: Sonic

1A

MONITORING WELL COMPLETION REPORT

Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, OK 73118
Telephone (405) 530-8800

Legal Location of Monitoring Well



Each square is 10-acres
Please Plot Well Location

Section 28
Township 6 ☐ North ☑ South Range 19 ☐ WIM ☑ EIM ☐ ECM

Do Not Write In This Space
Well Record ID Number _____

Latitude 34° 00' 43.10 **Longitude** 95° 19' 39.25"

Date collected (latitude and longitude), if different from date the well was drilled: _____
Method latitude and longitude was collected: ☐ GPS-uncorrected data, ☐ GPS-corrected data (WASS), ☐ GPS-corrected data (DGPS), ☐ GPS-corrected to base station

County Caddo Variance Request No. (if applicable) _____

WELL OWNER – NAME AND ADDRESS

Well Owner Western Farmers Electric Cooperative Phone 405-247-3351
Address/City/State 701 NE 7th Street Anadarko OK Zip 73005
Finding Location _____

TYPE OF WORK
☑ Monitoring Well

USE OF WELL
☐ Air Sparging ☐ Pump & Treat ☐ Site Assessment ☐ Unsaturated Zone ☐ Vapor Extraction ☐ Water Quality

NEW WELL CONSTRUCTION DATA
An application for a variance must be requested and obtained before any changes are made to the minimum construction standards for any well.

Date Well Was Completed 6-18-20
Hole Diameter 6 inches From 0 feet to 26 feet
Hole Diameter _____ inches From _____ feet to _____ feet

CASING INFORMATION: *Note: If surface casing is used please indicate that on the appropriate well casing information line.
1) Well Casing Material (check one): ☐ H.C. Steel ☒ P.V.C. ☐ Other
Well Casing Diameter (inches): 2 inches Well Casing From 0 feet to 16 feet
2) Well Casing Material (check one): ☐ H.C. Steel ☐ P.V.C. ☐ Other
Well Casing Diameter (inches): _____ inches Well Casing From _____ feet to _____ feet

SCREEN OR PERFORATION INFORMATION:
Type of Screen: ☑ PVC ☐ H.C. Steel ☐ Stainless Steel ☐ Other
Type of Slots or Openings: ☐ Perforations ☑ Factory Slotted ☐ Hand Slotted or Perforated ☐ Other Describe _____
Screened Interval: From 16 feet to 26 feet
From _____ feet to _____ feet
From _____ feet to _____ feet

FILTER PACK INFORMATION:
Filter Pack Material: ☐ Coarse Gravel ☐ Fine Gravel ☐ Coarse Sand ☒ Medium Sand ☐ Fine Sand ☐ Native Material
Filter Pack Interval: From 13 feet to 26 feet

WELL SEAL INFORMATION:

Type of Surface Seal: ☒ Cement Grout ☐ Cement Grout with Bentonite ☐ Other Describe: _____

Surface Seal Interval: From 0 feet to 2 feet

Annular Seal Material:

☐ Cement Grout ☑ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout, ☐ Bentonite Pellets ☐ Bentonite Granules/Chips ☐ Other

Annular Seal Interval: From 2 feet to 10 feet

Filter Pack Seal Material:

☐ Cement Grout ☐ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout ☐ Bentonite Pellets ☑ Bentonite Granules/Chips ☐ Other

Filter Pack Seal Interval: From 10 feet to 13 feet

TYPE OF COMPLETION: ☐ Above Ground with Casing Protection ☐ Flush Mounted ☐ Below Ground (connections between wells)

Was There a Cement Pad Installed Around the Well? ☑ Yes ☐ No

Size of Cement Pad if Installed: 2 feet by 2 feet

HYDROLOGIC DATA

Depth to water at time of drilling _____ Estimated yield of well _____ gpm First water zone _____ feet

Drawdown Pumping Test: Depth to water before start of test was _____ feet; Well was pumped/bailed at _____ gpm for _____ hours, which resulted in a drawdown depth to water of _____ feet.

LITHOLOGY DESCRIPTION

Note: If no lithology descriptions were made then, in the "Material" data field please indicate "no lithologic description obtained"

MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)	MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)
Topsoil	0	2			
Limestone	2	7			
Shale	7	26			

CERTIFICATION

The work described above was done under my supervision. This report is correct to the best of my knowledge.

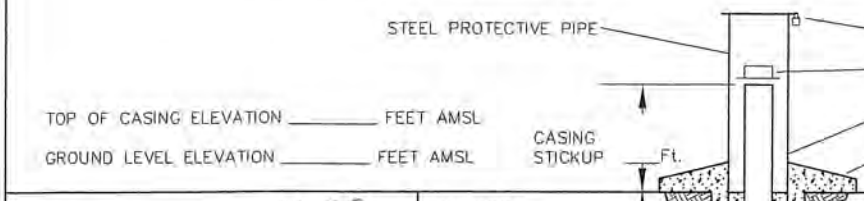
Firm Name Environmental Works, Inc D/PC No. 0667

Operator Name Paul Fehr OP No. 1521

Signature Date 8-17-20

CM-1B

ABOVE GRADE–MONITORING WELL INSTALLATION RECORD



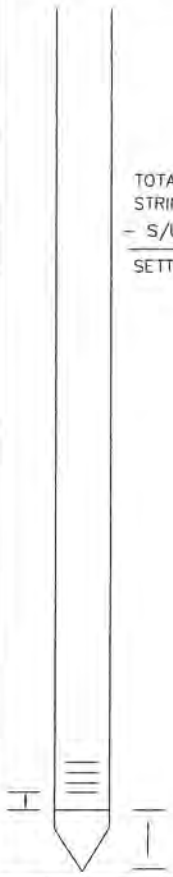
SPECIFICATIONS

LOCK: YES ☐ NO ☐
RISER CAP w/VENT: YES ☒ NO ☐
WEEP HOLE: YES ☐ NO ☒
CONCRETE PAD: YES ☒ NO ☐ SIZE _____

TIME DRILLING STOPPED: 16:08
TIME WELL INSTALLATION BEGAN: 16:08
TIME WELL INSTALLATION FINISHED: 9:38 on 6/18/20

OBSERVATIONS

TOTAL STRING – S/U
SETTING DEPTH



CONCRETE SURFACE SEAL	2 Ft.	2 Ft.
CEMENT–SODIUM BENTONITE GROUT MIX OTHER: _____	25.5 Ft.	27.5 Ft.
SODIUM BENTONITE PELLETS (GENERALLY 2 FT.)	3 Ft.	30.5 Ft.
CHEMICALLY INERT SAND FILTER PACK (2' MAX. ABOVE SCREEN)	5.5 Ft.	36 Ft.
CHEMICALLY INERT SAND FILTER PACK TYPE: 12/20	10 Ft.	
FINES SUMP	.2 Ft.	46 Ft.
OVERDRILLED MATERIAL BACKFILL w/: SAND	.6 Ft.	46.2 Ft.
CAP/PLUG		46.8 Ft. DRILLED DEPTH

WELL COMPLETION MATERIALS:
LENGTH OF SCREEN USED: 10 FT.
LENGTH OF RISER USED: _____ FT.
AMOUNT OF BENTONITE USED: .75 (PUCK) LBS.
AMOUNT OF SAND FILTER USED: 3 BAGS
AMOUNT OF CEMENT USED: _____ BAGS
AMOUNT OF CONCRETE: _____ YARD

1. TYPE OF CASING: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL _____ ☐ OTHER _____ ☐
2. TYPE OF CASING/SCREEN JOINTS: SCREW COUPLE ☒ OTHER _____ ☐
3. TYPE OF WELL SCREEN: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL ☐ OTHER _____ ☐
4. DIAMETER OF CASING AND WELL SCREEN: (I.D.): RISER 2 INCHES, SCREEN 2 INCHES
5. SLOT SIZE OF SCREEN: _____
6. TYPE OF SCREEN PERFORATION: FACTORY SLOTTED ☒ OTHER ☐ _____
7. INSTALLED PROTECTOR PIPE w/LOCK: YES ☒ NO ☐
8. BOREHOLE DIAMETER = 6.25 INCHES
9. WERE DRILLING ADDITIVES USED? YES ☒ NO ☐ BENTONITE ☐ WATER ☒ AIR ☐ GALLONS / VOLUME USED: _____
10. WAS CONDUCTOR CASING USED? YES ☐ NO ☒ TYPE OF CONDUCTOR CASING? STEEL ☐ PVC ☐ DEPTH: _____ TO N/A FEET DIAMETER OF CONDUCTOR CASING: _____
11. INITIAL WATER LEVEL: _____
12. STABILIZED WATER LEVEL: _____
13. HOW WAS WELL DEVELOPED? BAILING ☐ PUMPING ☐ AIR SURGING (AIR OR NITROGEN) ☐ OTHER ☐ _____
14. TIME SPENT ON WELL DEVELOPMENT? _____ / _____ MINUTES/HOURS
15. APPROXIMATE WATER VOLUME REMOVED? _____ GALLONS
16. WATER CLARITY BEFORE DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
17. WATER CLARITY AFTER DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
18. WATER ODOR? IF YES, DESCRIBE: _____
19. WATER COLOR? IF YES, DESCRIBE: _____
20. WATER LEVEL SUMMARY (FROM TOP OF CASING)
    BEFORE DEVELOPMENT _____ FT. DATE _____
    AFTER DEVELOPMENT _____ FT. DATE _____
    WATER LEVEL _____ FT. DATE _____
    _____ FT. DATE _____
21. SAMPLING METHOD: _____

ENVIRO CLEAN CARDINAL
3700 West Robinson St., Suite 200 • Norman, Oklahoma 73072 • 405-701-5058
www.EnviroCleanPS.com

WELL NUMBER: CM-1B
JOB NAME/NUMBER: WFEC
LOCATION: Fort Towson
INSTALLATION DATE: 6/17/20
COMPANY REPRESENTATIVE: Alyse Spooner
DRILLING CONTRACTOR: Environmental Works
DRILLING METHOD: Sonic

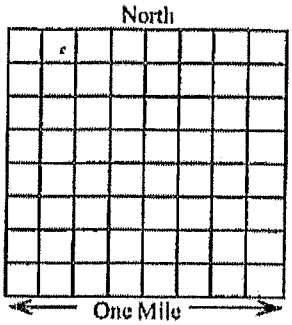
C:_ECS\CAD\FORMS\ECC_ABOVEWELLFORM.DWG on Apr 14, 2016–10:19am

1B

MONITORING WELL COMPLETION REPORT

Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, OK 73118
Telephone (405) 530-8800

Legal Location of Monitoring Well



Each square is 10-acres
Please Plot Well Location

Do Not Write In This Space
Well Record ID Number _____

Section 28
Township 6 ☐ North ☒ South Range 14 ☐ WIM ☒ EIM ☐ ECM

Latitude	Longitude
34° 00' 43.12"	95° 19' 39.75"

Date collected (latitude and longitude), if different from date the well was drilled: _____
Method latitude and longitude was collected: ☐ GPS-uncorrected data, ☐ GPS-corrected data (WASS), ☐ GPS-corrected data (DGPS), ☐ GPS-corrected to base station

County Caddo Variance Request No. (if applicable) _____

WELL OWNER – NAME AND ADDRESS

Well Owner Western Farmers Electric Cooperative Phone 405-247-3351
Address/City/State 701 NE 7th Street Anadarko OK Zip 73005
Finding Location _____

TYPE OF WORK
☒ Monitoring Well

USE OF WELL
☐ Air Sparging ☐ Site Assessment ☐ Vapor Extraction
☐ Pump & Treat ☐ Unsaturated Zone ☐ Water Quality

NEW WELL CONSTRUCTION DATA
An application for a variance must be requested and obtained before any changes are made to the minimum construction standards for any well.

Date Well Was Completed 6-17
Hole Diameter 6 inches From 0 feet to 46 feet
Hole Diameter _____ inches From _____ feet to _____ feet

CASING INFORMATION: *Note: If surface casing is used please indicate that on the appropriate well casing information line.
1) Well Casing Material (check one): ☐ H.C. Steel ☒ P.V.C. ☐ Other
Well Casing Diameter (inches): 2 inches Well Casing From 0 feet to 36 feet
2) Well Casing Material (check one): ☐ H.C. Steel ☐ P.V.C. ☐ Other
Well Casing Diameter (inches): _____ inches Well Casing From _____ feet to _____ feet

SCREEN OR PERFORATION INFORMATION:
Type of Screen: ☒ PVC ☐ H.C. Steel ☐ Stainless Steel ☐ Other
Type of Slots or Openings: ☐ Perforations ☒ Factory Slotted ☐ Hand Slotted or Perforated ☐ Other Describe _____
Screened Interval: From 36 feet to 46 feet
From _____ feet to _____ feet
From _____ feet to _____ feet

FILTER PACK INFORMATION:
Filter Pack Material: ☐ Coarse Gravel ☐ Fine Gravel ☐ Coarse Sand ☒ Medium Sand ☐ Fine Sand ☐ Native Material
Filter Pack Interval: From 30.5 feet to 46. feet

WELL SEAL INFORMATION:

Type of Surface Seal: ☒ Cement Grout ☐ Cement Grout with Bentonite ☐ Other Describe: _____

Surface Seal Interval: From 0 feet to 2 feet

Annular Seal Material:

☐ Cement Grout ☒ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout ☐ Bentonite Pellets ☐ Bentonite Granules/Chips ☐ Other

Annular Seal Interval: From 2 feet to 27.5 feet

Filter Pack Seal Material:

☐ Cement Grout ☐ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout ☐ Bentonite Pellets ☒ Bentonite Granules/Chips ☐ Other

Filter Pack Seal Interval: From 27.5 feet to 30.5 feet

TYPE OF COMPLETION: ☐ Above Ground with Casing Protection ☐ Flush Mounted ☐ Below Ground (connections between wells)

Was There a Cement Pad Installed Around the Well? ☒ Yes ☐ No

Size of Cement Pad if Installed: 2 feet by 2 feet

HYDROLOGIC DATA

Depth to water at time of drilling _____ Estimated yield of well _____ gpm First water zone _____ feet

Drawdown Pumping Test: Depth to water before start of test was _____ feet; Well was pumped/bailed at _____ gpm for _____ hours, which resulted in a drawdown depth to water of _____ feet.

LITHOLOGY DESCRIPTION

Note: If no lithology descriptions were made then, in the "Material" data field please indicate "no lithologic description obtained"

MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)	MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)
Topsoil	0	2			
Limestone	2	7			
Shale	7	6/6			

CERTIFICATION

The work described above was done under my supervision. This report is correct to the best of my knowledge.

Firm Name Environmental Water Eng. D/PC No. 0667

Operator Name Paul Fabi OP No. 1521

Signature Date 8-17-20

CM-2

ABOVE GRADE—MONITORING WELL INSTALLATION RECORD

TOP OF CASING ELEVATION _____ FEET AMSL

GROUND LEVEL ELEVATION _____ FEET AMSL

CASING STICKUP _____ Ft.

TIME DRILLING STOPPED: 11 10

TIME WELL INSTALLATION BEGAN: 11 10

TIME WELL INSTALLATION FINISHED: 13 00

OBSERVATIONS

TOTAL STRING – S/U

SETTING DEPTH

WELL COMPLETION MATERIALS:

LENGTH OF SCREEN USED: 10 FT.

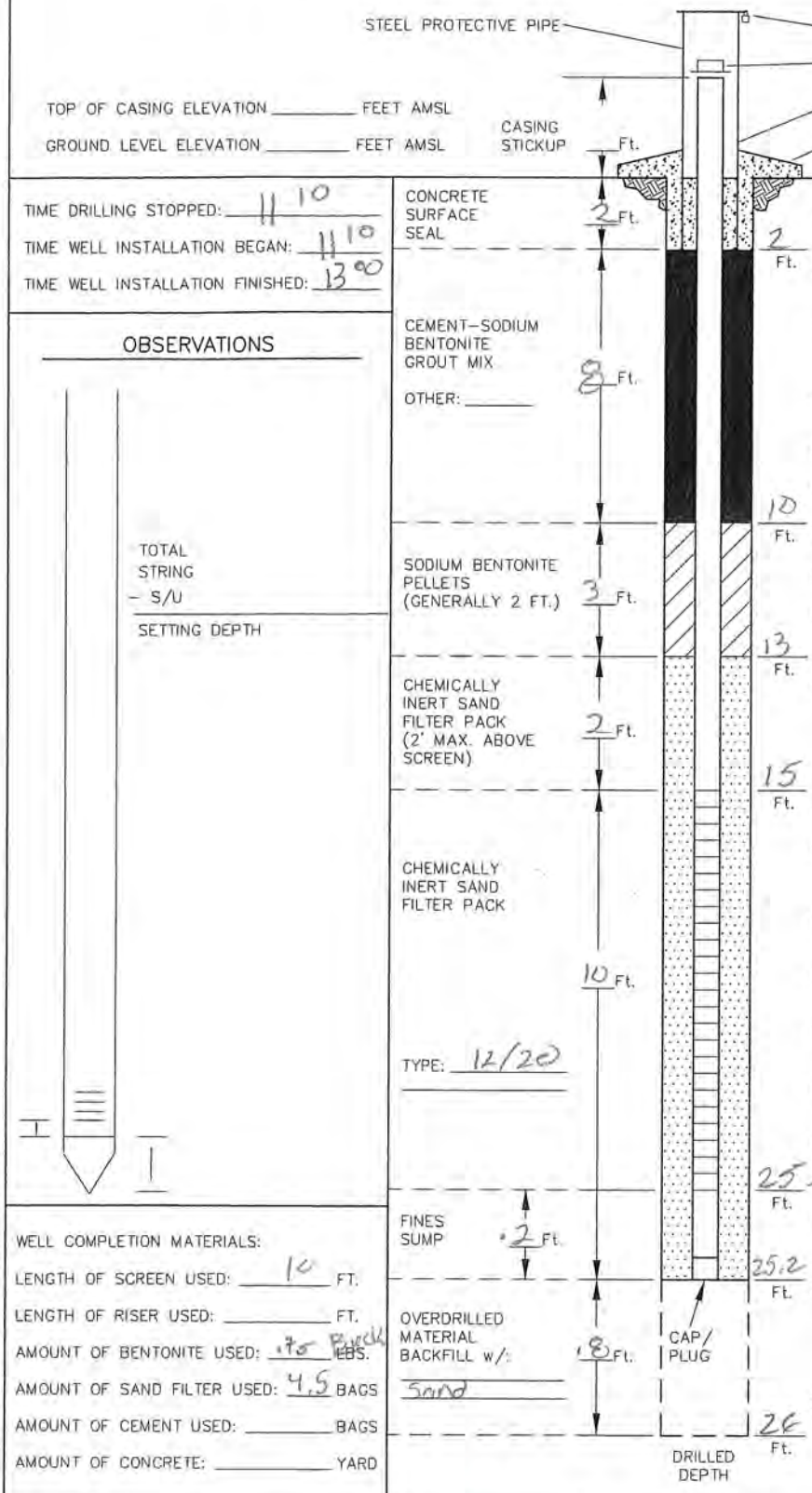
LENGTH OF RISER USED: _____ FT.

AMOUNT OF BENTONITE USED: 170 Bucket LBS.

AMOUNT OF SAND FILTER USED: 4.5 BAGS

AMOUNT OF CEMENT USED: _____ BAGS

AMOUNT OF CONCRETE: _____ YARD



SPECIFICATIONS

LOCK: YES ☐ NO ☐

RISER CAP w/VENT: YES ☒ NO ☐

WEEP HOLE: YES ☐ NO ☒

CONCRETE PAD: YES ☒ NO ☐ SIZE _____

1. TYPE OF CASING: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL _____ ☐ OTHER _____ ☐
2. TYPE OF CASING/SCREEN JOINTS: SCREW COUPLE ☒ OTHER _____ ☐
3. TYPE OF WELL SCREEN: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL ☐ OTHER _____ ☐
4. DIAMETER OF CASING AND WELL SCREEN: (I.D.): RISER 2 INCHES, SCREEN 2 INCHES
5. SLOT SIZE OF SCREEN: _____
6. TYPE OF SCREEN PERFORATION: FACTORY SLOTTED ☒ —OTHER ☐ _____
7. INSTALLED PROTECTOR PIPE w/LOCK: YES ☒ NO ☐
8. BOREHOLE DIAMETER = 6.25 INCHES
9. WERE DRILLING ADDITIVES USED? YES ☐ NO ☒ BENTONITE ☐ WATER ☐ AIR ☐ GALLONS / VOLUME USED: _____
10. WAS CONDUCTOR CASING USED? YES ☐ NO ☒ TYPE OF CONDUCTOR CASING? STEEL ☐ PVC ☐ DEPTH: _____ TO N/A FEET DIAMETER OF CONDUCTOR CASING: _____
11. INITIAL WATER LEVEL: _____
12. STABILIZED WATER LEVEL: _____
13. HOW WAS WELL DEVELOPED? BAILING ☐ PUMPING ☐ AIR SURGING (AIR OR NITROGEN) ☐ OTHER ☐ _____
14. TIME SPENT ON WELL DEVELOPMENT? _____ / _____ MINUTES/HOURS
15. APPROXIMATE WATER VOLUME REMOVED? _____ GALLONS
16. WATER CLARITY BEFORE DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
17. WATER CLARITY AFTER DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
18. WATER ODOR? IF YES, DESCRIBE: _____
19. WATER COLOR? IF YES, DESCRIBE: _____
20. WATER LEVEL SUMMARY (FROM TOP OF CASING)
    BEFORE DEVELOPMENT _____ FT. DATE _____
    AFTER DEVELOPMENT _____ FT. DATE _____
    WATER LEVEL _____ FT. DATE _____
    _____ FT. DATE _____
21. SAMPLING METHOD: _____

ENVIRO CLEAN CARDINAL

3700 West Robinson St., Suite 200 • Norman, Oklahoma 73072 • 405-701-5058

www.EnviroCleanPS.com

WELL NUMBER: CM-2

JOB NAME/NUMBER: WFSL

LOCATION: Fort Towson

INSTALLATION DATE: 6/19/20

COMPANY REPRESENTATIVE: Alex Schaefer

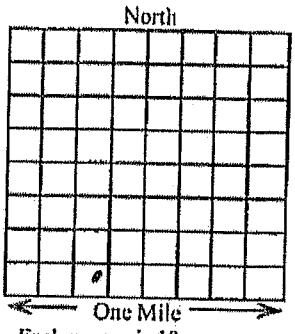
DRILLING CONTRACTOR: Environmental Works

DRILLING METHOD: Sonic

MONITORING WELL COMPLETION REPORT

Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, OK 73118
Telephone (405) 530-8800

Legal Location of Monitoring Well



Each square is 10-acres
Please Plot Well Location

Do Not Write In This Space
Well Record ID Number _____

Section 21
Township 6 ☐ North ☐ South Range 19 ☐ WIM ☒ EIM ☐ ECM

Latitude 34° 00' 45.15" Longitude 95° 19' 29.45"

Date collected (latitude and longitude), if different from date the well was drilled: _____
Method latitude and longitude was collected: ☐ GPS-uncorrected data,
☐ GPS-corrected data (WASS), ☐ GPS-corrected data (DGPS), ☐ GPS-corrected to base station

County Coalgate Variance Request No. (if applicable) _____

WELL OWNER – NAME AND ADDRESS

Well Owner Western Farmers Electric Cooperative Phone 405 247-3351
Address/City/State 701 NE 7th Street Anadarko OK Zip 73005
Finding Location _____

TYPE OF WORK
☒ Monitoring Well

USE OF WELL
☐ Air Sparging ☐ Pump & Treat ☐ Site Assessment ☐ Unsaturated Zone ☐ Vapor Extraction ☐ Water Quality

NEW WELL CONSTRUCTION DATA
An application for a variance must be requested and obtained before any changes are made to the minimum construction standards for any well.

Date Well Was Completed 6-18-20
Hole Diameter 6 inches From 0 feet to 25 feet
Hole Diameter _____ inches From _____ feet to _____ feet

CASING INFORMATION: *Note: If surface casing is used please indicate that on the appropriate well casing information line.
1) Well Casing Material (check one): ☐ H.C. Steel ☒ P.V.C. ☐ Other
Well Casing Diameter (inches): 2.0 inches Well Casing From 10 0 feet to 15 feet
2) Well Casing Material (check one): ☐ H.C. Steel ☐ P.V.C. ☐ Other
Well Casing Diameter (inches): _____ inches Well Casing From _____ feet to _____ feet

SCREEN OR PERFORATION INFORMATION:
Type of Screen: ☒ PVC ☐ H.C. Steel ☐ Stainless Steel ☐ Other
Type of Slots or Openings: ☐ Perforations ☒ Factory Slotted ☐ Hand Slotted or Perforated ☐ Other Describe: _____
Screened Interval: From 15 feet to 25 feet
From _____ feet to _____ feet
From _____ feet to _____ feet

FILTER PACK INFORMATION:
Filter Pack Material: ☐ Course Gravel ☐ Fine Gravel ☐ Course Sand ☒ Medium Sand ☐ Fine Sand ☐ Native Material
Filter Pack Interval: From 13 feet to 25 feet

WELL SEAL INFORMATION:

Type of Surface Seal: ☒ Cement Grout ☐ Cement Grout with Bentonite ☐ Other Describe: _____

Surface Seal Interval: From 0 feet to 2 feet

Annular Seal Material:

☐ Cement Grout ☒ Cement Grout/ Bentonite ☐ H S. Bentonite Grout, ☐ Bentonite Pellets ☐ Bentonite Granules/Chips ☐ Other

Annular Seal Interval: From 2 feet to ~~25~~ 10 feet

Filter Pack Seal Material:

☐ Cement Grout ☐ Cement Grout/ Bentonite ☐ H S. Bentonite Grout ☐ Bentonite Pellets ☐ Bentonite Granules/Chips ☐ Other

Filter Pack Seal Interval: From 10 feet to 13. feet

TYPE OF COMPLETION: ☒ Above Ground with Casing Protection ☐ Flush Mounted ☐ Below Ground (connections between wells)

Was There a Cement Pad Installed Around the Well? ☒ Yes ☐ No

Size of Cement Pad if Installed: 2 feet by 2 feet

HYDROLOGIC DATA

Depth to water at time of drilling _____ Estimated yield of well _____ gpm First water zone _____ feet

Drawdown Pumping Test: Depth to water before start of test was _____ feet; Well was pumped/bailed at _____ gpm for _____ hours, which resulted in a drawdown depth to water of _____ feet.

LITHOLOGY DESCRIPTION

Note: If no lithology descriptions were made then, in the "Material" data field please indicate "no lithologic description obtained"

MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)	MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)
Topsoil	0	2			
Limestone	2	7			
Shale	7	25			

CERTIFICATION

The work described above was done under my supervision. This report is correct to the best of my knowledge.

Firm Name Environmental Wells, Inc D/PC No. 0667

Operator Name Paul E Rabe OP No. 1524

Signature Date 8-17-20

CM-3A

ABOVE GRADE–MONITORING WELL INSTALLATION RECORD

TOP OF CASING ELEVATION _____ FEET AMSL

GROUND LEVEL ELEVATION _____ FEET AMSL

TIME DRILLING STOPPED: 1005

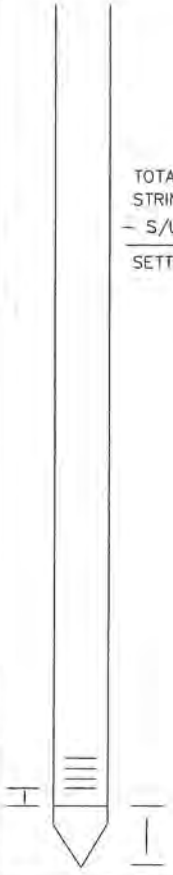
TIME WELL INSTALLATION BEGAN: 1005

TIME WELL INSTALLATION FINISHED: 1155

OBSERVATIONS

TOTAL STRING – S/U

SETTING DEPTH



WELL COMPLETION MATERIALS:

LENGTH OF SCREEN USED: 10 FT.

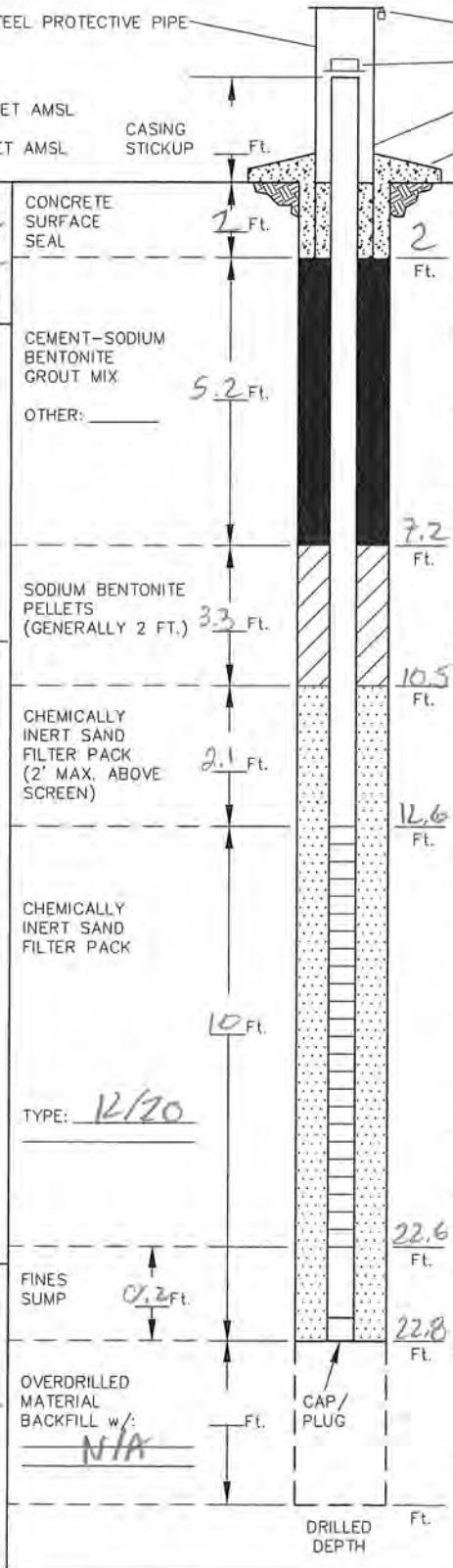
LENGTH OF RISER USED: _____ FT.

AMOUNT OF BENTONITE USED: .75 BUCK. LBS.

AMOUNT OF SAND FILTER USED: 5 BAGS

AMOUNT OF CEMENT USED: _____ BAGS

AMOUNT OF CONCRETE: _____ YARD



SPECIFICATIONS

LOCK: YES ☐ NO ☐

RISER CAP w/VENT: YES ☑ NO ☐

WEEP HOLE: YES ☐ NO ☒

CONCRETE PAD: YES ☒ NO ☐ SIZE _____

1. TYPE OF CASING: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL _____ ☐ OTHER _____ ☐
2. TYPE OF CASING/SCREEN JOINTS: SCREW COUPLE ☒ OTHER _____ ☐
3. TYPE OF WELL SCREEN: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL ☐ OTHER _____ ☐
4. DIAMETER OF CASING AND WELL SCREEN: (I.D.): RISER 2 INCHES, SCREEN 2 INCHES
5. SLOT SIZE OF SCREEN: _____
6. TYPE OF SCREEN PERFORATION: FACTORY SLOTTED ☒ OTHER ☐ _____
7. INSTALLED PROTECTOR PIPE w/LOCK: YES ☒ NO ☐
8. BOREHOLE DIAMETER = 6.25 INCHES
9. WERE DRILLING ADDITIVES USED? YES ☒ NO ☐ BENTONITE ☐ WATER ☒ AIR ☐ GALLONS / VOLUME USED: _____
10. WAS CONDUCTOR CASING USED? YES ☐ NO ☒ TYPE OF CONDUCTOR CASING? STEEL ☐ PVC ☐ DEPTH: _____ TO N/A FEET DIAMETER OF CONDUCTOR CASING: _____
11. INITIAL WATER LEVEL: _____
12. STABILIZED WATER LEVEL: _____
13. HOW WAS WELL DEVELOPED? BAILING ☐ PUMPING ☐ AIR SURGING (AIR OR NITROGEN) ☐ OTHER ☐ _____
14. TIME SPENT ON WELL DEVELOPMENT? _____ / _____ MINUTES/HOURS
15. APPROXIMATE WATER VOLUME REMOVED? _____ GALLONS
16. WATER CLARITY BEFORE DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
17. WATER CLARITY AFTER DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
18. WATER ODOR? IF YES, DESCRIBE: _____
19. WATER COLOR? IF YES, DESCRIBE: _____
20. WATER LEVEL SUMMARY (FROM TOP OF CASING) BEFORE DEVELOPMENT _____ FT. DATE _____ AFTER DEVELOPMENT _____ FT. DATE _____ WATER LEVEL _____ FT. DATE _____ _____ FT. DATE _____
21. SAMPLING METHOD: _____

ENVIRO CLEAN CARDINAL

3700 West Robinson St., Suite 200 • Norman, Oklahoma 73072 • 405-701-5058

www.EnviroCleanPS.com

WELL NUMBER: CM-3A

JOB NAME/NUMBER : WFEC

LOCATION: Fort Towson

INSTALLATION DATE: 6/17/20

COMPANY REPRESENTATIVE: Alyse Johanson

DRILLING CONTRACTOR: Environmental Works

DRILLING METHOD: Sonic

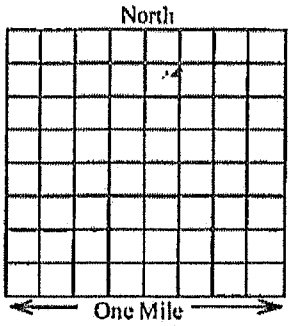
C:_ECS\CAD\FORMS\ECC_ABOVEWELLFORM.DWG on Apr 14, 2016–10:19am

3A

MONITORING WELL COMPLETION REPORT

Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, OK 73118
Telephone (405) 530-8800

Legal Location of Monitoring Well



Each square is 10-acres
Please Plot Well Location

Section 28
Township 6 ☐ North ☒ South Range 19 ☐ WIM ☒ EIM ☐ ECM

Do Not Write In This Space
Well Record ID Number _____

Latitude 34° 00' 35.86"
Longitude 95° 19' 23.54"

Date collected (latitude and longitude), if different from date the well was drilled: _____
Method latitude and longitude was collected: ☐ GPS-uncorrected data, ☐ GPS-corrected data (WASS), ☐ GPS-corrected data (DGPS), ☐ GPS-corrected to base station

County Caddo Variance Request No. (if applicable) _____

WELL OWNER – NAME AND ADDRESS

Well Owner Western Farmer Electric Cooperative Phone 405-247-3351
Address/City/State 201 NE 7th Anadarko OK Zip 73005
Finding Location _____

TYPE OF WORK
☒ Monitoring Well

USE OF WELL
☐ Air Sparging ☐ Site Assessment ☐ Vapor Extraction
☐ Pump & Treat ☐ Unsaturated Zone ☐ Water Quality

NEW WELL CONSTRUCTION DATA
An application for a variance must be requested and obtained before any changes are made to the minimum construction standards for any well.

Date Well Was Completed 6-17-20
Hole Diameter 6 inches From 0 feet to 22.6 feet
Hole Diameter _____ inches From _____ feet to _____ feet

CASING INFORMATION: *Note: If surface casing is used please indicate that on the appropriate well casing information line.
1) Well Casing Material (check one): ☐ H.C. Steel ☒ P.V.C. ☐ Other
Well Casing Diameter (inches): 2 inches Well Casing From 0 feet to 12.6 feet
2) Well Casing Material (check one): ☐ H.C. Steel ☐ P.V.C. ☐ Other
Well Casing Diameter (inches): _____ inches Well Casing From _____ feet to _____ feet

SCREEN OR PERFORATION INFORMATION:
Type of Screen: ☒ PVC ☐ H.C. Steel ☐ Stainless Steel ☐ Other
Type of Slots or Openings: ☐ Perforations ☒ Factory Slotted ☐ Hand Slotted or Perforated ☐ Other Describe _____
Screened Interval: From 12.6 feet to 22.6 feet
From _____ feet to _____ feet
From _____ feet to _____ feet

FILTER PACK INFORMATION:
Filter Pack Material: ☐ Course Gravel ☐ Fine Gravel ☐ Course Sand ☒ Medium Sand ☐ Fine Sand ☐ Native Material
Filter Pack Interval: From 10.5 feet to 22.6 feet

WELL SEAL INFORMATION:

Type of Surface Seal: ☒ Cement Grout ☐ Cement Grout with Bentonite ☐ Other Describe: _____

Surface Seal Interval: From 0 feet to 2 feet

Annular Seal Material:

☐ Cement Grout ☒ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout, ☐ Bentonite Pellets ☐ Bentonite Granules/Chips ☐ Other

Annular Seal Interval: From 2 feet to 7.2 feet

Filter Pack Seal Material:

☐ Cement Grout ☐ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout ☐ Bentonite Pellets ☒ Bentonite Granules/Chips ☐ Other

Filter Pack Seal Interval: From 7.2 feet to 10.5 feet

TYPE OF COMPLETION: ☒ Above Ground with Casing Protection ☐ Flush Mounted ☐ Below Ground (connections between wells)

Was There a Cement Pad Installed Around the Well? ☒ Yes ☐ No

Size of Cement Pad if Installed: 2 feet by 2 feet

HYDROLOGIC DATA

Depth to water at time of drilling _____ Estimated yield of well _____ gpm First water zone _____ feet

Drawdown Pumping Test: Depth to water before start of test was _____ feet; Well was pumped/bailed at _____ gpm for _____ hours, which resulted in a drawdown depth to water of _____ feet.

LITHOLOGY DESCRIPTION

Note: If no lithology descriptions were made then, in the "Material" data field please indicate "no lithologic description obtained"

MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)	MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)
TOPSOIL	0	2			
Limestone	2	7			
Shale	7	22.6			

CERTIFICATION

The work described above was done under my supervision. This report is correct to the best of my knowledge.

Firm Name Environmental Wells Inc D/PC No. 0667

Operator Name Paul Pelk OP No. 154

Signature Date 8-17-20

CM-3B

ABOVE GRADE–MONITORING WELL INSTALLATION RECORD

TOP OF CASING ELEVATION _____ FEET AMSL

GROUND LEVEL ELEVATION _____ FEET AMSL

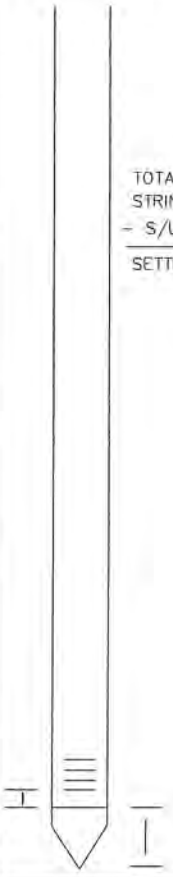
CASING STICKUP _____ Ft.

TIME DRILLING STOPPED: 1732

TIME WELL INSTALLATION BEGAN: 1732

TIME WELL INSTALLATION FINISHED: 1155 on 6/17

OBSERVATIONS



WELL COMPLETION MATERIALS:

LENGTH OF SCREEN USED: 10 FT.

LENGTH OF RISER USED: _____ FT.

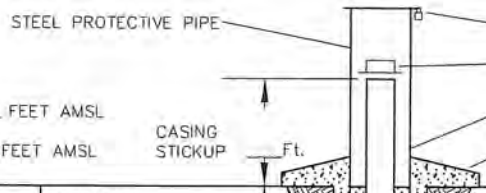
AMOUNT OF BENTONITE USED: 175 Bags LBS.

AMOUNT OF SAND FILTER USED: 3.5 BAGS

AMOUNT OF CEMENT USED: _____ BAGS

AMOUNT OF CONCRETE: _____ YARD

SPECIFICATIONS



LOCK: YES ☐ NO ☐

RISER CAP w/VENT: YES ☒ NO ☐

WEEP HOLE: YES ☐ NO ☒

CONCRETE PAD: YES ☒ NO ☐ SIZE _____

2 Ft.

1. TYPE OF CASING: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL _____ ☐ OTHER _____ ☐
2. TYPE OF CASING/SCREEN JOINTS: SCREW COUPLE ☒ OTHER _____ ☐
3. TYPE OF WELL SCREEN: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL ☐ OTHER _____ ☐
4. DIAMETER OF CASING AND WELL SCREEN: (I.D.): RISER 2 INCHES, SCREEN 2 INCHES
5. SLOT SIZE OF SCREEN: _____

40.5 Ft.

6. TYPE OF SCREEN PERFORATION: FACTORY SLOTTED ☒ OTHER ☐ _____
7. INSTALLED PROTECTOR PIPE w/LOCK: YES ☒ NO ☐
8. BOREHOLE DIAMETER = 6.25 INCHES

43.5 Ft.

9. WERE DRILLING ADDITIVES USED? YES ☒ NO ☐ BENTONITE ☐ WATER ☒ AIR ☐ GALLONS / VOLUME USED: _____
10. WAS CONDUCTOR CASING USED? YES ☐ NO ☒ TYPE OF CONDUCTOR CASING? STEEL ☐ PVC ☐ DEPTH: _____ TO N/A FEET DIAMETER OF CONDUCTOR CASING: _____

46 Ft.

11. INITIAL WATER LEVEL: _____
12. STABILIZED WATER LEVEL: _____
13. HOW WAS WELL DEVELOPED? BAILING ☐ PUMPING ☐ AIR SURGING (AIR OR NITROGEN) ☐ OTHER ☐ _____
14. TIME SPENT ON WELL DEVELOPMENT? _____ / _____ MINUTES/HOURS
15. APPROXIMATE WATER VOLUME REMOVED? _____ GALLONS
16. WATER CLARITY BEFORE DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
17. WATER CLARITY AFTER DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
18. WATER ODOR? IF YES, DESCRIBE: _____

56 Ft.

19. WATER COLOR? IF YES, DESCRIBE: _____

56.2 Ft.

20. WATER LEVEL SUMMARY (FROM TOP OF CASING)
BEFORE DEVELOPMENT _____ FT. DATE _____
AFTER DEVELOPMENT _____ FT. DATE _____
WATER LEVEL _____ FT. DATE _____
_____ FT. DATE _____
21. SAMPLING METHOD: _____

Ft.

ENVIRO CLEAN CARDINAL

3700 West Robinson St., Suite 200 • Norman, Oklahoma 73072 • 405-701-5058
www.EnviroCleanPS.com

WELL NUMBER: CM-3B

JOB NAME/NUMBER : WFEC

LOCATION: Fort Towson

INSTALLATION DATE: 6/16/20 - 6/17/20

COMPANY REPRESENTATIVE: Alyse Johnson

DRILLING CONTRACTOR: Environmental Works

DRILLING METHOD: Sonic

C:_ECS\CAD\FORMS\ECC_ABOVEWELLFORM.DWG on Apr 14, 2016 - 10:19am

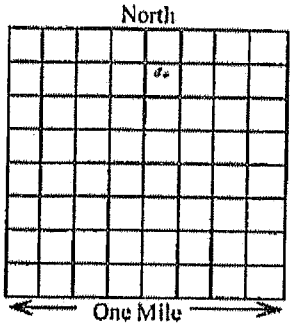
3B

MONITORING WELL COMPLETION REPORT

Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, OK 73118
Telephone (405) 530-8800

Legal Location of Monitoring Well

North



One Mile

Each square is 10-acres
Please Plot Well Location

Section 28
Township 6 ☐ North ☑ South Range 19 ☐ WIM ☑ EIM ☐ ECM

Do Not Write In This Space
Well Record ID Number

Latitude 34° 00' 35.80" **Longitude** 95° 19' 23.03"

Date collected (latitude and longitude), if different from date the well was drilled:
Method latitude and longitude was collected: ☐ GPS-uncorrected data, ☐ GPS-corrected data (WASS), ☐ GPS-corrected data (DGPS), ☐ GPS-corrected to base station

County Caddo Variance Request No. (if applicable)

WELL OWNER – NAME AND ADDRESS

Well Owner Western Farmers Electric Cooperative Phone 405-247-3351
Address/City/State 701 NE 7th St. Anadarko OK Zip 73005
Finding Location

TYPE OF WORK
☒ Monitoring Well

USE OF WELL
☐ Air Sparging ☐ Pump & Treat ☐ Site Assessment ☐ Unsaturated Zone ☐ Vapor Extraction ☐ Water Quality

NEW WELL CONSTRUCTION DATA
An application for a variance must be requested and obtained before any changes are made to the minimum construction standards for any well.

Date Well Was Completed 6-16-20
Hole Diameter 6 inches From 0 feet to 56 feet
Hole Diameter ____ inches From ____ feet to ____ feet

CASING INFORMATION: *Note: If surface casing is used please indicate that on the appropriate well casing information line.
1) Well Casing Material (check one): ☐ H.C. Steel ☒ P.V.C. ☐ Other
Well Casing Diameter (inches): 2 inches Well Casing From 0 feet to 46 feet
2) Well Casing Material (check one): ☐ H.C. Steel ☐ P.V.C. ☐ Other
Well Casing Diameter (inches): ____ inches Well Casing From ____ feet to ____ feet

SCREEN OR PERFORATION INFORMATION:
Type of Screen: ☒ PVC ☐ H.C. Steel ☐ Stainless Steel ☐ Other
Type of Slots or Openings: ☐ Perforations ☒ Factory Slotted ☐ Hand Slotted or Perforated ☐ Other Describe
Screened Interval: From 46 feet to 56 feet
From ____ feet to ____ feet
From ____ feet to ____ feet

FILTER PACK INFORMATION:
Filter Pack Material: ☐ Coarse Gravel ☐ Fine Gravel ☐ Course Sand ☒ Medium Sand ☐ Fine Sand ☐ Native Material
Filter Pack Interval: From 43.5 feet to 56 feet

WELL SEAL INFORMATION:

Type of Surface Seal: ☒ Cement Grout ☐ Cement Grout with Bentonite ☐ Other Describe: _____

Surface Seal Interval: From 0 feet to 2 feet

Annular Seal Material:

☐ Cement Grout ☒ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout, ☐ Bentonite Pellets ☐ Bentonite Granules/Chips ☐ Other

Annular Seal Interval: From 2 feet to 40.5 feet

Filter Pack Seal Material:

☐ Cement Grout ☐ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout ☐ Bentonite Pellets ☒ Bentonite Granules/Chips ☐ Other

Filter Pack Seal Interval: From 40.5 feet to 43.5 feet

TYPE OF COMPLETION: ☒ Above Ground with Casing Protection ☐ Flush Mounted ☐ Below Ground (connections between wells)

Was There a Cement Pad Installed Around the Well? ☒ Yes ☐ No

Size of Cement Pad if Installed: 2 feet by 2 feet

HYDROLOGIC DATA

Depth to water at time of drilling _____ Estimated yield of well _____ gpm First water zone _____ feet

Drawdown Pumping Test: Depth to water before start of test was _____ feet; Well was pumped/bailed at _____ gpm for _____ hours, which resulted in a drawdown depth to water of _____ feet.

LITHOLOGY DESCRIPTION

Note: If no lithology descriptions were made then, in the "Material" data field please indicate "no lithologic description obtained"

MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)	MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)
Topsoil	0	2			
Limestone	2	7			
Shale	7	56			

CERTIFICATION

The work described above was done under my supervision. This report is correct to the best of my knowledge.

Firm Name Environmental Works Inc D/PC No. 0667

Operator Name Paul Reb OP No. 1521

Signature Date 8-17-20

CM-4A

ABOVE GRADE—MONITORING WELL INSTALLATION RECORD

TOP OF CASING ELEVATION _____ FEET AMSL

GROUND LEVEL ELEVATION _____ FEET AMSL

CASING STICKUP _____ Ft.

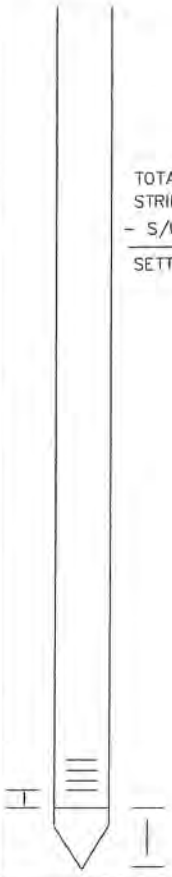
TIME DRILLING STOPPED: 11 51

TIME WELL INSTALLATION BEGAN: 11 51

TIME WELL INSTALLATION FINISHED: 13 23

OBSERVATIONS

TOTAL STRING - S/U SETTING DEPTH



SPECIFICATIONS

STEEL PROTECTIVE PIPE

LOCK: YES ☐ NO ☐

RISER CAP w/VENT: YES ☒ NO ☐

WEEP HOLE: YES ☐ NO ☒

CONCRETE PAD: YES ☒ NO ☐ SIZE _____

CONCRETE SURFACE SEAL — 2 Ft. (to 2 Ft.)

CEMENT–SODIUM BENTONITE GROUT MIX — 8 Ft.

OTHER: _____

SODIUM BENTONITE PELLETS (GENERALLY 2 FT.) — 3 Ft. (to 13.1 Ft.)

CHEMICALLY INERT SAND FILTER PACK (2' MAX. ABOVE SCREEN) — 2.4 Ft. (to 15.5 Ft.)

CHEMICALLY INERT SAND FILTER PACK — 10 Ft.

TYPE: 12/20

FINES SUMP — .2 Ft. (to 25.7 Ft.)

OVERDRILLED MATERIAL BACKFILL w/: .5 Ft. SAND (to 26.2 Ft.)

CAP/PLUG

DRILLED DEPTH

1. TYPE OF CASING: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL _____ ☐ OTHER _____ ☐ — 2 Ft.
2. TYPE OF CASING/SCREEN JOINTS: SCREW COUPLE ☒ OTHER _____ ☐
3. TYPE OF WELL SCREEN: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL ☐ OTHER _____ ☐
4. DIAMETER OF CASING AND WELL SCREEN: (I.D.): RISER 2 INCHES, SCREEN 2 INCHES
5. SLOT SIZE OF SCREEN: _____
6. TYPE OF SCREEN PERFORATION: FACTORY SLOTTED ☒ OTHER ☐ _____ — 10.1 Ft.
7. INSTALLED PROTECTOR PIPE w/LOCK: YES ☒ NO ☐
8. BOREHOLE DIAMETER = 6.25 INCHES
9. WERE DRILLING ADDITIVES USED? YES ☒ NO ☐ BENTONITE ☐ WATER ☒ AIR ☐ GALLONS / VOLUME USED: _____ — 13.1 Ft.
10. WAS CONDUCTOR CASING USED? YES ☐ NO ☒ TYPE OF CONDUCTOR CASING? STEEL ☐ PVC ☐ DEPTH: _____ TO N/A FEET DIAMETER OF CONDUCTOR CASING: _____
11. INITIAL WATER LEVEL: _____ — 15.5 Ft.
12. STABILIZED WATER LEVEL: _____
13. HOW WAS WELL DEVELOPED? BAILING ☐ PUMPING ☐ AIR SURGING (AIR OR NITROGEN) ☐ OTHER ☐ _____
14. TIME SPENT ON WELL DEVELOPMENT? _____ / _____ MINUTES/HOURS
15. APPROXIMATE WATER VOLUME REMOVED? _____ GALLONS
16. WATER CLARITY BEFORE DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
17. WATER CLARITY AFTER DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
18. WATER ODOR? IF YES, DESCRIBE: _____ — 25.5 Ft.
19. WATER COLOR? IF YES, DESCRIBE: _____
20. WATER LEVEL SUMMARY (FROM TOP OF CASING) BEFORE DEVELOPMENT _____ FT. DATE _____ AFTER DEVELOPMENT _____ FT. DATE _____ WATER LEVEL _____ FT. DATE _____ _____ FT. DATE _____ — 25.7 Ft.
21. SAMPLING METHOD: _____ — 26.2 Ft.

WELL COMPLETION MATERIALS:

LENGTH OF SCREEN USED: 10 FT.

LENGTH OF RISER USED: _____ FT.

AMOUNT OF BENTONITE USED: .5 Bucket LBS.

AMOUNT OF SAND FILTER USED: 4.5 BAGS

AMOUNT OF CEMENT USED: _____ BAGS

AMOUNT OF CONCRETE: _____ YARD

ENVIRO CLEAN CARDINAL

3700 West Robinson St., Suite 200 • Norman, Oklahoma 73072 • 405-701-5058
www.EnviroCleanPS.com

WELL NUMBER: CM-4A

JOB NAME/NUMBER: WESC

LOCATION: Fort Towson, OK

INSTALLATION DATE: 6/16/20

COMPANY REPRESENTATIVE: Alyse Johnson

DRILLING CONTRACTOR: Layton Manual Works

DRILLING METHOD: Sonic

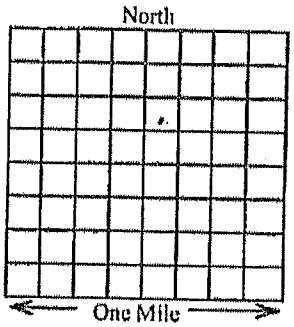
C:_ECS\CAD\FORMS\ECC_ABOVEWELLFORM.DWG on Apr 14, 2016–10:19am

4A

MONITORING WELL COMPLETION REPORT

Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, OK 73118
Telephone (405) 530-8800

Legal Location of Monitoring Well



Each square is 10-acres
Please Plot Well Location

Section 28
Township 6 ☐ North ☒ South Range 19 ☐ WIM ☒ EIM ☐ ECM

Do Not Write In This Space
Well Record ID Number

Latitude 34° 00' 26.52" Longitude 95° 19' 26.50"

Date collected (latitude and longitude), if different from date the well was drilled:
Method latitude and longitude was collected: ☐ GPS-uncorrected data, ☐ GPS-corrected data (WASS), ☐ GPS-corrected data (DGPS), ☐ GPS-corrected to base station

County Caddo Variance Request No. (if applicable)

WELL OWNER – NAME AND ADDRESS

Well Owner Western Farmer Electric Cooperative Phone 405-247-3351
Address/City/State 701 NE 7th Street Anadarko OK Zip 73005
Finding Location

TYPE OF WORK
☒ Monitoring Well

USE OF WELL
☐ Air Sparging ☐ Pump & Treat ☐ Site Assessment ☐ Unsaturated Zone ☐ Vapor Extraction ☐ Water Quality

NEW WELL CONSTRUCTION DATA
An application for a variance must be requested and obtained before any changes are made to the minimum construction standards for any well.

Date Well Was Completed 6-16-20
Hole Diameter 6 inches From 0 feet to 25.5 feet
Hole Diameter inches From feet to feet

CASING INFORMATION: *Note: If surface casing is used please indicate that on the appropriate well casing information line.
1) Well Casing Material (check one): ☐ H.C. Steel ☒ P.V.C. ☐ Other
Well Casing Diameter (inches): 2.0 inches Well Casing From 0 feet to 15.5 feet
2) Well Casing Material (check one): ☐ H.C. Steel ☐ P.V.C. ☐ Other
Well Casing Diameter (inches): inches Well Casing From feet to feet

SCREEN OR PERFORATION INFORMATION:
Type of Screen: ☒ PVC ☐ H.C. Steel ☐ Stainless Steel ☐ Other
Type of Slots or Openings: ☐ Perforations ☒ Factory Slotted ☐ Hand Slotted or Perforated ☐ Other Describe
Screened Interval: From 15.5 feet to 25.5 feet
From feet to feet
From feet to feet

FILTER PACK INFORMATION:
Filter Pack Material: ☐ Coarse Gravel ☐ Fine Gravel ☐ Coarse Sand ☒ Medium Sand ☐ Fine Sand ☐ Native Material
Filter Pack Interval: From 13.5 feet to 25.5 feet

WELL SEAL INFORMATION:

Type of Surface Seal: ☒ Cement Grout ☐ Cement Grout with Bentonite ☐ Other Describe: _____

Surface Seal Interval: From 0 feet to 2 feet

Annular Seal Material:

☐ Cement Grout ☒ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout, ☐ Bentonite Pellets ☐ Bentonite Granules/Chips ☐ Other

Annular Seal Interval: From 2 feet to 10.1 feet

Filter Pack Seal Material:

☐ Cement Grout ☐ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout ☐ Bentonite Pellets ☒ Bentonite Granules/Chips ☐ Other

Filter Pack Seal Interval: From 10.1 feet to 12.1 feet

TYPE OF COMPLETION: ☒ Above Ground with Casing Protection ☐ Flush Mounted ☐ Below Ground (connections between wells)

Was There a Cement Pad Installed Around the Well? ☒ Yes ☐ No

Size of Cement Pad if Installed: 2 feet by 2 feet

HYDROLOGIC DATA

Depth to water at time of drilling _____ Estimated yield of well _____ gpm First water zone _____ feet

Drawdown Pumping Test: Depth to water before start of test was _____ feet; Well was pumped/bailed at _____ gpm for _____ hours, which resulted in a drawdown depth to water of _____ feet.

LITHOLOGY DESCRIPTION

Note: If no lithology descriptions were made then, in the "Material" data field please indicate "no lithologic description obtained"

MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)	MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)
TOPSOIL	0	2			
Limestone	2	7			
Shale	7	25.5			

CERTIFICATION

The work described above was done under my supervision. This report is correct to the best of my knowledge.

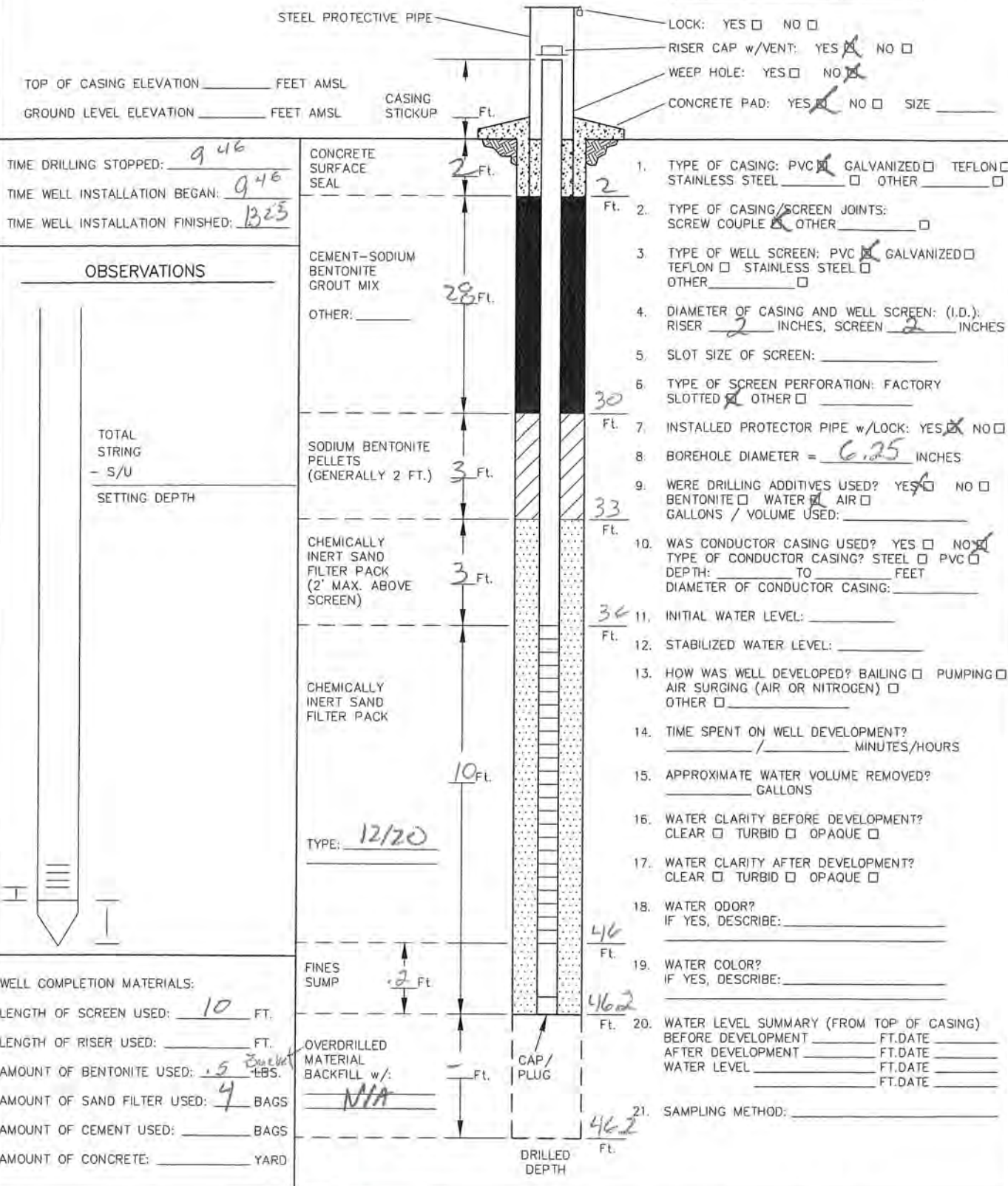
Firm Name Environmental Wells Inc D/PC No. 0667

Operator Name Paul Felix OP No. 1521

Signature Date 8-17-20

CM-4B

ABOVE GRADE–MONITORING WELL INSTALLATION RECORD



SPECIFICATIONS

- LOCK: YES ☐ NO ☐
- RISER CAP w/VENT: YES ☒ NO ☐
- WEEP HOLE: YES ☐ NO ☒
- CONCRETE PAD: YES ☒ NO ☐ SIZE _____

1. TYPE OF CASING: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL _____ ☐ OTHER _____ ☐
2. TYPE OF CASING/SCREEN JOINTS: SCREW COUPLE ☒ OTHER _____ ☐
3. TYPE OF WELL SCREEN: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL ☐ OTHER _____ ☐
4. DIAMETER OF CASING AND WELL SCREEN: (I.D.): RISER 2 INCHES, SCREEN 2 INCHES
5. SLOT SIZE OF SCREEN: _____
6. TYPE OF SCREEN PERFORATION: FACTORY SLOTTED ☒ OTHER ☐ _____
7. INSTALLED PROTECTOR PIPE w/LOCK: YES ☒ NO ☐
8. BOREHOLE DIAMETER = 6.25 INCHES
9. WERE DRILLING ADDITIVES USED? YES ☒ NO ☐ BENTONITE ☐ WATER ☒ AIR ☐ GALLONS / VOLUME USED: _____
10. WAS CONDUCTOR CASING USED? YES ☐ NO ☒ TYPE OF CONDUCTOR CASING? STEEL ☐ PVC ☐ DEPTH: _____ TO _____ FEET DIAMETER OF CONDUCTOR CASING: _____
11. INITIAL WATER LEVEL: _____
12. STABILIZED WATER LEVEL: _____
13. HOW WAS WELL DEVELOPED? BAILING ☐ PUMPING ☐ AIR SURGING (AIR OR NITROGEN) ☐ OTHER ☐ _____
14. TIME SPENT ON WELL DEVELOPMENT? _____ / _____ MINUTES/HOURS
15. APPROXIMATE WATER VOLUME REMOVED? _____ GALLONS
16. WATER CLARITY BEFORE DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
17. WATER CLARITY AFTER DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
18. WATER ODOR? IF YES, DESCRIBE: _____
19. WATER COLOR? IF YES, DESCRIBE: _____
20. WATER LEVEL SUMMARY (FROM TOP OF CASING)
    BEFORE DEVELOPMENT _____ FT. DATE _____
    AFTER DEVELOPMENT _____ FT. DATE _____
    WATER LEVEL _____ FT. DATE _____
    _____ FT. DATE _____
21. SAMPLING METHOD: _____

TIME DRILLING STOPPED: 9:46
TIME WELL INSTALLATION BEGAN: 9:46
TIME WELL INSTALLATION FINISHED: 13:25

OBSERVATIONS

TOTAL STRING – S/U
SETTING DEPTH

WELL COMPLETION MATERIALS:

- LENGTH OF SCREEN USED: 10 FT.
- LENGTH OF RISER USED: _____ FT.
- AMOUNT OF BENTONITE USED: .5 Bucket LBS.
- AMOUNT OF SAND FILTER USED: 4 BAGS
- AMOUNT OF CEMENT USED: _____ BAGS
- AMOUNT OF CONCRETE: _____ YARD

ENVIRO CLEAN CARDINAL

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www.EnviroCleanPS.com

WELL NUMBER: CM-4B
JOB NAME/NUMBER: WPSC
LOCATION: Fort Towson, OK
INSTALLATION DATE: 6/16/20
COMPANY REPRESENTATIVE: Alyse Johnson
DRILLING CONTRACTOR: Environmental Works
DRILLING METHOD: Sonic

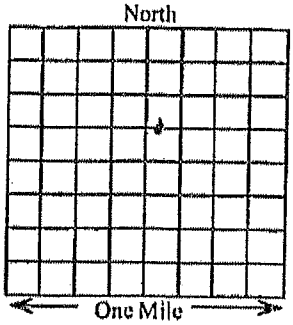
C:_ECS\CAD\FORMS\ECC_ABOVEWELLFORM.DWG on Apr 14, 2016–10:19am

4B

MONITORING WELL COMPLETION REPORT

Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, OK 73118
Telephone (405) 530-8800

Legal Location of Monitoring Well



Each square is 10-acres
Please Plot Well Location

Section 28
Township 6 ☐ North ☐ South Range 19 ☐ WIM ☒ EIM ☐ ECM

Do Not Write In This Space
Well Record ID Number

Latitude 34° 00' 25.47" **Longitude** 95° 19' 26.35"

Date collected (latitude and longitude), if different from date the well was drilled:
Method latitude and longitude was collected: ☐ GPS-uncorrected data, ☐ GPS-corrected data (WASS), ☐ GPS-corrected data (DGPS), ☐ GPS-corrected to base station

County Coal Variance Request No. (if applicable)

WELL OWNER – NAME AND ADDRESS

Well Owner Western Farmers Electric Cooperative Phone 405, 247-3351
Address/City/State 701 NE 7th Street, Anadarko OK Zip 73005
Finding Location Go East on Rt 70 out of Hugo OK, Turn Right onto 7th Street, Go South until overflow past the Lake Rd

TYPE OF WORK
☒ Monitoring Well

USE OF WELL
☐ Air Sparging ☐ Pump & Treat ☐ Site Assessment ☐ Unsaturated Zone ☐ Vapor Extraction ☐ Water Quality

NEW WELL CONSTRUCTION DATA
An application for a variance must be requested and obtained before any changes are made to the minimum construction standards for any well.

Date Well Was Completed 6-16-20
Hole Diameter 6 inches From 0 feet to 46 feet
Hole Diameter ____ inches From ____ feet to ____ feet

CASING INFORMATION: *Note: If surface casing is used please indicate that on the appropriate well casing information line.
1) Well Casing Material (check one): ☐ H.C. Steel ☒ P.V.C. ☐ Other
Well Casing Diameter (inches): 2 inches Well Casing From 0 feet to 36 feet
2) Well Casing Material (check one): ☐ H.C. Steel ☐ P.V.C. ☐ Other
Well Casing Diameter (inches): ____ inches Well Casing From ____ feet to ____ feet

SCREEN OR PERFORATION INFORMATION:
Type of Screen: ☒ PVC ☐ H.C. Steel ☐ Stainless Steel ☐ Other
Type of Slots or Openings: ☐ Perforations ☒ Factory Slotted ☐ Hand Slotted or Perforated ☐ Other Describe ____
Screened Interval: From 36 feet to 46 feet
From ____ feet to ____ feet
From ____ feet to ____ feet

FILTER PACK INFORMATION:
Filter Pack Material: ☐ Coarse Gravel ☐ Fine Gravel ☐ Coarse Sand ☒ Medium Sand ☐ Fine Sand ☐ Native Material
Filter Pack Interval: From 33 feet to 46 feet

WELL SEAL INFORMATION:

Type of Surface Seal: ☑ Cement Grout ☐ Cement Grout with Bentonite ☐ Other Describe: _____

Surface Seal Interval: From 0 feet to 2 feet

Annular Seal Material:

☐ Cement Grout ☑ Cement Grout/ Bentonite ☐ H S. Bentonite Grout, ☐ Bentonite Pellets ☐ Bentonite Granules/Chips ☐ Other

Annular Seal Interval: From 2 feet to 33 feet

Filter Pack Seal Material:

☐ Cement Grout ☐ Cement Grout/ Bentonite ☐ H S. Bentonite Grout ☐ Bentonite Pellets ☑ Bentonite Granules/Chips ☐ Other

Filter Pack Seal Interval: From 33 feet to 36 feet

TYPE OF COMPLETION: ☑ Above Ground with Casing Protection ☐ Flush Mounted ☐ Below Ground (connections between wells)

Was There a Cement Pad Installed Around the Well? ☑ Yes ☐ No

Size of Cement Pad if Installed: 2 feet by 2 feet

HYDROLOGIC DATA

Depth to water at time of drilling _____ Estimated yield of well _____ gpm First water zone _____ feet

Drawdown Pumping Test: Depth to water before start of test was _____ feet; Well was pumped/bailed at _____ gpm for _____ hours, which resulted in a drawdown depth to water of _____ feet.

LITHOLOGY DESCRIPTION

Note: If no lithology descriptions were made then, in the "Material" data field please indicate "no lithologic description obtained"

MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)	MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)
Topsoil	0	2			
Limestone	2	7			
Shale	7	46			

CERTIFICATION

The work described above was done under my supervision. This report is correct to the best of my knowledge.

Firm Name Environmental Wells Inc D/PC No. 0667

Operator Name Paul Pike OP No. 1521

Signature Date 8-27-20

MW-5A

ABOVE GRADE–MONITORING WELL INSTALLATION RECORD

TOP OF CASING ELEVATION _____ FEET AMSL

GROUND LEVEL ELEVATION _____ FEET AMSL

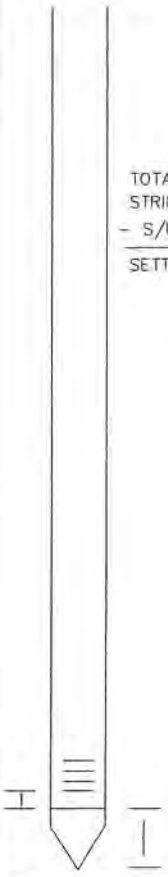
CASING STICKUP _____ Ft.

TIME DRILLING STOPPED: 15 12

TIME WELL INSTALLATION BEGAN: 15 12

TIME WELL INSTALLATION FINISHED: 16 46

OBSERVATIONS



TOTAL STRING - S/U SETTING DEPTH

WELL COMPLETION MATERIALS:

LENGTH OF SCREEN USED: 10 FT.

LENGTH OF RISER USED: _____ FT.

AMOUNT OF BENTONITE USED: 1.5 Bags 50lbs

AMOUNT OF SAND FILTER USED: 5 BAGS

AMOUNT OF CEMENT USED: _____ BAGS

AMOUNT OF CONCRETE: _____ YARD

SPECIFICATIONS

STEEL PROTECTIVE PIPE

LOCK: YES ☐ NO ☐

RISER CAP w/VENT: YES ☒ NO ☐

WEEP HOLE: YES ☐ NO ☒

CONCRETE PAD: YES ☒ NO ☐ SIZE _____

CONCRETE SURFACE SEAL	2 Ft.	2 Ft.
CEMENT–SODIUM BENTONITE GROUT MIX	Ft.	
OTHER: _____		13 Ft.
SODIUM BENTONITE PELLETS (GENERALLY 2 FT.)	2.1 Ft.	15.1 Ft.
CHEMICALLY INERT SAND FILTER PACK (2' MAX. ABOVE SCREEN)	3.4 Ft.	18.5 Ft.
CHEMICALLY INERT SAND FILTER PACK	10 Ft.	
TYPE: 12/20		28.5 Ft.
FINES SUMP	.2 Ft.	28.7 Ft.
OVERDRILLED MATERIAL BACKFILL w/: 3 BAGS	0.3 Ft.	29 Ft. DRILLED DEPTH

CAP/PLUG

1. TYPE OF CASING: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL _____ ☐ OTHER _____ ☐
2. TYPE OF CASING/SCREEN JOINTS: SCREW COUPLE ☒ OTHER _____ ☐
3. TYPE OF WELL SCREEN: PVC ☒ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL ☐ OTHER _____ ☐
4. DIAMETER OF CASING AND WELL SCREEN: (I.D.): RISER 2 INCHES, SCREEN 2 INCHES
5. SLOT SIZE OF SCREEN: _____
6. TYPE OF SCREEN PERFORATION: FACTORY SLOTTED ☒ OTHER ☐ _____
7. INSTALLED PROTECTOR PIPE w/LOCK: YES ☒ NO ☐
8. BOREHOLE DIAMETER = 6.25 INCHES
9. WERE DRILLING ADDITIVES USED? YES ☒ NO ☐ BENTONITE ☐ WATER ☒ AIR ☐ GALLONS / VOLUME USED: _____
10. WAS CONDUCTOR CASING USED? YES ☐ NO ☒ TYPE OF CONDUCTOR CASING? STEEL ☐ PVC ☐ DEPTH: _____ TO _____ FEET DIAMETER OF CONDUCTOR CASING: _____
11. INITIAL WATER LEVEL: _____
12. STABILIZED WATER LEVEL: _____
13. HOW WAS WELL DEVELOPED? BAILING ☐ PUMPING ☐ AIR SURGING (AIR OR NITROGEN) ☐ OTHER ☐ _____
14. TIME SPENT ON WELL DEVELOPMENT? _____ / _____ MINUTES/HOURS
15. APPROXIMATE WATER VOLUME REMOVED? _____ GALLONS
16. WATER CLARITY BEFORE DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
17. WATER CLARITY AFTER DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
18. WATER ODOR? IF YES, DESCRIBE: _____
19. WATER COLOR? IF YES, DESCRIBE: _____
20. WATER LEVEL SUMMARY (FROM TOP OF CASING)
    BEFORE DEVELOPMENT _____ FT. DATE _____
    AFTER DEVELOPMENT _____ FT. DATE _____
    WATER LEVEL _____ FT. DATE _____
    _____ FT. DATE _____
21. SAMPLING METHOD: _____

ENVIRO CLEAN CARDINAL

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www.EnviroCleanPS.com

WELL NUMBER: CM-5A

JOB NAME/NUMBER : WESC

LOCATION: Fort Towson, OK

INSTALLATION DATE: 6/15/20

COMPANY REPRESENTATIVE: Alyse Johnson

DRILLING CONTRACTOR: Environmental Works

DRILLING METHOD: Sonic

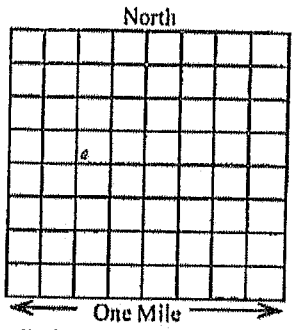
C:_ECS\CAD\FORMS\ECC_ABOVEWELLFORM.DWG on Apr 14, 2016–10:19am

5A

MONITORING WELL COMPLETION REPORT

Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, OK 73118
Telephone (405) 530-8800

Legal Location of Monitoring Well



Each square is 10-acres
Please Plot Well Location

Section 28
Township 6 ☐ North ☒ South Range 19 ☐ WIM ☒ EIM ☐ ECM

Do Not Write In This Space
Well Record ID Number _____

Latitude 34° 00' 37.61" Longitude 95° 14' 35.38"

Date collected (latitude and longitude), if different from date the well was drilled: _____
Method latitude and longitude was collected: ☐ GPS-uncorrected data, ☐ GPS-corrected data (WASS), ☐ GPS-corrected data (DGPS), ☐ GPS-corrected to base station

County Caddo Variance Request No. (if applicable) _____

WELL OWNER – NAME AND ADDRESS

Well Owner Western Farmers Electric Cooperative Phone 405-247-3351
Address/City/State 701 NE 7th St. Anadarko, Ok. Zip 73005
Finding Location Take 81 70 out of Hugo, OK, Turn right onto NE 7th Street. Go south past overflow pond.

TYPE OF WORK
☒ Monitoring Well

USE OF WELL
☐ Air Sparging ☐ Pump & Treat ☐ Site Assessment ☐ Unsaturated Zone ☐ Vapor Extraction ☐ Water Quality

NEW WELL CONSTRUCTION DATA
An application for a variance must be requested and obtained before any changes are made to the minimum construction standards for any well.

Date Well Was Completed 6-15-20
Hole Diameter 6 inches From 0 feet to 28.5 feet
Hole Diameter _____ inches From _____ feet to _____ feet

CASING INFORMATION: *Note: If surface casing is used please indicate that on the appropriate well casing information line.
1) Well Casing Material (check one): ☐ H.C. Steel ☒ P.V.C. ☐ Other
Well Casing Diameter (inches): 2 inches Well Casing From 0 feet to 18.5 feet
2) Well Casing Material (check one): ☐ H.C. Steel ☐ P.V.C. ☐ Other
Well Casing Diameter (inches): _____ inches Well Casing From _____ feet to _____ feet

SCREEN OR PERFORATION INFORMATION:
Type of Screen: ☒ PVC ☐ H.C. Steel ☐ Stainless Steel ☐ Other
Type of Slots or Openings: ☐ Perforations ☒ Factory Slotted ☐ Hand Slotted or Perforated ☐ Other Describe _____
Screened Interval: From 18.5 feet to 28.5 feet
From _____ feet to _____ feet
From _____ feet to _____ feet

FILTER PACK INFORMATION:
Filter Pack Material: ☐ Coarse Gravel ☐ Fine Gravel ☐ Coarse Sand ☒ Medium Sand ☐ Fine Sand ☐ Native Material
Filter Pack Interval: From 15.1 feet to 28.5 feet

WELL SEAL INFORMATION:

Type of Surface Seal: ☒ Cement Grout ☐ Cement Grout with Bentonite ☐ Other Describe: _____

Surface Seal Interval: From 0 feet to 2 feet

Annular Seal Material:

☐ Cement Grout ☒ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout, ☐ Bentonite Pellets ☐ Bentonite Granules/Chips ☐ Other

Annular Seal Interval: From 2 feet to 13 feet

Filter Pack Seal Material:

☐ Cement Grout ☐ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout ☐ Bentonite Pellets ☒ Bentonite Granules/Chips ☐ Other

Filter Pack Seal Interval: From 13 feet to 15.1 feet

TYPE OF COMPLETION: ☒ Above Ground with Casing Protection ☐ Flush Mounted ☐ Below Ground (connections between wells)

Was There a Cement Pad Installed Around the Well? ☒ Yes ☐ No

Size of Cement Pad if Installed: 2 feet by 2 feet

HYDROLOGIC DATA

Depth to water at time of drilling _____ Estimated yield of well _____ gpm First water zone _____ feet

Drawdown Pumping Test: Depth to water before start of test was _____ feet; Well was pumped/bailed at _____ gpm for _____ hours, which resulted in a drawdown depth to water of _____ feet.

LITHOLOGY DESCRIPTION

Note: If no lithology descriptions were made then, in the "Material" data field please indicate "no lithologic description obtained"

MATERIAL (indicate with a check mark n zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)	MATERIAL (indicate with a check mark n zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)
Topsoil	0	2			
Limestone	2	7			
Shale	7	25.5			

CERTIFICATION

The work described above was done under my supervision. This report is correct to the best of my knowledge.

Firm Name Environmental Wells, Inc D/PC No. 0667

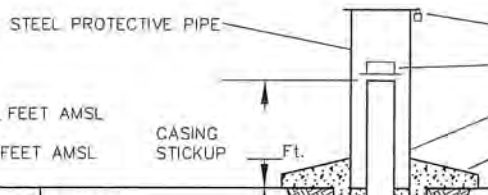
Operator Name Paul Fehr OP No. 1521

Paul Fehr Date 8-17-20

Signature

CM-5B

ABOVE GRADE–MONITORING WELL INSTALLATION RECORD



TOP OF CASING ELEVATION _____ FEET AMSL

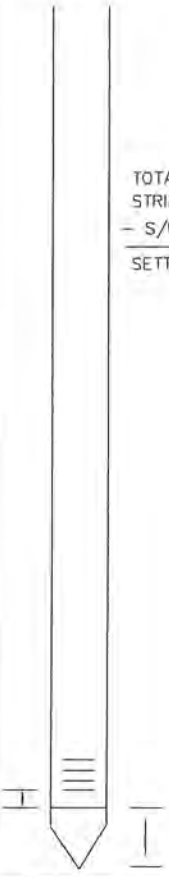
GROUND LEVEL ELEVATION _____ FEET AMSL

TIME DRILLING STOPPED: 12 55

TIME WELL INSTALLATION BEGAN: 12 55

TIME WELL INSTALLATION FINISHED: 16 46

OBSERVATIONS



TOTAL STRING – S/U SETTING DEPTH

WELL COMPLETION MATERIALS:

LENGTH OF SCREEN USED: 10 FT.

LENGTH OF RISER USED: _____ FT.

AMOUNT OF BENTONITE USED: 1 Bucket LBS.

AMOUNT OF SAND FILTER USED: 3 BAGS

AMOUNT OF CEMENT USED: _____ BAGS

AMOUNT OF CONCRETE: _____ YARD

CONCRETE SURFACE SEAL	2 Ft.	2 Ft.
CEMENT–SODIUM BENTONITE GROUT MIX	30 Ft.	32 Ft.
OTHER: _____		
SODIUM BENTONITE PELLETS (GENERALLY 2 FT.)	3 Ft.	35 Ft.
CHEMICALLY INERT SAND FILTER PACK (2' MAX. ABOVE SCREEN)	3 Ft.	38 Ft.
CHEMICALLY INERT SAND FILTER PACK	10 Ft.	48 Ft.
TYPE: 12/20		
FINES SUMP	0.2 Ft.	48.2 Ft.
OVERDRILLED MATERIAL BACKFILL w/: SAND	0.3 Ft.	48.5 Ft.
CAP/PLUG		DRILLED DEPTH

SPECIFICATIONS

LOCK: YES ☐ NO ☐

RISER CAP w/VENT: YES ☒ NO ☐

WEEP HOLE: YES ☐ NO ☒

CONCRETE PAD: YES ☒ NO ☐ SIZE _____

1. TYPE OF CASING: PVC ☑ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL _____ ☐ OTHER _____ ☐
2. TYPE OF CASING/SCREEN JOINTS: SCREW COUPLE ☑ OTHER _____ ☐
3. TYPE OF WELL SCREEN: PVC ☑ GALVANIZED ☐ TEFLON ☐ STAINLESS STEEL ☐ OTHER _____ ☐
4. DIAMETER OF CASING AND WELL SCREEN: (I.D.): RISER 2 INCHES, SCREEN 2 INCHES
5. SLOT SIZE OF SCREEN: _____
6. TYPE OF SCREEN PERFORATION: FACTORY SLOTTED ☒ OTHER ☐ _____
7. INSTALLED PROTECTOR PIPE w/LOCK: YES ☒ NO ☐
8. BOREHOLE DIAMETER = 6.25 INCHES
9. WERE DRILLING ADDITIVES USED? YES ☒ NO ☐ BENTONITE ☐ WATER ☒ AIR ☐ GALLONS / VOLUME USED: _____
10. WAS CONDUCTOR CASING USED? YES ☐ NO ☒ TYPE OF CONDUCTOR CASING? STEEL ☐ PVC ☐ DEPTH: _____ TO _____ FEET DIAMETER OF CONDUCTOR CASING: _____
11. INITIAL WATER LEVEL: _____
12. STABILIZED WATER LEVEL: _____
13. HOW WAS WELL DEVELOPED? BAILING ☐ PUMPING ☐ AIR SURGING (AIR OR NITROGEN) ☐ OTHER ☐ _____
14. TIME SPENT ON WELL DEVELOPMENT? _____ / _____ MINUTES/HOURS
15. APPROXIMATE WATER VOLUME REMOVED? _____ GALLONS
16. WATER CLARITY BEFORE DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
17. WATER CLARITY AFTER DEVELOPMENT? CLEAR ☐ TURBID ☐ OPAQUE ☐
18. WATER ODOR? IF YES, DESCRIBE: _____
19. WATER COLOR? IF YES, DESCRIBE: _____
20. WATER LEVEL SUMMARY (FROM TOP OF CASING)
    BEFORE DEVELOPMENT _____ FT. DATE _____
    AFTER DEVELOPMENT _____ FT. DATE _____
    WATER LEVEL _____ FT. DATE _____
    _____ FT. DATE _____
21. SAMPLING METHOD: _____

ENVIRO CLEAN CARDINAL

3700 West Robinson St., Suite 200 • Norman, Oklahoma 73072 • 405-701-5058

www.EnviroCleanPS.com

WELL NUMBER: CM-5B

JOB NAME/NUMBER: WFEC

LOCATION: Fort Towson, OK

INSTALLATION DATE: 6/15/20

COMPANY REPRESENTATIVE: Alyse Dawson

DRILLING CONTRACTOR: Environmental Works

DRILLING METHOD: Sonic

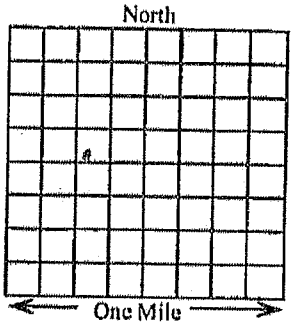
C:_ECS\CAD\FORMS\ECC_ABOVEWELLFORM.DWG on Apr 14, 2016–10:19am

5B

MONITORING WELL COMPLETION REPORT

Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, OK 73118
Telephone (405) 530-8800

Legal Location of Monitoring Well



Each square is 10-acres
Please Plot Well Location

Section 28
Township 6 ☐ North ☒ South Range 19 ☐ WIM ☒ EIM ☐ ECM

Do Not Write In This Space
Well Record ID Number _____

Latitude 34° 00' 18.06" Longitude 95° 14' 55.05"

Date collected (latitude and longitude), if different from date the well was drilled: _____
Method latitude and longitude was collected: ☐ GPS-uncorrected data,
☐ GPS-corrected data (WASS), ☐ GPS-corrected data (DGPS), ☐ GPS-corrected to base station

County Caddo Variance Request No. (if applicable) _____

WELL OWNER – NAME AND ADDRESS

Well Owner Western Farmers Phone 405-247-3351
Address/City/State 701 NE 7th Street Anadarko, OK Zip 73005
Finding Location _____

TYPE OF WORK
☒ Monitoring Well

USE OF WELL
☐ Air Sparging ☐ Pump & Treat ☐ Site Assessment ☐ Unsaturated Zone ☐ Vapor Extraction ☐ Water Quality

NEW WELL CONSTRUCTION DATA
An application for a variance must be requested and obtained before any changes are made to the minimum construction standards for any well.

Date Well Was Completed 6-15-20
Hole Diameter 6 inches From 0 feet to 48 feet
Hole Diameter _____ inches From _____ feet to _____ feet

CASING INFORMATION: *Note: If surface casing is used please indicate that on the appropriate well casing information line.
1) Well Casing Material (check one): ☐ H.C. Steel ☐ P.V.C. ☐ Other
Well Casing Diameter (inches): _____ inches Well Casing From _____ feet to _____ feet
2) Well Casing Material (check one): ☐ H.C. Steel ☒ P.V.C. ☐ Other
Well Casing Diameter (inches): 2" inches Well Casing From +3 feet to 38 feet

SCREEN OR PERFORATION INFORMATION:
Type of Screen: ☒ PVC ☐ H.C. Steel ☐ Stainless Steel ☐ Other
Type of Slots or Openings: ☐ Perforations ☒ Factory Slotted ☐ Hand Slotted or Perforated ☐ Other Describe _____
Screened Interval: From 38 feet to 48 feet
From _____ feet to _____ feet
From _____ feet to _____ feet

FILTER PACK INFORMATION:
Filter Pack Material: ☐ Coarse Gravel ☐ Fine Gravel ☐ Coarse Sand ☒ Medium Sand ☐ Fine Sand ☐ Native Material
Filter Pack Interval: From 35 feet to 48 feet

WELL SEAL INFORMATION:

Type of Surface Seal: ☒ Cement Grout ☐ Cement Grout with Bentonite ☐ Other Describe: _____

Surface Seal Interval: From 0 feet to 2 feet

Annular Seal Material:

☐ Cement Grout ☐ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout, ☐ Bentonite Pellets ☐ Bentonite Granules/Chips ☐ Other

Annular Seal Interval: From 2 feet to 32 feet

Filter Pack Seal Material:

☐ Cement Grout ☐ Cement Grout/ Bentonite ☐ H.S. Bentonite Grout ☐ Bentonite Pellets ☒ Bentonite Granules/Chips ☐ Other

Filter Pack Seal Interval: From 32 feet to 35 feet

TYPE OF COMPLETION: ☒ Above Ground with Casing Protection ☐ Flush Mounted ☐ Below Ground (connections between wells)

Was There a Cement Pad Installed Around the Well? ☒ Yes ☐ No

Size of Cement Pad if Installed: 2 feet by 2 feet

HYDROLOGIC DATA

Depth to water at time of drilling _____ Estimated yield of well _____ gpm First water zone _____ feet

Drawdown Pumping Test: Depth to water before start of test was _____ feet; Well was pumped/bailed at _____ gpm for _____ hours, which resulted in a drawdown depth to water of _____ feet.

LITHOLOGY DESCRIPTION

Note: If no lithology descriptions were made then, in the "Material" data field please indicate "no lithologic description obtained"

MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)	MATERIAL (indicate with a check mark a zone that is saturated)	ENCOUNTERED FROM (Feet)	ENCOUNTERED TO (Feet)
Top Soil	0	2			
Limestone	2	7			
Shale	7	45			

CERTIFICATION

The work described above was done under my supervision. This report is correct to the best of my knowledge.

Firm Name Environmental Wells, Inc D/PC No. 0667

Operator Name Paul Peter OP No. 154

Paul Peter Date 8-17-20

Signature

APPENDIX E

LABORATORY REPORT TO ASSESS WHETHER MOLYBDENUM MIGHT ADSORB TO OR LEACH FROM ROCK (PACE ANALYTICAL)

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

August 19, 2020

Chris Schaefer
Altamira
3700 W Robinson
Ste 200
Norman, OK 73072

RE: Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Dear Chris Schaefer:

Enclosed are the analytical results for sample(s) received by the laboratory between June 24, 2020 and July 10, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace National - Mt. Juliet
- Pace Analytical Services - Kansas City

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Angie Brown
angie.brown@pacelabs.com
1(913)563-1402
Project Manager

Enclosures

cc: Heather Tiffany, Altamira
labdata@altamira-us., Altamira

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

Pace Analytical Services National
12065 Lebanon Road, Mt. Juliet, TN 37122
Alabama Certification #: 40660
Alaska Certification 17-026
Arizona Certification #: AZ0612
Arkansas Certification #: 88-0469
California Certification #: 2932
Canada Certification #: 1461.01
Colorado Certification #: TN00003
Connecticut Certification #: PH-0197
DOD Certification: #1461.01
EPA# TN00003
Florida Certification #: E87487
Georgia DW Certification #: 923
Georgia Certification: NELAP
Idaho Certification #: TN00003
Illinois Certification #: 200008
Indiana Certification #: C-TN-01
Iowa Certification #: 364
Kansas Certification #: E-10277
Kentucky UST Certification #: 16
Kentucky Certification #: 90010
Louisiana Certification #: AI30792
Louisiana DW Certification #: LA180010
Maine Certification #: TN0002
Maryland Certification #: 324
Massachusetts Certification #: M-TN003
Michigan Certification #: 9958
Minnesota Certification #: 047-999-395
Mississippi Certification #: TN00003
Missouri Certification #: 340
Montana Certification #: CERT0086
Nebraska Certification #: NE-OS-15-05
Nevada Certification #: TN-03-2002-34
New Hampshire Certification #: 2975
New Jersey Certification #: TN002
New Mexico DW Certification
New York Certification #: 11742
North Carolina Aquatic Toxicity Certification #: 41
North Carolina Drinking Water Certification #: 21704
North Carolina Environmental Certificate #: 375
North Dakota Certification #: R-140
Ohio VAP Certification #: CL0069
Oklahoma Certification #: 9915
Oregon Certification #: TN200002
Pennsylvania Certification #: 68-02979
Rhode Island Certification #: LAO00356
South Carolina Certification #: 84004
South Dakota Certification
Tennessee DW/Chem/Micro Certification #: 2006
Texas Certification #: T 104704245-17-14
Texas Mold Certification #: LAB0152
USDA Soil Permit #: P330-15-00234
Utah Certification #: TN00003
Virginia Certification #: VT2006
Vermont Dept. of Health: ID# VT-2006
Virginia Certification #: 460132
Washington Certification #: C847
West Virginia Certification #: 233
Wisconsin Certification #: 9980939910
Wyoming UST Certification #: via A2LA 2926.01
A2LA-ISO 17025 Certification #: 1461.01
A2LA-ISO 17025 Certification #: 1461.02
AIHA-LAP/LLC EMLAP Certification #:100789

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60340925001	**CM-5 = 12' (CRUSHED)**	Solid	06/15/20 12:00	06/24/20 09:35
60340925002	**CM-5 = 12' (CORE)**	Solid	06/15/20 12:00	06/24/20 09:35
60340925003	**CM-5 = 20'**	Solid	06/15/20 12:10	06/24/20 09:35
60340925004	**CM-5 = 25'**	Solid	06/15/20 12:10	06/24/20 09:35
60340925005	**MW-19S raw water**	Water	06/23/20 11:00	07/01/20 15:37
60340925006	**CM-5-12' site water Leach 1**	Water	07/08/20 09:10	07/08/20 09:10
60340925007	**CM-5-12 'site water Leach 2**	Water	07/09/20 12:05	07/09/20 12:05
60340925008	**CM-5-12 'site water Leach 3**	Water	07/10/20 10:15	07/10/20 10:15
60340925009	**CM-5-12' Control pH 7 Leach 1**	Water	07/08/20 09:15	07/08/20 09:15
60340925010	**CM-5-12' Control pH 7 Leach 2**	Water	07/09/20 12:10	07/09/20 12:10
60340925011	**CM-5-12' Control pH 7 Leach 3**	Water	07/10/20 10:20	07/10/20 10:20
60340925012	**CM-5-12' Control pH 12 Leach 1**	Water	07/08/20 09:20	07/08/20 09:20
60340925013	**CM-5-12' Control pH 12 Leach 2**	Water	07/09/20 12:15	07/09/20 12:15
60340925014	**CM-5-12' Control pH 12 Leach 3**	Water	07/10/20 10:25	07/10/20 10:25

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SAMPLE ANALYTE COUNT

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60340925001	**CM-5 = 12' (CRUSHED)**	EPA 6010	JDE	8	PASI-K
		EPA 9081	JDE	1	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	KBC	1	PAN
		Walkley Black	SL	1	PAN
60340925002	**CM-5 = 12' (CORE)**	ASTM D2974	DWC	1	PASI-K
		EPA 9045	JDS	1	PASI-K
60340925005	**MW-19S raw water**	EPA 6010	JDE	8	PASI-K
		SM 2320B	MGS	3	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 9056	MJK	2	PASI-K
		EPA 9056	LDB	1	PASI-K
60340925006	**CM-5-12' site water Leach 1**	EPA 6010	JDE	8	PASI-K
		SM 2320B	MGS	3	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 9056	MJK	2	PASI-K
		EPA 9056	JWR	1	PASI-K
60340925007	**CM-5-12 'site water Leach 2**	EPA 6010	JDE	8	PASI-K
		SM 2320B	MGS	3	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 9056	MJK	2	PASI-K
		EPA 9056	MJK	1	PASI-K
60340925008	**CM-5-12 'site water Leach 3**	EPA 6010	JDE	8	PASI-K
		SM 2320B	MGS	3	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 9056	MJK	2	PASI-K
		EPA 9056	MJK	1	PASI-K
60340925009	**CM-5-12' Control pH 7 Leach 1**	EPA 6010	JDE	8	PASI-K
		SM 2320B	MGS	3	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 9056	MJK	2	PASI-K
		EPA 9056	JWR	1	PASI-K
60340925010	**CM-5-12' Control pH 7 Leach 2**	EPA 6010	JDE	8	PASI-K
		SM 2320B	MGS	3	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 9056	MJK	2	PASI-K
		EPA 9056	MJK	1	PASI-K

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60340925011	**CM-5-12' Control pH 7 Leach 3**	EPA 6010	JDE	8	PASI-K
		SM 2320B	MGS	3	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 9056	MJK	2	PASI-K
		EPA 9056	MJK	1	PASI-K
60340925012	**CM-5-12' Control pH 12 Leach 1**	EPA 6010	JDE	8	PASI-K
		SM 2320B	MGS	3	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 9056	MJK	2	PASI-K
		EPA 9056	JWR	1	PASI-K
60340925013	**CM-5-12' Control pH 12 Leach 2**	EPA 6010	JDE	8	PASI-K
		SM 2320B	MGS	3	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 9056	MJK	2	PASI-K
		EPA 9056	MJK	1	PASI-K
60340925014	**CM-5-12' Control pH 12 Leach 3**	EPA 6010	JDE, TDS	8	PASI-K
		SM 2320B	MGS	3	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 9056	MJK	2	PASI-K
		EPA 9056	MJK	1	PASI-K

PAN = Pace National - Mt. Juliet
PASI-K = Pace Analytical Services - Kansas City

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
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SUMMARY OF DETECTION

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
60340925001	**CM-5 = 12' (CRUSHED)**					
EPA 6010	Aluminum	21500	mg/kg	8.1	07/08/20 19:13	M1
EPA 6010	Calcium	9100	mg/kg	10.8	07/08/20 19:13	M1
EPA 6010	Iron	27100	mg/kg	5.4	07/08/20 19:13	M1
EPA 6010	Magnesium	5040	mg/kg	5.4	07/08/20 19:13	M1
EPA 6010	Manganese	1870	mg/kg	0.54	07/08/20 19:13	M1
EPA 6010	Molybdenum	0.39J	mg/kg	2.2	07/08/20 19:13	
EPA 6010	Potassium	6200	mg/kg	53.8	07/08/20 19:13	M1
EPA 6010	Sodium	1880	mg/kg	53.8	07/08/20 19:13	
EPA 9081	Cation Exchange Capacity	45.0	meq/100g	1.2	07/09/20 10:09	
ASTM D2974	Percent Moisture	18.4	%	0.50	06/25/20 11:11	
SM 2540G	Total Solids	80.9	%		07/07/20 18:37	
Walkley Black	Total Organic Carbon	15300000	ug/kg	247000	07/02/20 15:02	
60340925002	**CM-5 = 12' (CORE)**					
ASTM D2974	Percent Moisture	19.8	%	0.50	06/25/20 11:11	
EPA 9045	pH at 25 Degrees C	8.5	Std. Units	0.10	08/12/20 12:54	
60340925005	**MW-19S raw water**					
EPA 6010	Aluminum	339	ug/L	75.0	07/21/20 13:06	
EPA 6010	Calcium	46200	ug/L	200	07/21/20 13:06	
EPA 6010	Molybdenum	445	ug/L	20.0	07/21/20 13:06	
EPA 6010	Potassium	43300	ug/L	500	07/21/20 13:06	
EPA 6010	Sodium	766000	ug/L	5000	07/21/20 14:30	
SM 2320B	Alkalinity,Carbonate (CaCO3)	65.4	mg/L	20.0	07/02/20 14:23	
SM 2320B	Alkalinity, Hydroxide (CaCO3)	61.3	mg/L	20.0	07/02/20 14:23	
SM 4500-H+B	pH at 25 Degrees C	10.4	Std. Units	0.10	07/08/20 10:26	H6
EPA 9056	Chloride	13.8	mg/L	1.0	07/06/20 17:59	
EPA 9056	Sulfate	1480	mg/L	200	07/13/20 16:22	
60340925006	**CM-5-12' site water Leach 1**					
EPA 6010	Calcium	41700	ug/L	200	07/21/20 13:36	
EPA 6010	Magnesium	3780	ug/L	50.0	07/21/20 13:36	
EPA 6010	Molybdenum	310	ug/L	20.0	07/21/20 13:36	
EPA 6010	Potassium	16300	ug/L	500	07/21/20 13:36	
EPA 6010	Sodium	490000	ug/L	500	07/21/20 13:36	
SM 2320B	Alkalinity,Carbonate (CaCO3)	69.5	mg/L	20.0	07/13/20 12:59	
SM 4500-H+B	pH at 25 Degrees C	9.6	Std. Units	0.10	07/13/20 09:59	H6
EPA 9056	Chloride	13.5	mg/L	1.0	07/09/20 11:46	
EPA 9056	Sulfate	1500	mg/L	200	07/13/20 17:11	
60340925007	**CM-5-12 'site water Leach 2**					
EPA 6010	Calcium	41400	ug/L	200	07/21/20 12:41	
EPA 6010	Magnesium	3780	ug/L	50.0	07/21/20 12:41	
EPA 6010	Molybdenum	324	ug/L	20.0	07/21/20 12:41	
EPA 6010	Potassium	17400	ug/L	500	07/21/20 12:41	
EPA 6010	Sodium	556000	ug/L	5000	07/21/20 14:15	
SM 2320B	Alkalinity,Carbonate (CaCO3)	43.9	mg/L	20.0	07/15/20 15:17	
SM 4500-H+B	pH at 25 Degrees C	9.2	Std. Units	0.10	07/13/20 10:11	H6
EPA 9056	Chloride	13.2	mg/L	1.0	07/10/20 23:14	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SUMMARY OF DETECTION

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
60340925007	**CM-5-12 'site water Leach 2**					
EPA 9056	Sulfate	1180	mg/L	200	07/13/20 18:51	
60340925008	**CM-5-12 'site water Leach 3**					
EPA 6010	Calcium	47500	ug/L	200	07/21/20 12:59	
EPA 6010	Iron	55.0	ug/L	50.0	07/21/20 12:59	
EPA 6010	Magnesium	4890	ug/L	50.0	07/21/20 12:59	
EPA 6010	Molybdenum	366	ug/L	20.0	07/21/20 12:59	
EPA 6010	Potassium	22300	ug/L	500	07/21/20 12:59	
EPA 6010	Sodium	620000	ug/L	5000	07/21/20 14:25	
SM 2320B	Alkalinity,Bicarbonate (CaCO3)	24.8	mg/L	20.0	07/15/20 15:49	
SM 2320B	Alkalinity,Carbonate (CaCO3)	27.8	mg/L	20.0	07/15/20 15:49	
SM 4500-H+B	pH at 25 Degrees C	9.1	Std. Units	0.10	07/13/20 10:14	H6
EPA 9056	Chloride	13.7	mg/L	1.0	07/11/20 03:06	
EPA 9056	Sulfate	1360	mg/L	200	07/13/20 20:13	
60340925009	**CM-5-12' Control pH 7 Leach 1**					
EPA 6010	Calcium	22400	ug/L	200	07/21/20 13:39	
EPA 6010	Magnesium	2980	ug/L	50.0	07/21/20 13:39	
EPA 6010	Molybdenum	2.2J	ug/L	20.0	07/21/20 13:39	
EPA 6010	Potassium	4920	ug/L	500	07/21/20 13:39	
EPA 6010	Sodium	408000	ug/L	500	07/21/20 13:39	
SM 2320B	Alkalinity,Bicarbonate (CaCO3)	684	mg/L	20.0	07/13/20 13:09	
SM 4500-H+B	pH at 25 Degrees C	9.3	Std. Units	0.10	07/13/20 10:01	H6
EPA 9056	Chloride	0.42J	mg/L	1.0	07/09/20 13:59	
EPA 9056	Sulfate	15.9	mg/L	1.0	07/09/20 13:59	
EPA 9056	Nitrate as N	0.070J	mg/L	0.10	07/09/20 13:59	
60340925010	**CM-5-12' Control pH 7 Leach 2**					
EPA 6010	Calcium	23400	ug/L	200	07/21/20 12:53	
EPA 6010	Magnesium	3680	ug/L	50.0	07/21/20 12:53	
EPA 6010	Manganese	1.9J	ug/L	5.0	07/21/20 12:53	
EPA 6010	Molybdenum	7.1J	ug/L	20.0	07/21/20 12:53	
EPA 6010	Potassium	5440	ug/L	500	07/21/20 12:53	
EPA 6010	Sodium	423000	ug/L	500	07/21/20 12:53	
SM 2320B	Alkalinity,Bicarbonate (CaCO3)	711	mg/L	20.0	07/15/20 15:27	
SM 4500-H+B	pH at 25 Degrees C	8.7	Std. Units	0.10	07/14/20 10:42	H6
EPA 9056	Chloride	0.73J	mg/L	1.0	07/11/20 00:54	
EPA 9056	Sulfate	24.3	mg/L	5.0	07/13/20 19:07	
EPA 9056	Nitrate as N	0.070J	mg/L	0.10	07/11/20 00:54	
60340925011	**CM-5-12' Control pH 7 Leach 3**					
EPA 6010	Aluminum	70.0J	ug/L	75.0	07/21/20 13:01	
EPA 6010	Calcium	25200	ug/L	200	07/21/20 13:01	
EPA 6010	Iron	35.9J	ug/L	50.0	07/21/20 13:01	
EPA 6010	Magnesium	4330	ug/L	50.0	07/21/20 13:01	
EPA 6010	Manganese	1.8J	ug/L	5.0	07/21/20 13:01	
EPA 6010	Molybdenum	4.5J	ug/L	20.0	07/21/20 13:01	
EPA 6010	Potassium	6020	ug/L	500	07/21/20 13:01	
EPA 6010	Sodium	427000	ug/L	500	07/21/20 13:01	

Pace Analytical Services, LLC
9608 Loiret Blvd.
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SUMMARY OF DETECTION

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
60340925011	**CM-5-12' Control pH 7 Leach 3**					
SM 2320B	Alkalinity,Bicarbonate (CaCO3)	676	mg/L	20.0	07/15/20 15:58	
SM 4500-H+B	pH at 25 Degrees C	8.9	Std. Units	0.10	07/14/20 10:50	H6
EPA 9056	Chloride	0.46J	mg/L	1.0	07/11/20 03:40	
EPA 9056	Sulfate	35.2	mg/L	5.0	07/13/20 20:30	
EPA 9056	Nitrate as N	0.14	mg/L	0.10	07/11/20 03:40	
60340925012	**CM-5-12' Control pH 12 Leach 1**					
EPA 6010	Aluminum	754	ug/L	75.0	07/21/20 13:41	
EPA 6010	Calcium	20800	ug/L	200	07/21/20 13:41	
EPA 6010	Magnesium	259	ug/L	50.0	07/21/20 13:41	
EPA 6010	Potassium	7120	ug/L	500	07/21/20 13:41	
EPA 6010	Sodium	1250000	ug/L	5000	07/21/20 15:06	
SM 2320B	Alkalinity,Bicarbonate (CaCO3)	1830	mg/L	60.0	07/13/20 13:18	
SM 2320B	Alkalinity,Carbonate (CaCO3)	260	mg/L	60.0	07/13/20 13:18	
SM 4500-H+B	pH at 25 Degrees C	11.5	Std. Units	0.10	07/13/20 10:02	H6
EPA 9056	Sulfate	23.7	mg/L	5.0	07/13/20 18:17	
EPA 9056	Nitrate as N	0.10	mg/L	0.10	07/09/20 15:05	
60340925013	**CM-5-12' Control pH 12 Leach 2**					
EPA 6010	Aluminum	442	ug/L	75.0	07/21/20 12:56	
EPA 6010	Calcium	19700	ug/L	200	07/21/20 12:56	
EPA 6010	Magnesium	341	ug/L	50.0	07/21/20 12:56	
EPA 6010	Molybdenum	4.8J	ug/L	20.0	07/21/20 12:56	
EPA 6010	Potassium	7390	ug/L	500	07/21/20 12:56	
EPA 6010	Sodium	1290000	ug/L	5000	07/21/20 14:22	
SM 2320B	Alkalinity,Bicarbonate (CaCO3)	1840	mg/L	60.0	07/15/20 15:45	
SM 2320B	Alkalinity,Carbonate (CaCO3)	83.2	mg/L	60.0	07/15/20 15:45	
SM 4500-H+B	pH at 25 Degrees C	11.2	Std. Units	0.10	07/14/20 10:43	H6
EPA 9056	Sulfate	53.0	mg/L	5.0	07/11/20 02:50	
EPA 9056	Nitrate as N	0.11	mg/L	0.10	07/11/20 02:33	
60340925014	**CM-5-12' Control pH 12 Leach 3**					
EPA 6010	Aluminum	64.4J	ug/L	75.0	07/21/20 13:04	
EPA 6010	Calcium	18800	ug/L	200	07/21/20 13:04	
EPA 6010	Iron	52.7	ug/L	50.0	07/21/20 13:04	
EPA 6010	Magnesium	283	ug/L	50.0	07/21/20 13:04	
EPA 6010	Molybdenum	4.7J	ug/L	20.0	07/21/20 13:04	
EPA 6010	Potassium	7600	ug/L	500	07/21/20 13:04	
EPA 6010	Sodium	1280000	ug/L	5000	07/21/20 15:38	
SM 2320B	Alkalinity,Bicarbonate (CaCO3)	1690	mg/L	60.0	07/15/20 16:08	
SM 4500-H+B	pH at 25 Degrees C	10.9	Std. Units	0.10	07/14/20 10:52	H6
EPA 9056	Sulfate	89.3	mg/L	5.0	07/11/20 04:29	
EPA 9056	Nitrate as N	0.12	mg/L	0.10	07/11/20 04:13	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Date: August 19, 2020

Core extraction: CM-5-12'

Extractions performed on core sample using 3 leaching solutions, Raw Sample Water, a DI solution at pH 7 and at DI solution at pH 12. Each extraction was performed daily for 3 consecutive days using the same core aliquot. The same leaching solution was carried through all 3 subsequent extraction from day 1 through day 3. After each extraction, sample (the leachate) was removed for testing. To keep the ratio of sample and extraction fluid identical through each extraction a small portion of sample was also removed proportional to the amount of leachate removed.
Amended report revised to include the following:

1) analyses results for pH added to CM-5 = 12' (core) sample, 60340925002.

2) available estimated values reported as "J" qualified results are provided for the pH 7 Leachate samples 1-3 and pH 12 Leachate samples 1-3.
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PROJECT NARRATIVE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Method: **EPA 6010**
Description: 6010 MET ICP Red. Interference
Client: ALTAMIRA
Date: August 19, 2020

General Information:
1 sample was analyzed for EPA 6010 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 663753

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60340925001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2690251)
  - Aluminum
  - Calcium
  - Iron
  - Magnesium
  - Manganese
  - Potassium
- MSD (Lab ID: 2690252)
  - Aluminum
  - Calcium
  - Iron
  - Magnesium
  - Potassium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Method: **EPA 6010**
Description: 6010 MET ICP
Client: ALTAMIRA
Date: August 19, 2020

General Information:
10 samples were analyzed for EPA 6010 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 666000

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60342674001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2698043)
  - Aluminum
  - Calcium
  - Iron
  - Magnesium
  - Manganese
  - Molybdenum
  - Potassium
- MSD (Lab ID: 2698044)
  - Aluminum
  - Calcium
  - Iron
  - Magnesium
  - Manganese
  - Molybdenum

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PROJECT NARRATIVE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Method: **EPA 6010**
Description: 6010 MET ICP
Client: ALTAMIRA
Date: August 19, 2020

QC Batch: 666000

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60342674001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- Potassium
- Sodium

Additional Comments:

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PROJECT NARRATIVE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Method: **EPA 9081**
Description: Cation Exchange Capacity
Client: ALTAMIRA
Date: August 19, 2020

General Information:
1 sample was analyzed for EPA 9081 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 9081 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Method: **SM 2320B**
Description: 2320B Alkalinity
Client: ALTAMIRA
Date: August 19, 2020

General Information:
10 samples were analyzed for SM 2320B by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 663307

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 2688463)
  - Alkalinity,Bicarbonate (CaCO3)

Additional Comments:

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PROJECT NARRATIVE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Method: **SM 2540G**
Description: Total Solids 2540 G-2011
Client: ALTAMIRA
Date: August 19, 2020

General Information:
1 sample was analyzed for SM 2540G by Pace National Mt. Juliet. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Method: **Walkley Black**
Description: Wet Chemistry WALKLEY-BLACK
Client: ALTAMIRA
Date: August 19, 2020

General Information:
1 sample was analyzed for Walkley Black by Pace National Mt. Juliet. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: ALTAMIRA
Date: August 19, 2020

General Information:
10 samples were analyzed for SM 4500-H+B by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- CM-5-12 'site water Leach 2 (Lab ID: 60340925007)
- CM-5-12 'site water Leach 3 (Lab ID: 60340925008)
- CM-5-12' Control pH 12 Leach 1 (Lab ID: 60340925012)
- CM-5-12' Control pH 12 Leach 2 (Lab ID: 60340925013)
- CM-5-12' Control pH 12 Leach 3 (Lab ID: 60340925014)
- CM-5-12' Control pH 7 Leach 1 (Lab ID: 60340925009)
- CM-5-12' Control pH 7 Leach 2 (Lab ID: 60340925010)
- CM-5-12' Control pH 7 Leach 3 (Lab ID: 60340925011)
- CM-5-12' site water Leach 1 (Lab ID: 60340925006)
- MW-19S raw water (Lab ID: 60340925005)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Method: **EPA 9045**
Description: 9045 pH Soil
Client: ALTAMIRA
Date: August 19, 2020

General Information:
1 sample was analyzed for EPA 9045 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Method: **EPA 9056**
Description: 9056 IC Anions
Client: ALTAMIRA
Date: August 19, 2020

General Information:
10 samples were analyzed for EPA 9056 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H3: Sample was received or analysis requested beyond the recognized method holding time.
- MW-19S raw water (Lab ID: 60340925005)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 665086

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
- CM-5-12' Control pH 12 Leach 2 (Lab ID: 60340925013)
  - Chloride
- CM-5-12' Control pH 12 Leach 3 (Lab ID: 60340925014)
  - Chloride

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Sample: CM-5 = 12' (CRUSHED) **Lab ID: 60340925001** Collected: 06/15/20 12:00 Received: 06/24/20 09:35 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050 Pace Analytical Services - Kansas City							
Aluminum	**21500**	mg/kg	8.1	1	07/07/20 13:00	07/08/20 19:13	7429-90-5	M1
Calcium	**9100**	mg/kg	10.8	1	07/07/20 13:00	07/08/20 19:13	7440-70-2	M1
Iron	**27100**	mg/kg	5.4	1	07/07/20 13:00	07/08/20 19:13	7439-89-6	M1
Magnesium	**5040**	mg/kg	5.4	1	07/07/20 13:00	07/08/20 19:13	7439-95-4	M1
Manganese	**1870**	mg/kg	0.54	1	07/07/20 13:00	07/08/20 19:13	7439-96-5	M1
Molybdenum	**0.39J**	mg/kg	2.2	1	07/07/20 13:00	07/08/20 19:13	7439-98-7	
Potassium	**6200**	mg/kg	53.8	1	07/07/20 13:00	07/08/20 19:13	7440-09-7	M1
Sodium	**1880**	mg/kg	53.8	1	07/07/20 13:00	07/08/20 19:13	7440-23-5	
Cation Exchange Capacity	Analytical Method: EPA 9081 Preparation Method: EPA 9081 Pace Analytical Services - Kansas City							
Cation Exchange Capacity	**45.0**	meq/100g	1.2	10	07/07/20 12:00	07/09/20 10:09		
Percent Moisture	Analytical Method: ASTM D2974 Pace Analytical Services - Kansas City							
Percent Moisture	**18.4**	%	0.50	1		06/25/20 11:11		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G Pace National - Mt. Juliet							
Total Solids	**80.9**	%		1	07/07/20 18:27	07/07/20 18:37		
Wet Chemistry WALKLEY-BLACK	Analytical Method: Walkley Black Preparation Method: ASTM F1647 Pace National - Mt. Juliet							
Total Organic Carbon	**15300000**	ug/kg	247000	2	07/02/20 11:10	07/02/20 15:02	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Sample: CM-5 = 12' (CORE) **Lab ID: 60340925002** Collected: 06/15/20 12:00 Received: 06/24/20 09:35 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture	Analytical Method: ASTM D2974 Pace Analytical Services - Kansas City							
Percent Moisture	**19.8**	%	0.50	1		06/25/20 11:11		
9045 pH Soil	Analytical Method: EPA 9045 Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**8.5**	Std. Units	0.10	1		08/12/20 12:54		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Sample: MW-19S raw water **Lab ID: 60340925005** Collected: 06/23/20 11:00 Received: 07/01/20 15:37 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Aluminum	**339**	ug/L	75.0	1	07/17/20 09:27	07/21/20 13:06	7429-90-5	
Calcium	**46200**	ug/L	200	1	07/17/20 09:27	07/21/20 13:06	7440-70-2	
Iron	ND	ug/L	50.0	1	07/17/20 09:27	07/21/20 13:06	7439-89-6	
Magnesium	ND	ug/L	50.0	1	07/17/20 09:27	07/21/20 13:06	7439-95-4	
Manganese	ND	ug/L	5.0	1	07/17/20 09:27	07/21/20 13:06	7439-96-5	
Molybdenum	**445**	ug/L	20.0	1	07/17/20 09:27	07/21/20 13:06	7439-98-7	
Potassium	**43300**	ug/L	500	1	07/17/20 09:27	07/21/20 13:06	7440-09-7	
Sodium	**766000**	ug/L	5000	10	07/17/20 09:27	07/21/20 14:30	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	ND	mg/L	20.0	1		07/02/20 14:23		
Alkalinity,Carbonate (CaCO3)	**65.4**	mg/L	20.0	1		07/02/20 14:23		
Alkalinity, Hydroxide (CaCO3)	**61.3**	mg/L	20.0	1		07/02/20 14:23		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**10.4**	Std. Units	0.10	1		07/08/20 10:26		H6
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**13.8**	mg/L	1.0	1		07/06/20 17:59	16887-00-6	
Sulfate	**1480**	mg/L	200	200		07/13/20 16:22	14808-79-8	
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Nitrate as N	ND	mg/L	0.10	1		07/06/20 17:59	14797-55-8	H3

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Sample: CM-5-12' site water Leach 1 **Lab ID: 60340925006** Collected: 07/08/20 09:10 Received: 07/08/20 09:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Aluminum	ND	ug/L	75.0	1	07/13/20 01:17	07/21/20 13:36	7429-90-5	
Calcium	**41700**	ug/L	200	1	07/13/20 01:17	07/21/20 13:36	7440-70-2	
Iron	ND	ug/L	50.0	1	07/13/20 01:17	07/21/20 13:36	7439-89-6	
Magnesium	**3780**	ug/L	50.0	1	07/13/20 01:17	07/21/20 13:36	7439-95-4	
Manganese	ND	ug/L	5.0	1	07/13/20 01:17	07/21/20 13:36	7439-96-5	
Molybdenum	**310**	ug/L	20.0	1	07/13/20 01:17	07/21/20 13:36	7439-98-7	
Potassium	**16300**	ug/L	500	1	07/13/20 01:17	07/21/20 13:36	7440-09-7	
Sodium	**490000**	ug/L	500	1	07/13/20 01:17	07/21/20 13:36	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	ND	mg/L	20.0	1		07/13/20 12:59		
Alkalinity,Carbonate (CaCO3)	**69.5**	mg/L	20.0	1		07/13/20 12:59		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1		07/13/20 12:59		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**9.6**	Std. Units	0.10	1		07/13/20 09:59		H6
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**13.5**	mg/L	1.0	1		07/09/20 11:46	16887-00-6	
Sulfate	**1500**	mg/L	200	200		07/13/20 17:11	14808-79-8	
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Nitrate as N	ND	mg/L	0.10	1		07/09/20 11:46	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Sample: CM-5-12 'site water Leach 2 **Lab ID: 60340925007** Collected: 07/09/20 12:05 Received: 07/09/20 12:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Aluminum	ND	ug/L	75.0	1	07/17/20 09:27	07/21/20 12:41	7429-90-5	
Calcium	**41400**	ug/L	200	1	07/17/20 09:27	07/21/20 12:41	7440-70-2	
Iron	ND	ug/L	50.0	1	07/17/20 09:27	07/21/20 12:41	7439-89-6	
Magnesium	**3780**	ug/L	50.0	1	07/17/20 09:27	07/21/20 12:41	7439-95-4	
Manganese	ND	ug/L	5.0	1	07/17/20 09:27	07/21/20 12:41	7439-96-5	
Molybdenum	**324**	ug/L	20.0	1	07/17/20 09:27	07/21/20 12:41	7439-98-7	
Potassium	**17400**	ug/L	500	1	07/17/20 09:27	07/21/20 12:41	7440-09-7	
Sodium	**556000**	ug/L	5000	10	07/17/20 09:27	07/21/20 14:15	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	ND	mg/L	20.0	1		07/15/20 15:17		
Alkalinity,Carbonate (CaCO3)	**43.9**	mg/L	20.0	1		07/15/20 15:17		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1		07/15/20 15:17		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**9.2**	Std. Units	0.10	1		07/13/20 10:11		H6
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**13.2**	mg/L	1.0	1		07/10/20 23:14	16887-00-6	
Sulfate	**1180**	mg/L	200	200		07/13/20 18:51	14808-79-8	
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Nitrate as N	ND	mg/L	0.10	1		07/10/20 23:14	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Sample: CM-5-12 'site water Leach 3 **Lab ID: 60340925008** Collected: 07/10/20 10:15 Received: 07/10/20 10:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Aluminum	ND	ug/L	75.0	1	07/17/20 09:27	07/21/20 12:59	7429-90-5	
Calcium	**47500**	ug/L	200	1	07/17/20 09:27	07/21/20 12:59	7440-70-2	
Iron	**55.0**	ug/L	50.0	1	07/17/20 09:27	07/21/20 12:59	7439-89-6	
Magnesium	**4890**	ug/L	50.0	1	07/17/20 09:27	07/21/20 12:59	7439-95-4	
Manganese	ND	ug/L	5.0	1	07/17/20 09:27	07/21/20 12:59	7439-96-5	
Molybdenum	**366**	ug/L	20.0	1	07/17/20 09:27	07/21/20 12:59	7439-98-7	
Potassium	**22300**	ug/L	500	1	07/17/20 09:27	07/21/20 12:59	7440-09-7	
Sodium	**620000**	ug/L	5000	10	07/17/20 09:27	07/21/20 14:25	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**24.8**	mg/L	20.0	1		07/15/20 15:49		
Alkalinity,Carbonate (CaCO3)	**27.8**	mg/L	20.0	1		07/15/20 15:49		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1		07/15/20 15:49		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**9.1**	Std. Units	0.10	1		07/13/20 10:14		H6
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**13.7**	mg/L	1.0	1		07/11/20 03:06	16887-00-6	
Sulfate	**1360**	mg/L	200	200		07/13/20 20:13	14808-79-8	
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Nitrate as N	ND	mg/L	0.10	1		07/11/20 03:06	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Sample: CM-5-12' Control pH 7 Leach 1 **Lab ID: 60340925009** Collected: 07/08/20 09:15 Received: 07/08/20 09:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Aluminum	ND	ug/L	75.0	1	07/13/20 01:17	07/21/20 13:39	7429-90-5	
Calcium	**22400**	ug/L	200	1	07/13/20 01:17	07/21/20 13:39	7440-70-2	
Iron	ND	ug/L	50.0	1	07/13/20 01:17	07/21/20 13:39	7439-89-6	
Magnesium	**2980**	ug/L	50.0	1	07/13/20 01:17	07/21/20 13:39	7439-95-4	
Manganese	ND	ug/L	5.0	1	07/13/20 01:17	07/21/20 13:39	7439-96-5	
Molybdenum	**2.2J**	ug/L	20.0	1	07/13/20 01:17	07/21/20 13:39	7439-98-7	
Potassium	**4920**	ug/L	500	1	07/13/20 01:17	07/21/20 13:39	7440-09-7	
Sodium	**408000**	ug/L	500	1	07/13/20 01:17	07/21/20 13:39	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**684**	mg/L	20.0	1		07/13/20 13:09		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	20.0	1		07/13/20 13:09		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1		07/13/20 13:09		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**9.3**	Std. Units	0.10	1		07/13/20 10:01		H6
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**0.42J**	mg/L	1.0	1		07/09/20 13:59	16887-00-6	
Sulfate	**15.9**	mg/L	1.0	1		07/09/20 13:59	14808-79-8	
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Nitrate as N	**0.070J**	mg/L	0.10	1		07/09/20 13:59	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Sample: CM-5-12' Control pH 7 Leach 2 **Lab ID: 60340925010** Collected: 07/09/20 12:10 Received: 07/09/20 12:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Aluminum	ND	ug/L	75.0	1	07/17/20 09:27	07/21/20 12:53	7429-90-5	
Calcium	**23400**	ug/L	200	1	07/17/20 09:27	07/21/20 12:53	7440-70-2	
Iron	ND	ug/L	50.0	1	07/17/20 09:27	07/21/20 12:53	7439-89-6	
Magnesium	**3680**	ug/L	50.0	1	07/17/20 09:27	07/21/20 12:53	7439-95-4	
Manganese	**1.9J**	ug/L	5.0	1	07/17/20 09:27	07/21/20 12:53	7439-96-5	
Molybdenum	**7.1J**	ug/L	20.0	1	07/17/20 09:27	07/21/20 12:53	7439-98-7	
Potassium	**5440**	ug/L	500	1	07/17/20 09:27	07/21/20 12:53	7440-09-7	
Sodium	**423000**	ug/L	500	1	07/17/20 09:27	07/21/20 12:53	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**711**	mg/L	20.0	1		07/15/20 15:27		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	20.0	1		07/15/20 15:27		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1		07/15/20 15:27		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**8.7**	Std. Units	0.10	1		07/14/20 10:42		H6
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**0.73J**	mg/L	1.0	1		07/11/20 00:54	16887-00-6	
Sulfate	**24.3**	mg/L	5.0	5		07/13/20 19:07	14808-79-8	
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Nitrate as N	**0.070J**	mg/L	0.10	1		07/11/20 00:54	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Sample: CM-5-12' Control pH 7 Leach 3 **Lab ID: 60340925011** Collected: 07/10/20 10:20 Received: 07/10/20 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Aluminum	**70.0J**	ug/L	75.0	1	07/17/20 09:27	07/21/20 13:01	7429-90-5	
Calcium	**25200**	ug/L	200	1	07/17/20 09:27	07/21/20 13:01	7440-70-2	
Iron	**35.9J**	ug/L	50.0	1	07/17/20 09:27	07/21/20 13:01	7439-89-6	
Magnesium	**4330**	ug/L	50.0	1	07/17/20 09:27	07/21/20 13:01	7439-95-4	
Manganese	**1.8J**	ug/L	5.0	1	07/17/20 09:27	07/21/20 13:01	7439-96-5	
Molybdenum	**4.5J**	ug/L	20.0	1	07/17/20 09:27	07/21/20 13:01	7439-98-7	
Potassium	**6020**	ug/L	500	1	07/17/20 09:27	07/21/20 13:01	7440-09-7	
Sodium	**427000**	ug/L	500	1	07/17/20 09:27	07/21/20 13:01	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**676**	mg/L	20.0	1		07/15/20 15:58		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	20.0	1		07/15/20 15:58		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	20.0	1		07/15/20 15:58		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**8.9**	Std. Units	0.10	1		07/14/20 10:50		H6
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**0.46J**	mg/L	1.0	1		07/11/20 03:40	16887-00-6	
Sulfate	**35.2**	mg/L	5.0	5		07/13/20 20:30	14808-79-8	
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Nitrate as N	**0.14**	mg/L	0.10	1		07/11/20 03:40	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Sample: CM-5-12' Control pH 12 Leach 1 **Lab ID: 60340925012** Collected: 07/08/20 09:20 Received: 07/08/20 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Aluminum	**754**	ug/L	75.0	1	07/13/20 01:17	07/21/20 13:41	7429-90-5	
Calcium	**20800**	ug/L	200	1	07/13/20 01:17	07/21/20 13:41	7440-70-2	
Iron	ND	ug/L	50.0	1	07/13/20 01:17	07/21/20 13:41	7439-89-6	
Magnesium	**259**	ug/L	50.0	1	07/13/20 01:17	07/21/20 13:41	7439-95-4	
Manganese	ND	ug/L	5.0	1	07/13/20 01:17	07/21/20 13:41	7439-96-5	
Molybdenum	ND	ug/L	20.0	1	07/13/20 01:17	07/21/20 13:41	7439-98-7	
Potassium	**7120**	ug/L	500	1	07/13/20 01:17	07/21/20 13:41	7440-09-7	
Sodium	**1250000**	ug/L	5000	10	07/13/20 01:17	07/21/20 15:06	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**1830**	mg/L	60.0	1		07/13/20 13:18		
Alkalinity,Carbonate (CaCO3)	**260**	mg/L	60.0	1		07/13/20 13:18		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	60.0	1		07/13/20 13:18		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**11.5**	Std. Units	0.10	1		07/13/20 10:02		H6
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	ND	mg/L	1.0	1		07/13/20 18:34	16887-00-6	
Sulfate	**23.7**	mg/L	5.0	5		07/13/20 18:17	14808-79-8	
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Nitrate as N	**0.10**	mg/L	0.10	1		07/09/20 15:05	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Sample: CM-5-12' Control pH 12 Leach 2 **Lab ID: 60340925013** Collected: 07/09/20 12:15 Received: 07/09/20 12:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Aluminum	**442**	ug/L	75.0	1	07/17/20 09:27	07/21/20 12:56	7429-90-5	
Calcium	**19700**	ug/L	200	1	07/17/20 09:27	07/21/20 12:56	7440-70-2	
Iron	ND	ug/L	50.0	1	07/17/20 09:27	07/21/20 12:56	7439-89-6	
Magnesium	**341**	ug/L	50.0	1	07/17/20 09:27	07/21/20 12:56	7439-95-4	
Manganese	ND	ug/L	5.0	1	07/17/20 09:27	07/21/20 12:56	7439-96-5	
Molybdenum	**4.8J**	ug/L	20.0	1	07/17/20 09:27	07/21/20 12:56	7439-98-7	
Potassium	**7390**	ug/L	500	1	07/17/20 09:27	07/21/20 12:56	7440-09-7	
Sodium	**1290000**	ug/L	5000	10	07/17/20 09:27	07/21/20 14:22	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**1840**	mg/L	60.0	1		07/15/20 15:45		
Alkalinity,Carbonate (CaCO3)	**83.2**	mg/L	60.0	1		07/15/20 15:45		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	60.0	1		07/15/20 15:45		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**11.2**	Std. Units	0.10	1		07/14/20 10:43		H6
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	ND	mg/L	5.0	5		07/11/20 02:50	16887-00-6	D3
Sulfate	**53.0**	mg/L	5.0	5		07/11/20 02:50	14808-79-8	
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Nitrate as N	**0.11**	mg/L	0.10	1		07/11/20 02:33	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Sample: CM-5-12' Control pH 12 Leach 3 **Lab ID: 60340925014** Collected: 07/10/20 10:25 Received: 07/10/20 10:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Aluminum	**64.4J**	ug/L	75.0	1	07/17/20 09:27	07/21/20 13:04	7429-90-5	
Calcium	**18800**	ug/L	200	1	07/17/20 09:27	07/21/20 13:04	7440-70-2	
Iron	**52.7**	ug/L	50.0	1	07/17/20 09:27	07/21/20 13:04	7439-89-6	
Magnesium	**283**	ug/L	50.0	1	07/17/20 09:27	07/21/20 13:04	7439-95-4	
Manganese	ND	ug/L	5.0	1	07/17/20 09:27	07/21/20 13:04	7439-96-5	
Molybdenum	**4.7J**	ug/L	20.0	1	07/17/20 09:27	07/21/20 13:04	7439-98-7	
Potassium	**7600**	ug/L	500	1	07/17/20 09:27	07/21/20 13:04	7440-09-7	
Sodium	**1280000**	ug/L	5000	10	07/17/20 09:27	07/21/20 15:38	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B							
	Pace Analytical Services - Kansas City							
Alkalinity,Bicarbonate (CaCO3)	**1690**	mg/L	60.0	1		07/15/20 16:08		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	60.0	1		07/15/20 16:08		
Alkalinity, Hydroxide (CaCO3)	ND	mg/L	60.0	1		07/15/20 16:08		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
	Pace Analytical Services - Kansas City							
pH at 25 Degrees C	**10.9**	Std. Units	0.10	1		07/14/20 10:52		H6
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	ND	mg/L	5.0	5		07/11/20 04:29	16887-00-6	D3
Sulfate	**89.3**	mg/L	5.0	5		07/11/20 04:29	14808-79-8	
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Nitrate as N	**0.12**	mg/L	0.10	1		07/11/20 04:13	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 663753
QC Batch Method: EPA 3050
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925001

METHOD BLANK: 2690249 Matrix: Solid
Associated Lab Samples: 60340925001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	mg/kg	ND	7.1	07/08/20 19:11	
Calcium	mg/kg	4.9J	9.4	07/08/20 19:11	
Iron	mg/kg	ND	4.7	07/08/20 19:11	
Magnesium	mg/kg	ND	4.7	07/08/20 19:11	
Manganese	mg/kg	ND	0.47	07/08/20 19:11	
Molybdenum	mg/kg	ND	1.9	07/08/20 19:11	
Potassium	mg/kg	ND	47.2	07/08/20 19:11	
Sodium	mg/kg	8.9J	47.2	07/08/20 19:11	

LABORATORY CONTROL SAMPLE: 2690250

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	mg/kg	1000	1010	101	80-120	
Calcium	mg/kg	1000	1010	101	80-120	
Iron	mg/kg	1000	987	99	80-120	
Magnesium	mg/kg	1000	938	94	80-120	
Manganese	mg/kg	100	96.4	96	80-120	
Molybdenum	mg/kg	100	107	107	80-120	
Potassium	mg/kg	1000	999	100	80-120	
Sodium	mg/kg	1000	1020	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2690251 2690252

Parameter	Units	60340925001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	mg/kg	21500	1060	1060	38100	35600	1570	1340	75-125	7	20	M1
Calcium	mg/kg	9100	1060	1060	9780	11600	64	236	75-125	17	20	M1
Iron	mg/kg	27100	1060	1060	32500	32800	511	531	75-125	1	20	M1
Magnesium	mg/kg	5040	1060	1060	7360	7140	219	198	75-125	3	20	M1
Manganese	mg/kg	1870	106	106	1920	1990	51	111	75-125	3	20	M1
Molybdenum	mg/kg	0.39J	106	106	84.9	83.8	80	79	75-125	1	20	
Potassium	mg/kg	6200	1060	1060	9170	8640	281	231	75-125	6	20	M1
Sodium	mg/kg	1880	1060	1060	2930	2940	99	100	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 665140
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925006, 60340925009, 60340925012

METHOD BLANK: 2694839 Matrix: Water
Associated Lab Samples: 60340925006, 60340925009, 60340925012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/21/20 13:14	
Calcium	ug/L	ND	200	07/21/20 13:14	
Iron	ug/L	ND	50.0	07/21/20 13:14	
Magnesium	ug/L	ND	50.0	07/21/20 13:14	
Manganese	ug/L	ND	5.0	07/21/20 13:14	
Molybdenum	ug/L	ND	20.0	07/21/20 13:14	
Potassium	ug/L	ND	500	07/21/20 13:14	
Sodium	ug/L	ND	500	07/21/20 15:04	

LABORATORY CONTROL SAMPLE: 2694840

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	10200	102	80-120	
Calcium	ug/L	10000	10300	103	80-120	
Iron	ug/L	10000	10200	102	80-120	
Magnesium	ug/L	10000	10000	100	80-120	
Manganese	ug/L	1000	1040	104	80-120	
Molybdenum	ug/L	1000	1000	100	80-120	
Potassium	ug/L	10000	10200	102	80-120	
Sodium	ug/L	10000	11300	113	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2694841 2694842

Parameter	Units	60342128002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	ND	10000	10000	10200	10200	102	102	75-125	0	20	
Calcium	ug/L	45900	10000	10000	55400	54900	95	90	75-125	1	20	
Iron	ug/L	31.4J	10000	10000	10200	10200	101	102	75-125	1	20	
Magnesium	ug/L	30300	10000	10000	40400	39800	101	95	75-125	2	20	
Manganese	ug/L	11.9	1000	1000	1060	1050	104	104	75-125	0	20	
Molybdenum	ug/L	ND	1000	1000	985	998	98	100	75-125	1	20	
Potassium	ug/L	901	10000	10000	11200	11200	103	103	75-125	0	20	
Sodium	ug/L	1940	10000	10000	12500	12400	106	104	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 666000
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925005, 60340925007, 60340925008, 60340925010, 60340925011, 60340925013, 60340925014

METHOD BLANK: 2698041 Matrix: Water
Associated Lab Samples: 60340925005, 60340925007, 60340925008, 60340925010, 60340925011, 60340925013, 60340925014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	75.0	07/21/20 12:39	
Calcium	ug/L	ND	200	07/21/20 12:39	
Iron	ug/L	ND	50.0	07/21/20 12:39	
Magnesium	ug/L	ND	50.0	07/21/20 12:39	
Manganese	ug/L	ND	5.0	07/21/20 12:39	
Molybdenum	ug/L	ND	20.0	07/21/20 12:39	
Potassium	ug/L	ND	500	07/21/20 12:39	
Sodium	ug/L	ND	500	07/21/20 12:39	

LABORATORY CONTROL SAMPLE: 2698042

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	10000	9990	100	80-120	
Calcium	ug/L	10000	10200	102	80-120	
Iron	ug/L	10000	10200	102	80-120	
Magnesium	ug/L	10000	9780	98	80-120	
Manganese	ug/L	1000	1050	105	80-120	
Molybdenum	ug/L	1000	1020	102	80-120	
Potassium	ug/L	10000	9960	100	80-120	
Sodium	ug/L	10000	10300	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2698043 2698044

Parameter	Units	60342674001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	690	10000	10000	15400	15700	148	150	75-125	1	20	M1
Calcium	ug/L	48200	10000	10000	62300	62600	142	145	75-125	0	20	M1
Iron	ug/L	463	10000	10000	15300	15500	149	151	75-125	1	20	M1
Magnesium	ug/L	18000	10000	10000	31300	31500	133	135	75-125	1	20	M1
Manganese	ug/L	43.2	1000	1000	1550	1570	151	153	75-125	1	20	M1
Molybdenum	ug/L	ND	1000	1000	1490	1510	149	151	75-125	1	20	M1
Potassium	ug/L	78400	10000	10000	92600	92900	142	145	75-125	0	20	M1
Sodium	ug/L	362000	10000	10000	373000	379000	106	168	75-125	2	20	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 663862
QC Batch Method: EPA 9081
Analysis Method: EPA 9081
Analysis Description: Cation Exchange Capacity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925001

METHOD BLANK: 2690644 Matrix: Solid
Associated Lab Samples: 60340925001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cation Exchange Capacity	meq/100g	ND	1.0	07/08/20 19:47	

LABORATORY CONTROL SAMPLE: 2690645

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cation Exchange Capacity	meq/100g	43.4	55.6	128	60-140	

SAMPLE DUPLICATE: 2690646

Parameter	Units	60340925001 Result	Dup Result	RPD	Max RPD	Qualifiers
Cation Exchange Capacity	meq/100g	45.0	44.5	1	47	

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 662141
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight/Percent Moisture
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925001, 60340925002

METHOD BLANK: 2684026 Matrix: Solid
Associated Lab Samples: 60340925001, 60340925002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Percent Moisture	%	ND	0.50	06/25/20 11:10	

SAMPLE DUPLICATE: 2684027

Parameter	Units	60339916002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	22.8	21.7	5	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 663307
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925005

METHOD BLANK: 2688461 Matrix: Water
Associated Lab Samples: 60340925005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Hydroxide (CaCO3)	mg/L	ND	20.0	07/02/20 13:58	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	07/02/20 13:58	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	20.0	07/02/20 13:58	

SAMPLE DUPLICATE: 2688463

Parameter	Units	60340964003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Hydroxide (CaCO3)	mg/L	ND	ND		10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	1470	1270	15	10	D6
Alkalinity,Carbonate (CaCO3)	mg/L	ND	ND		10	

SAMPLE DUPLICATE: 2688464

Parameter	Units	60341499004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Hydroxide (CaCO3)	mg/L	ND	ND		10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	362	380	5	10	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	ND		10	

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 664992
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925006, 60340925009, 60340925012

METHOD BLANK: 2694567 Matrix: Water
Associated Lab Samples: 60340925006, 60340925009, 60340925012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Hydroxide (CaCO3)	mg/L	ND	20.0	07/13/20 11:35	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	07/13/20 11:35	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	20.0	07/13/20 11:35	

SAMPLE DUPLICATE: 2694569

Parameter	Units	60342191008 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Hydroxide (CaCO3)	mg/L	ND	ND		10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	88.7	91.1	3	10	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	ND		10	

SAMPLE DUPLICATE: 2694570

Parameter	Units	60342169002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Hydroxide (CaCO3)	mg/L		ND			
Alkalinity,Bicarbonate (CaCO3)	mg/L		127			
Alkalinity,Carbonate (CaCO3)	mg/L		ND			

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 665490 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925007, 60340925008, 60340925010, 60340925011, 60340925013, 60340925014

METHOD BLANK: 2695851 Matrix: Water
Associated Lab Samples: 60340925007, 60340925008, 60340925010, 60340925011, 60340925013, 60340925014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Hydroxide (CaCO3)	mg/L	ND	20.0	07/15/20 13:32	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	07/15/20 13:32	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	20.0	07/15/20 13:32	

SAMPLE DUPLICATE: 2695853

Parameter	Units	60341750006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Hydroxide (CaCO3)	mg/L	ND	ND		10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	465	456	2	10	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	ND		10	

SAMPLE DUPLICATE: 2695854

Parameter	Units	60342444002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Hydroxide (CaCO3)	mg/L	ND	ND		10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	ND		10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 1504868
QC Batch Method: SM 2540 G
Analysis Method: SM 2540G
Analysis Description: Total Solids 2540 G-2011
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60340925001

METHOD BLANK: R3547350-1 Matrix: Solid
Associated Lab Samples: 60340925001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Solids	%	ND		07/07/20 18:37	

LABORATORY CONTROL SAMPLE: R3547350-2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Solids	%	50.0	50.0	100	85.0-115	

SAMPLE DUPLICATE: R3547350-3

Parameter	Units	L1235184-01 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Solids	%	89.8	90.3	0.594	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 1502302
QC Batch Method: ASTM F1647
Analysis Method: Walkley Black
Analysis Description: Wet Chemistry WALKLEY-BLACK
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60340925001

METHOD BLANK: R3545672-1 Matrix: Solid
Associated Lab Samples: 60340925001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	ug/kg	ND	100000	07/02/20 15:01	

LABORATORY CONTROL SAMPLE: R3545672-2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	ug/kg	5080000	6290000	124	45.0-154	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: R3545672-4 R3545672-5

Parameter	Units	L1233185-01 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	ug/kg	1180000	5050000	5050000	6830000	6790000	112	111	80.0-120	0.629	20	

SAMPLE DUPLICATE: R3545672-3

Parameter	Units	L1233185-01 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	ug/kg	1180000	1390000	15.6	20	

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 664047
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60340925005

SAMPLE DUPLICATE: 2691253

Parameter	Units	60340925005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	10.4	10.4	0	5	H6

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 664912
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925006, 60340925007, 60340925008, 60340925009, 60340925012

SAMPLE DUPLICATE: 2694382

Parameter	Units	60342342001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.1	8.2	1	5	H6

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 665193
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925010, 60340925011, 60340925013, 60340925014

SAMPLE DUPLICATE: 2694996

Parameter	Units	60342238004 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.4	8.4	0	5	H6

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 670396
QC Batch Method: EPA 9045
Analysis Method: EPA 9045
Analysis Description: 9045 pH
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60340925002

SAMPLE DUPLICATE: 2712994

Parameter	Units	60344886001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	0	3	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 665086
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925005, 60340925006, 60340925007, 60340925008, 60340925009, 60340925010, 60340925011, 60340925012, 60340925013, 60340925014

METHOD BLANK: 2694753 Matrix: Water
Associated Lab Samples: 60340925005, 60340925006, 60340925007, 60340925008, 60340925009, 60340925010, 60340925011, 60340925012, 60340925013, 60340925014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	07/13/20 09:23	
Sulfate	mg/L	ND	1.0	07/13/20 09:23	

METHOD BLANK: 2695230 Matrix: Water
Associated Lab Samples: 60340925005, 60340925006, 60340925007, 60340925008, 60340925009, 60340925010, 60340925011, 60340925012, 60340925013, 60340925014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	07/14/20 09:14	
Sulfate	mg/L	ND	1.0	07/14/20 09:14	

METHOD BLANK: 2695546 Matrix: Water
Associated Lab Samples: 60340925005, 60340925006, 60340925007, 60340925008, 60340925009, 60340925010, 60340925011, 60340925012, 60340925013, 60340925014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	07/06/20 16:08	
Sulfate	mg/L	ND	1.0	07/06/20 16:08	

METHOD BLANK: 2695548 Matrix: Water
Associated Lab Samples: 60340925005, 60340925006, 60340925007, 60340925008, 60340925009, 60340925010, 60340925011, 60340925012, 60340925013, 60340925014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	07/09/20 09:21	
Sulfate	mg/L	ND	1.0	07/09/20 09:21	

METHOD BLANK: 2695550 Matrix: Water
Associated Lab Samples: 60340925005, 60340925006, 60340925007, 60340925008, 60340925009, 60340925010, 60340925011, 60340925012, 60340925013, 60340925014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	07/10/20 22:41	

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QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

METHOD BLANK: 2695550 Matrix: Water
Associated Lab Samples: 60340925005, 60340925006, 60340925007, 60340925008, 60340925009, 60340925010, 60340925011, 60340925012, 60340925013, 60340925014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	07/10/20 22:41	

LABORATORY CONTROL SAMPLE: 2694754

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	80-120	
Sulfate	mg/L	5	4.9	99	80-120	

LABORATORY CONTROL SAMPLE: 2695231

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	80-120	
Sulfate	mg/L	5	5.0	99	80-120	

LABORATORY CONTROL SAMPLE: 2695547

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	80-120	
Sulfate	mg/L	5	4.9	99	80-120	

LABORATORY CONTROL SAMPLE: 2695549

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	80-120	
Sulfate	mg/L	5	5.0	100	80-120	

LABORATORY CONTROL SAMPLE: 2695551

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	80-120	
Sulfate	mg/L	5	5.1	101	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2694755 2694756

Parameter	Units	60340925005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	13.8	5	5	19.6	19.6	116	116	80-120	0	15	
Sulfate	mg/L	1480	1000	1000	2540	2510	106	103	80-120	1	15	

SAMPLE DUPLICATE: 2694757

Parameter	Units	60340925009 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	0.42J	.42J		15	
Sulfate	mg/L	15.9	17.0	7	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 663680
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925005

METHOD BLANK: 2690061 Matrix: Water
Associated Lab Samples: 60340925005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrate as N	mg/L	ND	0.10	07/06/20 16:08	

LABORATORY CONTROL SAMPLE: 2690062

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	2	1.9	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2690063 2690064

Parameter	Units	60340925005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrate as N	mg/L	ND	2	2	2.1	2.1	103	103	80-120	0	15	H3

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 664437
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925006, 60340925009, 60340925012

METHOD BLANK: 2692565 Matrix: Water
Associated Lab Samples: 60340925006, 60340925009, 60340925012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrate as N	mg/L	ND	0.10	07/09/20 09:21	

LABORATORY CONTROL SAMPLE: 2692566

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	2	2.0	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2692567 2692568

Parameter	Units	60340925006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrate as N	mg/L	ND	2	2	2.4	2.3	114	110	80-120	4	15	

SAMPLE DUPLICATE: 2692569

Parameter	Units	60340925009 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrate as N	mg/L	0.070J	.07J		15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

QC Batch: 664858 | Analysis Method: EPA 9056
QC Batch Method: EPA 9056 | Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340925007, 60340925008, 60340925010, 60340925011, 60340925013, 60340925014

METHOD BLANK: 2693918 Matrix: Water
Associated Lab Samples: 60340925007, 60340925008, 60340925010, 60340925011, 60340925013, 60340925014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrate as N	mg/L	ND	0.10	07/10/20 22:41	

LABORATORY CONTROL SAMPLE: 2693919

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	2	2.0	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2693920 2693921

Parameter	Units	60340925007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrate as N	mg/L	ND	2	2	2.3	2.3	110	111	80-120	1	15	

SAMPLE DUPLICATE: 2693922

Parameter	Units	60340925010 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrate as N	mg/L	0.070J	.072J		15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
H3	Sample was received or analysis requested beyond the recognized method holding time.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60340925001	**CM-5 = 12' (CRUSHED)**	EPA 3050	663753	EPA 6010	664099
60340925005	**MW-19S raw water**	EPA 3010	666000	EPA 6010	666039
60340925006	**CM-5-12' site water Leach 1**	EPA 3010	665140	EPA 6010	665192
60340925007	**CM-5-12 'site water Leach 2**	EPA 3010	666000	EPA 6010	666039
60340925008	**CM-5-12 'site water Leach 3**	EPA 3010	666000	EPA 6010	666039
60340925009	**CM-5-12' Control pH 7 Leach 1**	EPA 3010	665140	EPA 6010	665192
60340925010	**CM-5-12' Control pH 7 Leach 2**	EPA 3010	666000	EPA 6010	666039
60340925011	**CM-5-12' Control pH 7 Leach 3**	EPA 3010	666000	EPA 6010	666039
60340925012	**CM-5-12' Control pH 12 Leach 1**	EPA 3010	665140	EPA 6010	665192
60340925013	**CM-5-12' Control pH 12 Leach 2**	EPA 3010	666000	EPA 6010	666039
60340925014	**CM-5-12' Control pH 12 Leach 3**	EPA 3010	666000	EPA 6010	666039
60340925001	**CM-5 = 12' (CRUSHED)**	EPA 9081	663862	EPA 9081	664095
60340925001	**CM-5 = 12' (CRUSHED)**	ASTM D2974	662141		
60340925002	**CM-5 = 12' (CORE)**	ASTM D2974	662141		
60340925005	**MW-19S raw water**	SM 2320B	663307		
60340925006	**CM-5-12' site water Leach 1**	SM 2320B	664992		
60340925007	**CM-5-12 'site water Leach 2**	SM 2320B	665490		
60340925008	**CM-5-12 'site water Leach 3**	SM 2320B	665490		
60340925009	**CM-5-12' Control pH 7 Leach 1**	SM 2320B	664992		
60340925010	**CM-5-12' Control pH 7 Leach 2**	SM 2320B	665490		
60340925011	**CM-5-12' Control pH 7 Leach 3**	SM 2320B	665490		
60340925012	**CM-5-12' Control pH 12 Leach 1**	SM 2320B	664992		
60340925013	**CM-5-12' Control pH 12 Leach 2**	SM 2320B	665490		
60340925014	**CM-5-12' Control pH 12 Leach 3**	SM 2320B	665490		
60340925001	**CM-5 = 12' (CRUSHED)**	SM 2540 G	1504868	SM 2540G	1504868
60340925001	**CM-5 = 12' (CRUSHED)**	ASTM F1647	1502302	Walkley Black	1502302
60340925005	**MW-19S raw water**	SM 4500-H+B	664047		
60340925006	**CM-5-12' site water Leach 1**	SM 4500-H+B	664912		
60340925007	**CM-5-12 'site water Leach 2**	SM 4500-H+B	664912		
60340925008	**CM-5-12 'site water Leach 3**	SM 4500-H+B	664912		
60340925009	**CM-5-12' Control pH 7 Leach 1**	SM 4500-H+B	664912		
60340925010	**CM-5-12' Control pH 7 Leach 2**	SM 4500-H+B	665193		
60340925011	**CM-5-12' Control pH 7 Leach 3**	SM 4500-H+B	665193		
60340925012	**CM-5-12' Control pH 12 Leach 1**	SM 4500-H+B	664912		
60340925013	**CM-5-12' Control pH 12 Leach 2**	SM 4500-H+B	665193		
60340925014	**CM-5-12' Control pH 12 Leach 3**	SM 4500-H+B	665193		
60340925002	**CM-5 = 12' (CORE)**	EPA 9045	670396		

Pace Analytical Services, LLC
9608 Loiret Blvd.
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WESTERN FARMS ELECTRIC COOP-Revised Report
Pace Project No.: 60340925

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60340925005	**MW-19S raw water**	EPA 9056	665086		
60340925006	**CM-5-12' site water Leach 1**	EPA 9056	665086		
60340925007	**CM-5-12 'site water Leach 2**	EPA 9056	665086		
60340925008	**CM-5-12 'site water Leach 3**	EPA 9056	665086		
60340925009	**CM-5-12' Control pH 7 Leach 1**	EPA 9056	665086		
60340925010	**CM-5-12' Control pH 7 Leach 2**	EPA 9056	665086		
60340925011	**CM-5-12' Control pH 7 Leach 3**	EPA 9056	665086		
60340925012	**CM-5-12' Control pH 12 Leach 1**	EPA 9056	665086		
60340925013	**CM-5-12' Control pH 12 Leach 2**	EPA 9056	665086		
60340925014	**CM-5-12' Control pH 12 Leach 3**	EPA 9056	665086		
60340925005	**MW-19S raw water**	EPA 9056	663680		
60340925006	**CM-5-12' site water Leach 1**	EPA 9056	664437		
60340925007	**CM-5-12 'site water Leach 2**	EPA 9056	664858		
60340925008	**CM-5-12 'site water Leach 3**	EPA 9056	664858		
60340925009	**CM-5-12' Control pH 7 Leach 1**	EPA 9056	664437		
60340925010	**CM-5-12' Control pH 7 Leach 2**	EPA 9056	664858		
60340925011	**CM-5-12' Control pH 7 Leach 3**	EPA 9056	664858		
60340925012	**CM-5-12' Control pH 12 Leach 1**	EPA 9056	664437		
60340925013	**CM-5-12' Control pH 12 Leach 2**	EPA 9056	664858		
60340925014	**CM-5-12' Control pH 12 Leach 3**	EPA 9056	664858		

Pace Analytical
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Sample Condition Upon Receipt

WO# : 60340925

60340925

Client Name: EnviroClean

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 8700 8143 5935 Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: T299 **Type of Ice:** Wet Blue (None)

Cooler Temperature (°C): **As-read** 5.6 **Corr. Factor** +0.1 **Corrected** 5.7

Date and initials of person examining contents: VB 6/24/20

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT#	☐Yes ☐No ☑N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☑Yes ☐No ~~☐N/A~~ >6mm	received 2- 0.94H
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

No. 04642

CHAIN OF CUSTODY RECORD

ENVIRO CLEAN SERVICES, LLC
(918) 794-7828

PROJECT NUMBER: WFEC 160020
PROJECT NAME: WFEC
COC 1 of 1
SHIPPED TO: Pace Lab's
PROJECT MANAGER: Christofer Schaefer
TAT: Standard

SAMPLER'S PRINTED NAME: Pasha Kilgstov
SAMPLER'S SIGNATURE:

60340925

Date	Time	Sample ID	Sample Matrix	# of Sample Containers		REMARKS
6/23/20	11:00	MW-19S	W	3	Water for miscellaneous leaching tests	3 x 1gal plastic cartons

TOTAL NUMBER OF CONTAINERS → 3

RELINQUISHED BY:	DATE 6/23/20 TIME 1600	RECEIVED BY:	DATE	TIME
RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE	TIME

METHOD OF SHIPMENT:

AIRBILL NUMBER:

RECEIVED IN LABORATORY BY: Vinton B / Pace 5.7°C
DATE 6/24/20 TIME 0935

Send PDF, EDD, and INVOICE (If applicable) to: ~~JULIE CZECH at julie.czech@ecsgrp.com~~ lab.data@Allonips-us.com

LABORATORY CONTACT:

LABORATORY ADDRESS:

POINT OF ORIGIN: ☐ OKLAHOMA CITY ☐ TULSA ☐ NORMAN ☐ WOODWARD ☐ ARLINGTON ☐ MIDLAND ☐ OTHER:

PAGE #1 - RECEIVING LAB PAGE #2 - ENVIRO CLEAN PROJECT FILE PAGE #3 - ENVIRO CLEAN QA/QC DEPT

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Sample Condition Upon Receipt

Client Name: EnviroClean

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 8700 8143 5935 Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: T299 **Type of Ice:** Wet Blue (None)

Cooler Temperature (°C): As-read 5.6 Corr. Factor +0.1 Corrected 5.7

Date and initials of person examining contents: VB 6/24/20

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT#	☐Yes ☐No ☑N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

CHAIN OF CUSTODY RECORD

No. 04642

ENVIRO CLEAN SERVICES, LLC
(918) 794-7828

PROJECT NUMBER: WFEE160020 | PROJECT NAME: WFEC | COC 1 of 1

SHIPPED TO: Pace Labs | PROJECT MANAGER: Christofer Schaefer | TAT: Standard

SAMPLER'S PRINTED NAME: Pastia Milgstav

SAMPLER'S SIGNATURE:

Date	Time	Sample ID	Sample Matrix	# of Sample Containers																		REMARKS
6/23/20	11:00	MW-19S	W	3																		3x1gal plastic cartons

Water for miscellaneous leaching tests

TOTAL NUMBER OF CONTAINERS → 3

RELINQUISHED BY:	DATE 6/23/20	RECEIVED BY:	DATE
	TIME 1400		TIME
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
	TIME		TIME

METHOD OF SHIPMENT:

AIRBILL NUMBER:

RECEIVED IN LABORATORY BY: Victoria B / Pace 5.7°C

DATE 6/24/20 TIME 0933

Send PDF, EDD, and INVOICE (If applicable) to: ~~JULIE CZECH at julie.czech@eecgrp.com~~ lab.data@stanantus.com

LABORATORY CONTACT:

LABORATORY ADDRESS:

POINT OF ORIGIN: ☐ OKLAHOMA CITY ☐ TULSA ☐ NORMAN ☐ WOODWARD ☐ ARLINGTON ☐ MIDLAND ☐ OTHER:

PAGE #1 - RECEIVING LAB | PAGE #2 - ENVIRO CLEAN PROJECT FILE | PAGE #3 - ENVIRO CLEAN QA/QC DEPT

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: OK
Cert. Needed: [X] Yes ☐ No
Owner Received Date: 6/24/2020 Results Requested By: 7/9/2020

Pace Analytical® www.pacelabs.com

Workorder: 60340925 **Workorder Name:** WESTERN FARMS ELECTRIC COOP

Report To	Subcontract To
Angie Brown Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1402	Pace National Mt. Juliet

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Total Organic Carbon	LAB USE ONLY
1	CM-5 = 12' (CRUSHED)	PS	6/15/2020 12:00	60340925001	Solid	1	X	12352Pol
2								
3								
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	MEEIER/Pace	6/30/20 1800		
2				
3				7/1 8:45

Comments

Cooler Temperature on Receipt 1.0 °C | Custody Seal Y or (N) | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

1908 6730 2677

C029

MPAS
1.4-.4=1.0

RAD SCREEN: <0.5 mR/hr

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client:	PACELK	135207
Cooler Received/Opened On: 7/1/20	Temperature:	1.0°C
Received By: LUCAS GREEN		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

APPENDIX F

LABORATORY REPORT FOR JUNE/JULY 2020 SAMPLING OF CCR NETWORK WELLS FOR DETECTION AND ASSESSMENT MONITORING PARAMETERS (ALS)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

October 12, 2020

Heather Tiffany
Altamira
525 central park Dr
Suite 500
Oklahoma City, OK 73013

Work Order: **HS20090348**

Laboratory Results for: **CCR Assessment Monitoring**

Dear Heather Tiffany,

ALS Environmental received 22 sample(s) on Sep 04, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: RJ.MODASHIA
RJ Modashia
Project Manager

Client: Altamira
Project: CCR Assessment Monitoring
Work Order: HS20090348

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20090348-01	MW-3	Water	HS20060899-01	17-Jun-2020 12:33	04-Sep-2020 08:55	☐
HS20090348-02	MW-5S	Water	HS20060948-01	18-Jun-2020 11:10	04-Sep-2020 08:55	☐
HS20090348-03	MW-7S	Water	HS20060948-02	17-Jun-2020 16:00	04-Sep-2020 08:55	☐
HS20090348-04	MW-13	Water	HS20060899-02	17-Jun-2020 09:35	04-Sep-2020 08:55	☐
HS20090348-05	MW-14A	Water	HS20060899-03	17-Jun-2020 11:04	04-Sep-2020 08:55	☐
HS20090348-06	MW-15A	Water	HS20061004-01	18-Jun-2020 12:23	04-Sep-2020 08:55	☐
HS20090348-07	MW-16	Water	HS20060948-03	18-Jun-2020 10:22	04-Sep-2020 08:55	☐
HS20090348-08	MW-17	Water	HS20060948-04	18-Jun-2020 09:16	04-Sep-2020 08:55	☐
HS20090348-09	MW-18	Water	HS20060948-05	17-Jun-2020 17:30	04-Sep-2020 08:55	☐
HS20090348-10	MW-19S	Water	HS20060948-06	17-Jun-2020 16:56	04-Sep-2020 08:55	☐
HS20090348-11	DUP 2	Water	HS20060948-09	17-Jun-2020 16:56	04-Sep-2020 08:55	☐
HS20090348-12	MW-20	Water	HS20060948-07	17-Jun-2020 15:08	04-Sep-2020 08:55	☐
HS20090348-13	MW-21	Water	HS20060948-08	17-Jun-2020 14:03	04-Sep-2020 08:55	☐
HS20090348-14	MW-8	Water	HS20060843-01	16-Jun-2020 10:47	04-Sep-2020 08:55	☐
HS20090348-15	MW-9	Water	HS20060843-02	16-Jun-2020 12:54	04-Sep-2020 08:55	☐
HS20090348-16	DUP 1	Water	HS20060843-05	16-Jun-2020 00:00	04-Sep-2020 08:55	☐
HS20090348-17	MW-10	Water	HS20060899-04/HS20061004-08	19-Jun-2020 10:53	04-Sep-2020 08:55	☐
HS20090348-18	MW-11	Water	HS20060899-05	16-Jun-2020 16:37	04-Sep-2020 08:55	☐
HS20090348-19	MW-22A	Water	HS20061004-09	18-Jun-2020 14:02	04-Sep-2020 08:55	☐
HS20090348-20	MW-23A	Water	HS20060843-03	16-Jun-2020 09:28	04-Sep-2020 08:55	☐
HS20090348-21	MW-24	Water	HS20060843-04	16-Jun-2020 11:47	04-Sep-2020 08:55	☐
HS20090348-22	MW-25R	Water	HS20060899-06	16-Jun-2020 17:45	04-Sep-2020 08:55	☐

Client: Altamira **CASE NARRATIVE**
Project: CCR Assessment Monitoring
Work Order: HS20090348

Work Order Comments

- At the request of the client, select samples in ALS work orders HS20060843, HS20060899, HS20060948, & HS20061004 were consolidated and reported under a new work order HS20090348.

Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

The analyses for Rad-226/228 was subcontracted to ALS Fort Collins. Final report attached.

Metals by Method SW7470

Batch ID: 154671,154982,154985,155064

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 154876

Sample ID: HS20060899-01MS

- MS/MSD and DUPs are for an unrelated sample

Batch ID: 154920

Sample ID: HS20061133-61MS

- MS/MSD and DUPs are for an unrelated sample

Batch ID: 154932

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Wet Chemistry by Method E300

Batch ID: R363618

Sample ID: HS20060899-01MS

- MS and MSD are for an unrelated sample

Batch ID: R363936

Sample ID: HS20060877-01MS

- MS and MSD are for an unrelated sample

Sample ID: HS20060948-03MS

- MS and MSD are for an unrelated sample

WetChemistry by Method M2540C

Batch ID: R368927,R368972

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500H+ B

Batch ID: R364046,R364111

Client: Altamira **CASE NARRATIVE**
Project: CCR Assessment Monitoring
Work Order: HS20090348

WetChemistry by Method SM4500H+ B

Batch ID: R364046,R364111

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R363618

Sample ID: MW-14A (HS20090348-05)

• Sample reported above the calibration range for Sulfate. Reported at the request of the client,

Sample ID: MW-3 (HS20090348-01)

• Sample reported above the calibration range for Sulfate. . Reported at the request of the client,

Sample ID: HS20060882-01MS

• MS and MSD for an unrelated sample

Batch ID: R364132

Sample ID: MW-23A (HS20090348-20)

• Sample ran at 2X due to high concentration of Sulfate

Sample ID: MW-8 (HS20090348-14)

• Sample ran at 2X due to high concentration of Sulfate

Batch ID: R363936

Sample ID: DUP 2 (HS20090348-11)

• Sample ran at 2x due to high concentration of Sulfate.

Sample ID: MW-10 (HS20090348-17)

• Sample ran at 2X due to high concentration of Sulfate

Sample ID: MW-15A (HS20090348-06)

• Sample ran at 2X due to high concentration of Sulfate

Sample ID: MW-16 (HS20090348-07)

• Sample ran at 2x due to high concentration of Sulfate.

Sample ID: MW-17 (HS20090348-08)

• Sample ran at 2x due to high concentration of Sulfate.

Sample ID: MW-18 (HS20090348-09)

• Sample ran at 2x due to high concentration of Sulfate.

Sample ID: MW-19S (HS20090348-10)

Client: Altamira **CASE NARRATIVE**
Project: CCR Assessment Monitoring
Work Order: HS20090348

WetChemistry by Method E300

Batch ID: R363936

- Sample ran at 2x due to high concentration of Sulfate.

Sample ID: MW-21 (HS20090348-13)

- Sample ran at 5x due to high concentration of Sulfate.

Sample ID: MW-22A (HS20090348-19)

- Sample ran at 2X due to high concentration of Sulfate

Batch ID: R363532,R364276,R364568

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R363534

Sample ID: HS20060846-07MS

- MS and MSD are for an unrelated sample (Sulfate)

Batch ID: R364222

Sample ID: HS20060948-01MS

- MS and MSD are for an unrelated sample

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-3
Collection Date: 17-Jun-2020 12:33

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 26-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:08
Arsenic	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:08
Barium	**0.0130**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 15:08
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:08
Boron	**1.16**		**0.110**	**0.200**	**mg/L**	10	30-Jun-2020 12:51
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:08
Calcium	**214**		**0.680**	**10.0**	**mg/L**	20	30-Jun-2020 15:59
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 15:08
Cobalt	**0.000289**	J	**0.000200**	**0.00500**	**mg/L**	1	29-Jun-2020 15:08
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 15:08
Lithium	**0.145**		**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 15:08
Molybdenum	U		0.000600	0.00500	mg/L	1	29-Jun-2020 15:08
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 15:08
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:08
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 29-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2020 16:36
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**13.7**		**0.200**	**0.500**	**mg/L**	1	19-Jun-2020 02:27
Fluoride	**0.203**		**0.0500**	**0.100**	**mg/L**	1	19-Jun-2020 02:27
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	19-Jun-2020 02:27
Sulfate	**1,240**	E	**1.00**	**2.50**	**mg/L**	5	19-Jun-2020 10:00
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,150**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**6.90**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.8**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-5S
Collection Date: 18-Jun-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 21:36
Arsenic	U		0.000400	0.00200	mg/L	1	29-Jun-2020 21:36
Barium	**0.0210**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 21:36
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:36
Boron	**0.811**		**0.0110**	**0.0200**	**mg/L**	1	30-Jun-2020 14:24
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:36
Calcium	**68.2**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 21:36
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 21:36
Cobalt	U		0.000200	0.00500	mg/L	1	29-Jun-2020 21:36
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 21:36
Lithium	**0.0490**		**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 21:36
Molybdenum	**0.00361**	J	**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 21:36
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 21:36
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:36
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 01-Jul-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	01-Jul-2020 15:21
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**19.5**		**0.200**	**0.500**	**mg/L**	1	20-Jun-2020 10:10
Fluoride	**0.824**		**0.0500**	**0.100**	**mg/L**	1	20-Jun-2020 10:10
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	20-Jun-2020 10:10
Sulfate	**408**		**2.00**	**5.00**	**mg/L**	10	29-Jun-2020 21:07
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**904**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.65**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.3**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-7S
Collection Date: 17-Jun-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 21:38
Arsenic	**0.000650**	J	**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 21:38
Barium	**0.0244**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 21:38
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:38
Boron	**1.33**		**0.0220**	**0.0400**	**mg/L**	2	30-Jun-2020 14:26
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:38
Calcium	**160**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 21:38
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 21:38
Cobalt	**0.000838**	J	**0.000200**	**0.00500**	**mg/L**	1	29-Jun-2020 21:38
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 21:38
Lithium	**0.0681**		**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 21:38
Molybdenum	**0.00105**	J	**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 21:38
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 21:38
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:38
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 01-Jul-2020		Analyst: FO
Mercury	**0.0000350**	J	**0.0000300**	**0.000200**	**mg/L**	1	01-Jul-2020 15:23
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**18.0**		**0.200**	**0.500**	**mg/L**	1	19-Jun-2020 15:09
Fluoride	**0.479**		**0.0500**	**0.100**	**mg/L**	1	19-Jun-2020 15:09
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	19-Jun-2020 15:09
Sulfate	**970**		**4.00**	**10.0**	**mg/L**	20	29-Jun-2020 22:01
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,680**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.55**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.3**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-13
Collection Date: 17-Jun-2020 09:35

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 26-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:47
Arsenic	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:47
Barium	**0.0116**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 15:47
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:47
Boron	**1.39**		**0.110**	**0.200**	**mg/L**	10	30-Jun-2020 13:02
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:47
Calcium	**243**		**0.340**	**5.00**	**mg/L**	10	30-Jun-2020 13:02
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 15:47
Cobalt	U		0.000200	0.00500	mg/L	1	29-Jun-2020 15:47
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 15:47
Lithium	**0.156**		**0.0100**	**0.0500**	**mg/L**	10	30-Jun-2020 13:02
Molybdenum	**0.000934**	J	**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 15:47
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 15:47
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:47
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 29-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2020 16:41
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**13.8**		**0.200**	**0.500**	**mg/L**	1	18-Jun-2020 20:25
Fluoride	**0.231**		**0.0500**	**0.100**	**mg/L**	1	18-Jun-2020 20:25
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	18-Jun-2020 20:25
Sulfate	**1,390**		**20.0**	**50.0**	**mg/L**	100	29-Jun-2020 19:36
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,450**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**6.71**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**23.9**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-14A
Collection Date: 17-Jun-2020 11:04

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-05
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 26-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:49
Arsenic	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:49
Barium	**0.0132**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 15:49
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:49
Boron	**0.907**		**0.0550**	**0.100**	**mg/L**	5	30-Jun-2020 13:04
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:49
Calcium	**280**		**0.170**	**2.50**	**mg/L**	5	30-Jun-2020 13:04
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 15:49
Cobalt	U		0.000200	0.00500	mg/L	1	29-Jun-2020 15:49
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 15:49
Lithium	**0.151**		**0.00500**	**0.0250**	**mg/L**	5	30-Jun-2020 13:04
Molybdenum	**0.000760**	J	**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 15:49
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 15:49
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:49
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 29-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2020 16:46
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**13.3**		**0.200**	**0.500**	**mg/L**	1	18-Jun-2020 23:26
Fluoride	**0.230**		**0.0500**	**0.100**	**mg/L**	1	18-Jun-2020 23:26
Nitrogen, Nitrate (As N)	**0.316**		**0.0300**	**0.100**	**mg/L**	1	18-Jun-2020 23:26
Sulfate	**1,650**	E	**1.00**	**2.50**	**mg/L**	5	19-Jun-2020 09:06
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,780**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.44**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**23.6**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-15A
Collection Date: 18-Jun-2020 12:23

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-06
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 28-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	01-Jul-2020 11:36
Arsenic	**0.000965**	J	**0.000400**	**0.00200**	**mg/L**	1	01-Jul-2020 11:36
Barium	**0.0291**		**0.00190**	**0.00400**	**mg/L**	1	01-Jul-2020 11:36
Beryllium	U		0.000200	0.00200	mg/L	1	01-Jul-2020 11:36
Boron	**4.57**		**0.0550**	**0.100**	**mg/L**	5	30-Jun-2020 16:14
Cadmium	U		0.000200	0.00200	mg/L	1	01-Jul-2020 11:36
Calcium	**141**		**0.170**	**2.50**	**mg/L**	5	30-Jun-2020 16:14
Chromium	**0.000900**	J	**0.000400**	**0.00400**	**mg/L**	1	01-Jul-2020 11:36
Cobalt	**0.000402**	J	**0.000200**	**0.00500**	**mg/L**	1	01-Jul-2020 11:36
Lead	U		0.000600	0.00200	mg/L	1	01-Jul-2020 11:36
Lithium	**0.111**		**0.00100**	**0.00500**	**mg/L**	1	01-Jul-2020 11:36
Molybdenum	**0.269**		**0.000600**	**0.00500**	**mg/L**	1	01-Jul-2020 11:36
Selenium	U		0.00110	0.00200	mg/L	1	01-Jul-2020 11:36
Thallium	U		0.000200	0.00200	mg/L	1	01-Jul-2020 11:36
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 29-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2020 19:04
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**26.3**		**0.400**	**1.00**	**mg/L**	2	20-Jun-2020 11:23
Fluoride	**0.860**		**0.100**	**0.200**	**mg/L**	2	20-Jun-2020 11:23
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	20-Jun-2020 11:23
Sulfate	**1,680**		**20.0**	**50.0**	**mg/L**	100	06-Jul-2020 16:46
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,520**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.68**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.7**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-16
Collection Date: 18-Jun-2020 10:22

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-07
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 21:40
Arsenic	U		0.000400	0.00200	mg/L	1	29-Jun-2020 21:40
Barium	**0.0142**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 21:40
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:40
Boron	**1.43**		**0.0220**	**0.0400**	**mg/L**	2	30-Jun-2020 14:28
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:40
Calcium	**186**		**0.0680**	**1.00**	**mg/L**	2	30-Jun-2020 14:28
Chromium	**0.000423**	J	**0.000400**	**0.00400**	**mg/L**	1	29-Jun-2020 21:40
Cobalt	U		0.000200	0.00500	mg/L	1	29-Jun-2020 21:40
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 21:40
Lithium	**0.0460**		**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 21:40
Molybdenum	**0.172**		**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 21:40
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 21:40
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:40
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 01-Jul-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	01-Jul-2020 15:25
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**14.7**		**0.400**	**1.00**	**mg/L**	2	19-Jun-2020 23:00
Fluoride	**0.694**		**0.100**	**0.200**	**mg/L**	2	19-Jun-2020 23:00
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	19-Jun-2020 23:00
Sulfate	**1,030**		**10.0**	**25.0**	**mg/L**	50	29-Jun-2020 22:19
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,610**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.60**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.7**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-17
Collection Date: 18-Jun-2020 09:16

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-08
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 21:42
Arsenic	U		0.000400	0.00200	mg/L	1	29-Jun-2020 21:42
Barium	U		0.00190	0.00400	mg/L	1	29-Jun-2020 21:42
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:42
Boron	**0.652**		**0.0220**	**0.0400**	**mg/L**	2	30-Jun-2020 14:30
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:42
Calcium	**494**		**0.680**	**10.0**	**mg/L**	20	30-Jun-2020 14:32
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 21:42
Cobalt	**0.000281**	J	**0.000200**	**0.00500**	**mg/L**	1	29-Jun-2020 21:42
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 21:42
Lithium	**0.147**		**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 21:42
Molybdenum	U		0.000600	0.00500	mg/L	1	29-Jun-2020 21:42
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 21:42
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:42
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 01-Jul-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	01-Jul-2020 15:26
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**4.29**		**0.400**	**1.00**	**mg/L**	2	19-Jun-2020 22:42
Fluoride	**0.211**		**0.100**	**0.200**	**mg/L**	2	19-Jun-2020 22:42
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	19-Jun-2020 22:42
Sulfate	**1,390**		**10.0**	**25.0**	**mg/L**	50	29-Jun-2020 22:37
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,230**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.38**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.9**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-18
Collection Date: 17-Jun-2020 17:30

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-09
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A			**Method:SW6020**		Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 21:44
Arsenic	**0.00272**		**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 21:44
Barium	**0.00294**	J	**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 21:44
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:44
Boron	**5.49**		**0.110**	**0.200**	**mg/L**	10	30-Jun-2020 14:34
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:44
Calcium	**21.6**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 21:44
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 21:44
Cobalt	U		0.000200	0.00500	mg/L	1	29-Jun-2020 21:44
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 21:44
Lithium	**0.00226**	J	**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 21:44
Molybdenum	**0.194**		**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 21:44
Selenium	**0.00370**		**0.00110**	**0.00200**	**mg/L**	1	29-Jun-2020 21:44
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:44
MERCURY BY SW7470A			**Method:SW7470**		Prep:SW7470 / 01-Jul-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	01-Jul-2020 15:28
ANIONS BY E300.0			**Method:E300**				Analyst: YP
Chloride	**4.06**		**0.400**	**1.00**	**mg/L**	2	19-Jun-2020 16:58
Fluoride	**1.28**		**0.100**	**0.200**	**mg/L**	2	19-Jun-2020 16:58
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	19-Jun-2020 16:58
Sulfate	**888**		**4.00**	**10.0**	**mg/L**	20	29-Jun-2020 22:55
TOTAL DISSOLVED SOLIDS BY SM2540C			**Method:M2540C**				Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,340**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B			**Method:SM4500H+ B**				Analyst: JAC
pH	**9.35**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**22.1**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10
SUBCONTRACT ANALYSIS - RADIUM 226			**Method:NA**				Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228			**Method:NA**				Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-19S
Collection Date: 17-Jun-2020 16:56

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-10
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 21:46
Arsenic	**0.00610**		**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 21:46
Barium	**0.0221**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 21:46
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:46
Boron	**6.80**		**0.110**	**0.200**	**mg/L**	10	30-Jun-2020 14:45
Cadmium	**0.000387**	J	**0.000200**	**0.00200**	**mg/L**	1	29-Jun-2020 21:46
Calcium	**43.6**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 21:46
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 21:46
Cobalt	U		0.000200	0.00500	mg/L	1	29-Jun-2020 21:46
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 21:46
Lithium	**0.00134**	J	**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 21:46
Molybdenum	**0.402**		**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 21:46
Selenium	**0.00655**		**0.00110**	**0.00200**	**mg/L**	1	29-Jun-2020 21:46
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:46
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 01-Jul-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	01-Jul-2020 15:30
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**13.8**		**0.400**	**1.00**	**mg/L**	2	19-Jun-2020 16:03
Fluoride	**1.15**		**0.100**	**0.200**	**mg/L**	2	19-Jun-2020 16:03
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	19-Jun-2020 16:03
Sulfate	**1,490**		**20.0**	**50.0**	**mg/L**	100	29-Jun-2020 23:13
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,300**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**10.2**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**22.1**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: DUP 2
Collection Date: 17-Jun-2020 16:56

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-11
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 22:25
Arsenic	**0.00577**		**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 22:25
Barium	**0.0177**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 22:25
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 22:25
Boron	**7.18**		**0.110**	**0.200**	**mg/L**	10	30-Jun-2020 14:53
Cadmium	**0.000328**	J	**0.000200**	**0.00200**	**mg/L**	1	29-Jun-2020 22:25
Calcium	**42.1**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 22:25
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 22:25
Cobalt	U		0.000200	0.00500	mg/L	1	29-Jun-2020 22:25
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 22:25
Lithium	**0.00114**	J	**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 22:25
Molybdenum	**0.394**		**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 22:25
Selenium	**0.00640**		**0.00110**	**0.00200**	**mg/L**	1	29-Jun-2020 22:25
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 22:25
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 01-Jul-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	01-Jul-2020 15:35
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**14.0**		**0.400**	**1.00**	**mg/L**	2	19-Jun-2020 23:54
Fluoride	**1.04**		**0.100**	**0.200**	**mg/L**	2	19-Jun-2020 23:54
Nitrogen, Nitrate (As N)	U	H	0.0600	0.200	mg/L	2	19-Jun-2020 23:54
Sulfate	**1,590**		**20.0**	**50.0**	**mg/L**	100	30-Jun-2020 00:44
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,290**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**9.88**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**23.2**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-20
Collection Date: 17-Jun-2020 15:08

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-12
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 21:48
Arsenic	U		0.000400	0.00200	mg/L	1	29-Jun-2020 21:48
Barium	**0.0102**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 21:48
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:48
Boron	**0.624**		**0.0220**	**0.0400**	**mg/L**	2	30-Jun-2020 14:47
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:48
Calcium	**320**		**0.680**	**10.0**	**mg/L**	20	30-Jun-2020 14:49
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 21:48
Cobalt	U		0.000200	0.00500	mg/L	1	29-Jun-2020 21:48
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 21:48
Lithium	**0.0895**		**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 21:48
Molybdenum	**0.000727**	J	**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 21:48
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 21:48
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 21:48
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 01-Jul-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	01-Jul-2020 15:31
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**6.18**		**0.200**	**0.500**	**mg/L**	1	19-Jun-2020 14:33
Fluoride	**0.220**		**0.0500**	**0.100**	**mg/L**	1	19-Jun-2020 14:33
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	19-Jun-2020 14:33
Sulfate	**870**		**4.00**	**10.0**	**mg/L**	20	29-Jun-2020 23:32
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,560**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**6.55**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**22.0**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-21
Collection Date: 17-Jun-2020 14:03

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-13
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 22:23
Arsenic	**0.000551**	J	**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 22:23
Barium	**0.0106**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 22:23
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 22:23
Boron	**2.84**		**0.0550**	**0.100**	**mg/L**	5	30-Jun-2020 14:51
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 22:23
Calcium	**139**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 22:23
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 22:23
Cobalt	U		0.000200	0.00500	mg/L	1	29-Jun-2020 22:23
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 22:23
Lithium	**0.140**		**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 22:23
Molybdenum	**0.00103**	J	**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 22:23
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 22:23
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 22:23
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 01-Jul-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	01-Jul-2020 15:33
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**21.8**		**1.00**	**2.50**	**mg/L**	5	19-Jun-2020 13:20
Fluoride	**0.524**		**0.250**	**0.500**	**mg/L**	5	19-Jun-2020 13:20
Nitrogen, Nitrate (As N)	U		0.150	0.500	mg/L	5	19-Jun-2020 13:20
Sulfate	**1,470**		**20.0**	**50.0**	**mg/L**	100	30-Jun-2020 00:26
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,470**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.07**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.7**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-8
Collection Date: 16-Jun-2020 10:47

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-14
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 26-Jun-2020		Analyst: JHD
Antimony	**0.00160**	J	**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 15:17
Arsenic	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:17
Barium	**0.00503**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 15:17
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:17
Boron	**1.08**		**0.0550**	**0.100**	**mg/L**	5	30-Jun-2020 12:56
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:17
Calcium	**420**		**0.170**	**2.50**	**mg/L**	5	30-Jun-2020 12:56
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 15:17
Cobalt	**0.00170**	J	**0.000200**	**0.00500**	**mg/L**	1	29-Jun-2020 15:17
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 15:17
Lithium	**0.236**		**0.00500**	**0.0250**	**mg/L**	5	30-Jun-2020 12:56
Molybdenum	U		0.000600	0.00500	mg/L	1	29-Jun-2020 15:17
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 15:17
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:17
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 22-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	22-Jun-2020 17:09
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**3.72**		**0.400**	**1.00**	**mg/L**	2	29-Jun-2020 16:17
Fluoride	**0.299**		**0.0500**	**0.100**	**mg/L**	1	17-Jun-2020 21:11
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	17-Jun-2020 21:11
Sulfate	**1,970**		**4.00**	**10.0**	**mg/L**	20	18-Jun-2020 05:02
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,540**		**5.00**	**10.0**	**mg/L**	1	23-Jun-2020 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**6.78**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**24.0**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-9
Collection Date: 16-Jun-2020 12:54

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-15
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 26-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:39
Arsenic	**0.000645**	J	**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 15:39
Barium	**0.0418**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 15:39
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:39
Boron	**0.0446**		**0.0110**	**0.0200**	**mg/L**	1	29-Jun-2020 15:39
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:39
Calcium	**36.0**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 15:39
Chromium	**0.000441**	J	**0.000400**	**0.00400**	**mg/L**	1	29-Jun-2020 15:39
Cobalt	**0.000328**	J	**0.000200**	**0.00500**	**mg/L**	1	29-Jun-2020 15:39
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 15:39
Lithium	**0.00189**	J	**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 15:39
Molybdenum	U		0.000600	0.00500	mg/L	1	29-Jun-2020 15:39
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 15:39
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:39
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 22-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	22-Jun-2020 17:14
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**0.883**		**0.200**	**0.500**	**mg/L**	1	29-Jun-2020 16:35
Fluoride	**0.134**		**0.0500**	**0.100**	**mg/L**	1	18-Jun-2020 00:13
Nitrogen, Nitrate (As N)	**0.119**		**0.0300**	**0.100**	**mg/L**	1	18-Jun-2020 00:13
Sulfate	**6.36**		**0.200**	**0.500**	**mg/L**	1	29-Jun-2020 16:35
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**170**		**5.00**	**10.0**	**mg/L**	1	23-Jun-2020 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**6.48**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**24.2**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: DUP 1
Collection Date: 16-Jun-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-16
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 26-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:45
Arsenic	**0.000677**	J	**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 15:45
Barium	**0.0382**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 15:45
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:45
Boron	**0.0630**		**0.0110**	**0.0200**	**mg/L**	1	29-Jun-2020 15:45
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:45
Calcium	**33.5**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 15:45
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 15:45
Cobalt	**0.000311**	J	**0.000200**	**0.00500**	**mg/L**	1	29-Jun-2020 15:45
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 15:45
Lithium	**0.00163**	J	**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 15:45
Molybdenum	U		0.000600	0.00500	mg/L	1	29-Jun-2020 15:45
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 15:45
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:45
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 22-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	22-Jun-2020 17:19
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**0.958**		**0.200**	**0.500**	**mg/L**	1	29-Jun-2020 19:18
Fluoride	**0.132**		**0.0500**	**0.100**	**mg/L**	1	17-Jun-2020 18:28
Nitrogen, Nitrate (As N)	**0.0997**	J	**0.0300**	**0.100**	**mg/L**	1	17-Jun-2020 18:28
Sulfate	**5.90**		**0.200**	**0.500**	**mg/L**	1	29-Jun-2020 19:18
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**152**		**5.00**	**10.0**	**mg/L**	1	23-Jun-2020 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**6.24**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**24.1**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-10
Collection Date: 19-Jun-2020 10:53

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-17
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 26-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:51
Arsenic	**0.000731**	J	**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 15:51
Barium	**0.0251**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 15:51
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:51
Boron	**2.87**		**0.110**	**0.200**	**mg/L**	10	30-Jun-2020 13:47
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:51
Calcium	**129**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 15:51
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 15:51
Cobalt	U		0.000200	0.00500	mg/L	1	29-Jun-2020 15:51
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 15:51
Lithium	**0.0665**		**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 15:51
Molybdenum	**0.00202**	J	**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 15:51
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 15:51
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:51
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 29-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2020 16:48
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**35.9**		**0.200**	**0.500**	**mg/L**	1	30-Jun-2020 14:25
Fluoride	**1.09**		**0.0500**	**0.100**	**mg/L**	1	30-Jun-2020 14:25
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	20-Jun-2020 13:37
Sulfate	**1,030**		**20.0**	**50.0**	**mg/L**	100	30-Jun-2020 15:38
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,580**		**5.00**	**10.0**	**mg/L**	1	23-Jun-2020 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.12**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**24.3**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-11
Collection Date: 16-Jun-2020 16:37

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-18
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 26-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:52
Arsenic	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:52
Barium	**0.0214**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 15:52
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:52
Boron	**2.47**		**0.110**	**0.200**	**mg/L**	10	30-Jun-2020 13:49
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:52
Calcium	**44.5**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 15:52
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 15:52
Cobalt	U		0.000200	0.00500	mg/L	1	29-Jun-2020 15:52
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 15:52
Lithium	**0.0550**		**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 15:52
Molybdenum	**0.00307**	J	**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 15:52
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 15:52
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:52
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 29-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2020 16:50
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**57.5**		**0.200**	**0.500**	**mg/L**	1	18-Jun-2020 15:35
Fluoride	**1.57**		**0.0500**	**0.100**	**mg/L**	1	18-Jun-2020 15:35
Nitrogen, Nitrate (As N)	**1.15**		**0.0300**	**0.100**	**mg/L**	1	18-Jun-2020 15:35
Sulfate	**718**		**4.00**	**10.0**	**mg/L**	20	29-Jun-2020 19:54
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,260**		**5.00**	**10.0**	**mg/L**	1	23-Jun-2020 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.23**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**24.3**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-22A
Collection Date: 18-Jun-2020 14:02

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-19
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A			**Method:SW6020**		Prep:SW3010A / 28-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	01-Jul-2020 11:54
Arsenic	**0.00134**	J	**0.000400**	**0.00200**	**mg/L**	1	01-Jul-2020 11:54
Barium	**0.00796**		**0.00190**	**0.00400**	**mg/L**	1	01-Jul-2020 11:54
Beryllium	U		0.000200	0.00200	mg/L	1	01-Jul-2020 11:54
Boron	**2.82**		**0.0550**	**0.100**	**mg/L**	5	30-Jun-2020 17:11
Cadmium	U		0.000200	0.00200	mg/L	1	01-Jul-2020 11:54
Calcium	**754**		**0.170**	**2.50**	**mg/L**	5	30-Jun-2020 17:11
Chromium	**0.000771**	J	**0.000400**	**0.00400**	**mg/L**	1	01-Jul-2020 11:54
Cobalt	U		0.000200	0.00500	mg/L	1	01-Jul-2020 11:54
Lead	U		0.000600	0.00200	mg/L	1	01-Jul-2020 11:54
Lithium	**0.501**		**0.00500**	**0.0250**	**mg/L**	5	30-Jun-2020 17:11
Molybdenum	U		0.000600	0.00500	mg/L	1	01-Jul-2020 11:54
Selenium	U		0.00110	0.00200	mg/L	1	01-Jul-2020 11:54
Thallium	U		0.000200	0.00200	mg/L	1	01-Jul-2020 11:54
MERCURY BY SW7470A			**Method:SW7470**		Prep:SW7470 / 29-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2020 19:06
ANIONS BY E300.0			**Method:E300**				Analyst: YP
Chloride	**2.34**		**0.400**	**1.00**	**mg/L**	2	20-Jun-2020 13:19
Fluoride	**0.237**		**0.100**	**0.200**	**mg/L**	2	20-Jun-2020 13:19
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	20-Jun-2020 13:19
Sulfate	**2,160**		**20.0**	**50.0**	**mg/L**	100	06-Jul-2020 21:54
TOTAL DISSOLVED SOLIDS BY SM2540C			**Method:M2540C**				Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**3,390**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
PH BY SM4500H+ B			**Method:SM4500H+ B**				Analyst: JAC
pH	**7.08**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.0**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10
SUBCONTRACT ANALYSIS - RADIUM 226			**Method:NA**				Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228			**Method:NA**				Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-23A
Collection Date: 16-Jun-2020 09:28

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-20
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 26-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:41
Arsenic	**0.000721**	J	**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 15:41
Barium	**0.00298**	J	**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 15:41
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:41
Boron	**1.12**		**0.110**	**0.200**	**mg/L**	10	30-Jun-2020 12:58
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:41
Calcium	**465**		**0.340**	**5.00**	**mg/L**	10	30-Jun-2020 12:58
Chromium	**0.000552**	J	**0.000400**	**0.00400**	**mg/L**	1	29-Jun-2020 15:41
Cobalt	**0.000286**	J	**0.000200**	**0.00500**	**mg/L**	1	29-Jun-2020 15:41
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 15:41
Lithium	**0.227**		**0.0100**	**0.0500**	**mg/L**	10	30-Jun-2020 12:58
Molybdenum	U		0.000600	0.00500	mg/L	1	29-Jun-2020 15:41
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 15:41
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:41
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 22-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	22-Jun-2020 17:16
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**12.5**		**0.400**	**1.00**	**mg/L**	2	29-Jun-2020 18:42
Fluoride	**0.374**		**0.0500**	**0.100**	**mg/L**	1	17-Jun-2020 19:41
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	17-Jun-2020 19:41
Sulfate	**1,850**		**4.00**	**10.0**	**mg/L**	20	18-Jun-2020 04:44
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,970**		**5.00**	**10.0**	**mg/L**	1	23-Jun-2020 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**6.58**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**24.1**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-24
Collection Date: 16-Jun-2020 11:47

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-21
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 26-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:43
Arsenic	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:43
Barium	**0.00853**		**0.00190**	**0.00400**	**mg/L**	1	29-Jun-2020 15:43
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:43
Boron	**1.09**		**0.0550**	**0.100**	**mg/L**	5	30-Jun-2020 13:00
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:43
Calcium	**450**		**0.170**	**2.50**	**mg/L**	5	30-Jun-2020 13:00
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 15:43
Cobalt	**0.000877**	J	**0.000200**	**0.00500**	**mg/L**	1	29-Jun-2020 15:43
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 15:43
Lithium	**0.295**		**0.00500**	**0.0250**	**mg/L**	5	30-Jun-2020 13:00
Molybdenum	U		0.000600	0.00500	mg/L	1	29-Jun-2020 15:43
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 15:43
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:43
MERCURY BY SW7470A		**Method:SW7470**			Prep:SW7470 / 22-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	22-Jun-2020 17:17
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**13.3**		**0.200**	**0.500**	**mg/L**	1	17-Jun-2020 22:24
Fluoride	**0.231**		**0.0500**	**0.100**	**mg/L**	1	17-Jun-2020 22:24
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	17-Jun-2020 22:24
Sulfate	**1,990**		**20.0**	**50.0**	**mg/L**	100	30-Jun-2020 13:12
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**3,120**		**5.00**	**10.0**	**mg/L**	1	23-Jun-2020 16:30
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**6.56**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**24.2**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36
SUBCONTRACT ANALYSIS - RADIUM 226		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228		**Method:NA**					Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: CCR Assessment Monitoring
Sample ID: MW-25R
Collection Date: 16-Jun-2020 17:45

ANALYTICAL REPORT
WorkOrder:HS20090348
Lab ID:HS20090348-22
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A			**Method:SW6020**		Prep:SW3010A / 26-Jun-2020		Analyst: JHD
Antimony	U		0.000400	0.00200	mg/L	1	29-Jun-2020 15:54
Arsenic	**0.000472**	J	**0.000400**	**0.00200**	**mg/L**	1	29-Jun-2020 15:54
Barium	U		0.00190	0.00400	mg/L	1	29-Jun-2020 15:54
Beryllium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:54
Boron	**0.997**		**0.0550**	**0.100**	**mg/L**	5	30-Jun-2020 13:51
Cadmium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:54
Calcium	**343**		**0.170**	**2.50**	**mg/L**	5	30-Jun-2020 13:51
Chromium	U		0.000400	0.00400	mg/L	1	29-Jun-2020 15:54
Cobalt	U		0.000200	0.00500	mg/L	1	29-Jun-2020 15:54
Lead	U		0.000600	0.00200	mg/L	1	29-Jun-2020 15:54
Lithium	**0.0596**		**0.00100**	**0.00500**	**mg/L**	1	29-Jun-2020 15:54
Molybdenum	**0.00101**	J	**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 15:54
Selenium	U		0.00110	0.00200	mg/L	1	29-Jun-2020 15:54
Thallium	U		0.000200	0.00200	mg/L	1	29-Jun-2020 15:54
MERCURY BY SW7470A			**Method:SW7470**		Prep:SW7470 / 29-Jun-2020		Analyst: FO
Mercury	U		0.0000300	0.000200	mg/L	1	29-Jun-2020 16:52
ANIONS BY E300.0			**Method:E300**				Analyst: YP
Chloride	**5.43**		**0.200**	**0.500**	**mg/L**	1	18-Jun-2020 15:53
Fluoride	**0.282**		**0.0500**	**0.100**	**mg/L**	1	18-Jun-2020 15:53
Nitrogen, Nitrate (As N)	**1.74**		**0.0300**	**0.100**	**mg/L**	1	18-Jun-2020 15:53
Sulfate	**820**		**4.00**	**10.0**	**mg/L**	20	29-Jun-2020 20:49
TOTAL DISSOLVED SOLIDS BY SM2540C			**Method:M2540C**				Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,630**		**5.00**	**10.0**	**mg/L**	1	23-Jun-2020 16:30
PH BY SM4500H+ B			**Method:SM4500H+ B**				Analyst: JAC
pH	**6.59**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**24.0**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36
SUBCONTRACT ANALYSIS - RADIUM 226			**Method:NA**				Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10
SUBCONTRACT ANALYSIS - RADIUM 228			**Method:NA**				Analyst: SUB
Subcontract Analysis	See Attached		0		NA	1	08-Sep-2020 15:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

Batch ID: 154671 **Start Date:** 22 Jun 2020 10:00 **End Date:** 22 Jun 2020 12:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090348-14		10 (mL)	10 (mL)	1
HS20090348-15		10 (mL)	10 (mL)	1
HS20090348-16		10 (mL)	10 (mL)	1
HS20090348-20		10 (mL)	10 (mL)	1
HS20090348-21		10 (mL)	10 (mL)	1

Batch ID: 154876 **Start Date:** 26 Jun 2020 12:00 **End Date:** 26 Jun 2020 16:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090348-01		10 (mL)	10 (mL)	1
HS20090348-04		10 (mL)	10 (mL)	1
HS20090348-05		10 (mL)	10 (mL)	1
HS20090348-14		10 (mL)	10 (mL)	1
HS20090348-15		10 (mL)	10 (mL)	1
HS20090348-16		10 (mL)	10 (mL)	1
HS20090348-17		10 (mL)	10 (mL)	1
HS20090348-18		10 (mL)	10 (mL)	1
HS20090348-20		10 (mL)	10 (mL)	1
HS20090348-21		10 (mL)	10 (mL)	1
HS20090348-22		10 (mL)	10 (mL)	1

Batch ID: 154920 **Start Date:** 27 Jun 2020 10:30 **End Date:** 27 Jun 2020 14:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090348-02		10 (mL)	10 (mL)	1
HS20090348-03		10 (mL)	10 (mL)	1
HS20090348-07		10 (mL)	10 (mL)	1
HS20090348-08		10 (mL)	10 (mL)	1
HS20090348-09		10 (mL)	10 (mL)	1
HS20090348-10		10 (mL)	10 (mL)	1
HS20090348-11		10 (mL)	10 (mL)	1
HS20090348-12		10 (mL)	10 (mL)	1
HS20090348-13		10 (mL)	10 (mL)	1

Batch ID: 154932 **Start Date:** 28 Jun 2020 10:00 **End Date:** 28 Jun 2020 16:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090348-06		10 (mL)	10 (mL)	1
HS20090348-19		10 (mL)	10 (mL)	1

Weight / Prep Log

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

Batch ID: 154982 **Start Date:** 29 Jun 2020 11:30 **End Date:** 29 Jun 2020 13:30
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090348-01		10 (mL)	10 (mL)	1
HS20090348-04		10 (mL)	10 (mL)	1
HS20090348-05		10 (mL)	10 (mL)	1
HS20090348-17		10 (mL)	10 (mL)	1
HS20090348-18		10 (mL)	10 (mL)	1
HS20090348-22		10 (mL)	10 (mL)	1

Batch ID: 154985 **Start Date:** 29 Jun 2020 12:30 **End Date:** 29 Jun 2020 14:30
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090348-06		10 (mL)	10 (mL)	1
HS20090348-19		10 (mL)	10 (mL)	1

Batch ID: 155064 **Start Date:** 01 Jul 2020 11:30 **End Date:** 01 Jul 2020 13:30
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090348-02		10 (mL)	10 (mL)	1
HS20090348-03		10 (mL)	10 (mL)	1
HS20090348-07		10 (mL)	10 (mL)	1
HS20090348-08		10 (mL)	10 (mL)	1
HS20090348-09		10 (mL)	10 (mL)	1
HS20090348-10		10 (mL)	10 (mL)	1
HS20090348-11		10 (mL)	10 (mL)	1
HS20090348-12		10 (mL)	10 (mL)	1
HS20090348-13		10 (mL)	10 (mL)	1

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154671 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS20090348-14	MW-8	16 Jun 2020 10:47		22 Jun 2020 10:00	22 Jun 2020 17:09	1
HS20090348-15	MW-9	16 Jun 2020 12:54		22 Jun 2020 10:00	22 Jun 2020 17:14	1
HS20090348-16	DUP 1	16 Jun 2020 00:00		22 Jun 2020 10:00	22 Jun 2020 17:19	1
HS20090348-20	MW-23A	16 Jun 2020 09:28		22 Jun 2020 10:00	22 Jun 2020 17:16	1
HS20090348-21	MW-24	16 Jun 2020 11:47		22 Jun 2020 10:00	22 Jun 2020 17:17	1
Batch ID: 154876 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20090348-01	MW-3	17 Jun 2020 12:33		26 Jun 2020 16:00	30 Jun 2020 15:59	20
HS20090348-01	MW-3	17 Jun 2020 12:33		26 Jun 2020 16:00	30 Jun 2020 12:51	10
HS20090348-01	MW-3	17 Jun 2020 12:33		26 Jun 2020 16:00	29 Jun 2020 15:08	1
HS20090348-04	MW-13	17 Jun 2020 09:35		26 Jun 2020 16:00	30 Jun 2020 13:02	10
HS20090348-04	MW-13	17 Jun 2020 09:35		26 Jun 2020 16:00	29 Jun 2020 15:47	1
HS20090348-05	MW-14A	17 Jun 2020 11:04		26 Jun 2020 16:00	30 Jun 2020 13:04	5
HS20090348-05	MW-14A	17 Jun 2020 11:04		26 Jun 2020 16:00	29 Jun 2020 15:49	1
HS20090348-14	MW-8	16 Jun 2020 10:47		26 Jun 2020 16:00	30 Jun 2020 12:56	5
HS20090348-14	MW-8	16 Jun 2020 10:47		26 Jun 2020 16:00	29 Jun 2020 15:17	1
HS20090348-15	MW-9	16 Jun 2020 12:54		26 Jun 2020 16:00	29 Jun 2020 15:39	1
HS20090348-16	DUP 1	16 Jun 2020 00:00		26 Jun 2020 16:00	29 Jun 2020 15:45	1
HS20090348-17	MW-10	19 Jun 2020 10:53		26 Jun 2020 16:00	30 Jun 2020 13:47	10
HS20090348-17	MW-10	19 Jun 2020 10:53		26 Jun 2020 16:00	29 Jun 2020 15:51	1
HS20090348-18	MW-11	16 Jun 2020 16:37		26 Jun 2020 16:00	30 Jun 2020 13:49	10
HS20090348-18	MW-11	16 Jun 2020 16:37		26 Jun 2020 16:00	29 Jun 2020 15:52	1
HS20090348-20	MW-23A	16 Jun 2020 09:28		26 Jun 2020 16:00	30 Jun 2020 12:58	10
HS20090348-20	MW-23A	16 Jun 2020 09:28		26 Jun 2020 16:00	29 Jun 2020 15:41	1
HS20090348-21	MW-24	16 Jun 2020 11:47		26 Jun 2020 16:00	30 Jun 2020 13:00	5
HS20090348-21	MW-24	16 Jun 2020 11:47		26 Jun 2020 16:00	29 Jun 2020 15:43	1
HS20090348-22	MW-25R	16 Jun 2020 17:45		26 Jun 2020 16:00	30 Jun 2020 13:51	5
HS20090348-22	MW-25R	16 Jun 2020 17:45		26 Jun 2020 16:00	29 Jun 2020 15:54	1

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154920 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20090348-02	MW-5S	18 Jun 2020 11:10		27 Jun 2020 14:30	30 Jun 2020 14:24	1
HS20090348-02	MW-5S	18 Jun 2020 11:10		27 Jun 2020 14:30	29 Jun 2020 21:36	1
HS20090348-03	MW-7S	17 Jun 2020 16:00		27 Jun 2020 14:30	30 Jun 2020 14:26	2
HS20090348-03	MW-7S	17 Jun 2020 16:00		27 Jun 2020 14:30	29 Jun 2020 21:38	1
HS20090348-07	MW-16	18 Jun 2020 10:22		27 Jun 2020 14:30	30 Jun 2020 14:28	2
HS20090348-07	MW-16	18 Jun 2020 10:22		27 Jun 2020 14:30	29 Jun 2020 21:40	1
HS20090348-08	MW-17	18 Jun 2020 09:16		27 Jun 2020 14:30	30 Jun 2020 14:32	20
HS20090348-08	MW-17	18 Jun 2020 09:16		27 Jun 2020 14:30	30 Jun 2020 14:30	2
HS20090348-08	MW-17	18 Jun 2020 09:16		27 Jun 2020 14:30	29 Jun 2020 21:42	1
HS20090348-09	MW-18	17 Jun 2020 17:30		27 Jun 2020 14:30	30 Jun 2020 14:34	10
HS20090348-09	MW-18	17 Jun 2020 17:30		27 Jun 2020 14:30	29 Jun 2020 21:44	1
HS20090348-10	MW-19S	17 Jun 2020 16:56		27 Jun 2020 14:30	30 Jun 2020 14:45	10
HS20090348-10	MW-19S	17 Jun 2020 16:56		27 Jun 2020 14:30	29 Jun 2020 21:46	1
HS20090348-11	DUP 2	17 Jun 2020 16:56		27 Jun 2020 14:30	30 Jun 2020 14:53	10
HS20090348-11	DUP 2	17 Jun 2020 16:56		27 Jun 2020 14:30	29 Jun 2020 22:25	1
HS20090348-12	MW-20	17 Jun 2020 15:08		27 Jun 2020 14:30	30 Jun 2020 14:49	20
HS20090348-12	MW-20	17 Jun 2020 15:08		27 Jun 2020 14:30	30 Jun 2020 14:47	2
HS20090348-12	MW-20	17 Jun 2020 15:08		27 Jun 2020 14:30	29 Jun 2020 21:48	1
HS20090348-13	MW-21	17 Jun 2020 14:03		27 Jun 2020 14:30	30 Jun 2020 14:51	5
HS20090348-13	MW-21	17 Jun 2020 14:03		27 Jun 2020 14:30	29 Jun 2020 22:23	1
Batch ID: 154932 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20090348-06	MW-15A	18 Jun 2020 12:23		28 Jun 2020 10:00	30 Jun 2020 16:14	5
HS20090348-06	MW-15A	18 Jun 2020 12:23		28 Jun 2020 10:00	01 Jul 2020 11:36	1
HS20090348-19	MW-22A	18 Jun 2020 14:02		28 Jun 2020 10:00	30 Jun 2020 17:11	5
HS20090348-19	MW-22A	18 Jun 2020 14:02		28 Jun 2020 10:00	01 Jul 2020 11:54	1
Batch ID: 154982 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS20090348-01	MW-3	17 Jun 2020 12:33		29 Jun 2020 11:30	29 Jun 2020 16:36	1
HS20090348-04	MW-13	17 Jun 2020 09:35		29 Jun 2020 11:30	29 Jun 2020 16:41	1
HS20090348-05	MW-14A	17 Jun 2020 11:04		29 Jun 2020 11:30	29 Jun 2020 16:46	1
HS20090348-17	MW-10	19 Jun 2020 10:53		29 Jun 2020 11:30	29 Jun 2020 16:48	1
HS20090348-18	MW-11	16 Jun 2020 16:37		29 Jun 2020 11:30	29 Jun 2020 16:50	1
HS20090348-22	MW-25R	16 Jun 2020 17:45		29 Jun 2020 11:30	29 Jun 2020 16:52	1
Batch ID: 154985 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS20090348-06	MW-15A	18 Jun 2020 12:23		29 Jun 2020 12:30	29 Jun 2020 19:04	1
HS20090348-19	MW-22A	18 Jun 2020 14:02		29 Jun 2020 12:30	29 Jun 2020 19:06	1

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 155064 (0)	**Test Name :** MERCURY BY SW7470A				**Matrix:** Water	
HS20090348-02	MW-5S	18 Jun 2020 11:10		01 Jul 2020 11:30	01 Jul 2020 15:21	1
HS20090348-03	MW-7S	17 Jun 2020 16:00		01 Jul 2020 11:30	01 Jul 2020 15:23	1
HS20090348-07	MW-16	18 Jun 2020 10:22		01 Jul 2020 11:30	01 Jul 2020 15:25	1
HS20090348-08	MW-17	18 Jun 2020 09:16		01 Jul 2020 11:30	01 Jul 2020 15:26	1
HS20090348-09	MW-18	17 Jun 2020 17:30		01 Jul 2020 11:30	01 Jul 2020 15:28	1
HS20090348-10	MW-19S	17 Jun 2020 16:56		01 Jul 2020 11:30	01 Jul 2020 15:30	1
HS20090348-11	DUP 2	17 Jun 2020 16:56		01 Jul 2020 11:30	01 Jul 2020 15:35	1
HS20090348-12	MW-20	17 Jun 2020 15:08		01 Jul 2020 11:30	01 Jul 2020 15:31	1
HS20090348-13	MW-21	17 Jun 2020 14:03		01 Jul 2020 11:30	01 Jul 2020 15:33	1
Batch ID: R363532 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090348-14	MW-8	16 Jun 2020 10:47			17 Jun 2020 21:11	1
HS20090348-16	DUP 1	16 Jun 2020 00:00			17 Jun 2020 18:28	1
HS20090348-20	MW-23A	16 Jun 2020 09:28			17 Jun 2020 19:41	1
HS20090348-21	MW-24	16 Jun 2020 11:47			17 Jun 2020 22:24	1
Batch ID: R363534 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090348-14	MW-8	16 Jun 2020 10:47			18 Jun 2020 05:02	20
HS20090348-15	MW-9	16 Jun 2020 12:54			18 Jun 2020 00:13	1
HS20090348-20	MW-23A	16 Jun 2020 09:28			18 Jun 2020 04:44	20
Batch ID: R363618 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090348-01	MW-3	17 Jun 2020 12:33			19 Jun 2020 10:00	5
HS20090348-01	MW-3	17 Jun 2020 12:33			19 Jun 2020 02:27	1
HS20090348-04	MW-13	17 Jun 2020 09:35			18 Jun 2020 20:25	1
HS20090348-05	MW-14A	17 Jun 2020 11:04			19 Jun 2020 09:06	5
HS20090348-05	MW-14A	17 Jun 2020 11:04			18 Jun 2020 23:26	1
HS20090348-18	MW-11	16 Jun 2020 16:37			18 Jun 2020 15:35	1
HS20090348-22	MW-25R	16 Jun 2020 17:45			18 Jun 2020 15:53	1

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R363936 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090348-02	MW-5S	18 Jun 2020 11:10			20 Jun 2020 10:10	1
HS20090348-03	MW-7S	17 Jun 2020 16:00			19 Jun 2020 15:09	1
HS20090348-06	MW-15A	18 Jun 2020 12:23			20 Jun 2020 11:23	2
HS20090348-07	MW-16	18 Jun 2020 10:22			19 Jun 2020 23:00	2
HS20090348-08	MW-17	18 Jun 2020 09:16			19 Jun 2020 22:42	2
HS20090348-09	MW-18	17 Jun 2020 17:30			19 Jun 2020 16:58	2
HS20090348-10	MW-19S	17 Jun 2020 16:56			19 Jun 2020 16:03	2
HS20090348-11	DUP 2	17 Jun 2020 16:56			19 Jun 2020 23:54	2
HS20090348-12	MW-20	17 Jun 2020 15:08			19 Jun 2020 14:33	1
HS20090348-13	MW-21	17 Jun 2020 14:03			19 Jun 2020 13:20	5
HS20090348-17	MW-10	19 Jun 2020 10:53			20 Jun 2020 13:37	2
HS20090348-19	MW-22A	18 Jun 2020 14:02			20 Jun 2020 13:19	2
Batch ID: R364046 (0)	**Test Name :** PH BY SM4500H+ B				**Matrix:** Water	
HS20090348-04	MW-13	17 Jun 2020 09:35			27 Jun 2020 11:36	1
HS20090348-05	MW-14A	17 Jun 2020 11:04			27 Jun 2020 11:36	1
HS20090348-11	DUP 2	17 Jun 2020 16:56			27 Jun 2020 11:36	1
HS20090348-14	MW-8	16 Jun 2020 10:47			27 Jun 2020 11:36	1
HS20090348-15	MW-9	16 Jun 2020 12:54			27 Jun 2020 11:36	1
HS20090348-16	DUP 1	16 Jun 2020 00:00			27 Jun 2020 11:36	1
HS20090348-17	MW-10	19 Jun 2020 10:53			27 Jun 2020 11:36	1
HS20090348-18	MW-11	16 Jun 2020 16:37			27 Jun 2020 11:36	1
HS20090348-20	MW-23A	16 Jun 2020 09:28			27 Jun 2020 11:36	1
HS20090348-21	MW-24	16 Jun 2020 11:47			27 Jun 2020 11:36	1
HS20090348-22	MW-25R	16 Jun 2020 17:45			27 Jun 2020 11:36	1
Batch ID: R364111 (0)	**Test Name :** PH BY SM4500H+ B				**Matrix:** Water	
HS20090348-01	MW-3	17 Jun 2020 12:33			29 Jun 2020 12:10	1
HS20090348-02	MW-5S	18 Jun 2020 11:10			29 Jun 2020 12:10	1
HS20090348-03	MW-7S	17 Jun 2020 16:00			29 Jun 2020 12:10	1
HS20090348-06	MW-15A	18 Jun 2020 12:23			29 Jun 2020 12:10	1
HS20090348-07	MW-16	18 Jun 2020 10:22			29 Jun 2020 12:10	1
HS20090348-08	MW-17	18 Jun 2020 09:16			29 Jun 2020 12:10	1
HS20090348-09	MW-18	17 Jun 2020 17:30			29 Jun 2020 12:10	1
HS20090348-10	MW-19S	17 Jun 2020 16:56			29 Jun 2020 12:10	1
HS20090348-12	MW-20	17 Jun 2020 15:08			29 Jun 2020 12:10	1
HS20090348-13	MW-21	17 Jun 2020 14:03			29 Jun 2020 12:10	1
HS20090348-19	MW-22A	18 Jun 2020 14:02			29 Jun 2020 12:10	1

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R364132 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090348-04	MW-13	17 Jun 2020 09:35			29 Jun 2020 19:36	100
HS20090348-14	MW-8	16 Jun 2020 10:47			29 Jun 2020 16:17	2
HS20090348-15	MW-9	16 Jun 2020 12:54			29 Jun 2020 16:35	1
HS20090348-16	DUP 1	16 Jun 2020 00:00			29 Jun 2020 19:18	1
HS20090348-18	MW-11	16 Jun 2020 16:37			29 Jun 2020 19:54	20
HS20090348-20	MW-23A	16 Jun 2020 09:28			29 Jun 2020 18:42	2
HS20090348-22	MW-25R	16 Jun 2020 17:45			29 Jun 2020 20:49	20
Batch ID: R364222 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090348-02	MW-5S	18 Jun 2020 11:10			29 Jun 2020 21:07	10
HS20090348-03	MW-7S	17 Jun 2020 16:00			29 Jun 2020 22:01	20
HS20090348-07	MW-16	18 Jun 2020 10:22			29 Jun 2020 22:19	50
HS20090348-08	MW-17	18 Jun 2020 09:16			29 Jun 2020 22:37	50
HS20090348-09	MW-18	17 Jun 2020 17:30			29 Jun 2020 22:55	20
HS20090348-10	MW-19S	17 Jun 2020 16:56			29 Jun 2020 23:13	100
HS20090348-11	DUP 2	17 Jun 2020 16:56			30 Jun 2020 00:44	100
HS20090348-12	MW-20	17 Jun 2020 15:08			29 Jun 2020 23:32	20
HS20090348-13	MW-21	17 Jun 2020 14:03			30 Jun 2020 00:26	100
Batch ID: R364276 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090348-17	MW-10	19 Jun 2020 10:53			30 Jun 2020 15:38	100
HS20090348-17	MW-10	19 Jun 2020 10:53			30 Jun 2020 14:25	1
HS20090348-21	MW-24	16 Jun 2020 11:47			30 Jun 2020 13:12	100
Batch ID: R364568 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090348-06	MW-15A	18 Jun 2020 12:23			06 Jul 2020 16:46	100
HS20090348-19	MW-22A	18 Jun 2020 14:02			06 Jul 2020 21:54	100

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R368150 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RADIUM 228				**Matrix:** Water	
HS20090348-01	MW-3	17 Jun 2020 12:33			08 Sep 2020 15:10	1
HS20090348-01	MW-3	17 Jun 2020 12:33			08 Sep 2020 15:10	1
HS20090348-02	MW-5S	18 Jun 2020 11:10			08 Sep 2020 15:10	1
HS20090348-02	MW-5S	18 Jun 2020 11:10			08 Sep 2020 15:10	1
HS20090348-03	MW-7S	17 Jun 2020 16:00			08 Sep 2020 15:10	1
HS20090348-03	MW-7S	17 Jun 2020 16:00			08 Sep 2020 15:10	1
HS20090348-04	MW-13	17 Jun 2020 09:35			08 Sep 2020 15:10	1
HS20090348-04	MW-13	17 Jun 2020 09:35			08 Sep 2020 15:10	1
HS20090348-05	MW-14A	17 Jun 2020 11:04			08 Sep 2020 15:10	1
HS20090348-05	MW-14A	17 Jun 2020 11:04			08 Sep 2020 15:10	1
HS20090348-06	MW-15A	18 Jun 2020 12:23			08 Sep 2020 15:10	1
HS20090348-06	MW-15A	18 Jun 2020 12:23			08 Sep 2020 15:10	1
HS20090348-07	MW-16	18 Jun 2020 10:22			08 Sep 2020 15:10	1
HS20090348-07	MW-16	18 Jun 2020 10:22			08 Sep 2020 15:10	1
HS20090348-08	MW-17	18 Jun 2020 09:16			08 Sep 2020 15:10	1
HS20090348-08	MW-17	18 Jun 2020 09:16			08 Sep 2020 15:10	1
HS20090348-09	MW-18	17 Jun 2020 17:30			08 Sep 2020 15:10	1
HS20090348-09	MW-18	17 Jun 2020 17:30			08 Sep 2020 15:10	1
HS20090348-10	MW-19S	17 Jun 2020 16:56			08 Sep 2020 15:10	1
HS20090348-10	MW-19S	17 Jun 2020 16:56			08 Sep 2020 15:10	1
HS20090348-11	DUP 2	17 Jun 2020 16:56			08 Sep 2020 15:10	1
HS20090348-11	DUP 2	17 Jun 2020 16:56			08 Sep 2020 15:10	1
HS20090348-12	MW-20	17 Jun 2020 15:08			08 Sep 2020 15:10	1
HS20090348-12	MW-20	17 Jun 2020 15:08			08 Sep 2020 15:10	1
HS20090348-13	MW-21	17 Jun 2020 14:03			08 Sep 2020 15:10	1
HS20090348-13	MW-21	17 Jun 2020 14:03			08 Sep 2020 15:10	1
HS20090348-14	MW-8	16 Jun 2020 10:47			08 Sep 2020 15:10	1
HS20090348-14	MW-8	16 Jun 2020 10:47			08 Sep 2020 15:10	1
HS20090348-15	MW-9	16 Jun 2020 12:54			08 Sep 2020 15:10	1
HS20090348-15	MW-9	16 Jun 2020 12:54			08 Sep 2020 15:10	1
HS20090348-16	DUP 1	16 Jun 2020 00:00			08 Sep 2020 15:10	1
HS20090348-16	DUP 1	16 Jun 2020 00:00			08 Sep 2020 15:10	1
HS20090348-17	MW-10	19 Jun 2020 10:53			08 Sep 2020 15:10	1
HS20090348-17	MW-10	19 Jun 2020 10:53			08 Sep 2020 15:10	1
HS20090348-18	MW-11	16 Jun 2020 16:37			08 Sep 2020 15:10	1
HS20090348-18	MW-11	16 Jun 2020 16:37			08 Sep 2020 15:10	1
HS20090348-19	MW-22A	18 Jun 2020 14:02			08 Sep 2020 15:10	1
HS20090348-19	MW-22A	18 Jun 2020 14:02			08 Sep 2020 15:10	1
HS20090348-20	MW-23A	16 Jun 2020 09:28			08 Sep 2020 15:10	1

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
HS20090348-20	MW-23A	16 Jun 2020 09:28			08 Sep 2020 15:10	1
HS20090348-21	MW-24	16 Jun 2020 11:47			08 Sep 2020 15:10	1
HS20090348-21	MW-24	16 Jun 2020 11:47			08 Sep 2020 15:10	1
HS20090348-22	MW-25R	16 Jun 2020 17:45			08 Sep 2020 15:10	1
HS20090348-22	MW-25R	16 Jun 2020 17:45			08 Sep 2020 15:10	1
Batch ID: R368927 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C				**Matrix:** Water	
HS20090348-14	MW-8	16 Jun 2020 10:47			23 Jun 2020 16:30	1
HS20090348-15	MW-9	16 Jun 2020 12:54			23 Jun 2020 16:30	1
HS20090348-16	DUP 1	16 Jun 2020 00:00			23 Jun 2020 16:30	1
HS20090348-17	MW-10	19 Jun 2020 10:53			23 Jun 2020 16:30	1
HS20090348-18	MW-11	16 Jun 2020 16:37			23 Jun 2020 16:30	1
HS20090348-20	MW-23A	16 Jun 2020 09:28			23 Jun 2020 16:30	1
HS20090348-21	MW-24	16 Jun 2020 11:47			23 Jun 2020 16:30	1
HS20090348-22	MW-25R	16 Jun 2020 17:45			23 Jun 2020 16:30	1
Batch ID: R368972 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C				**Matrix:** Water	
HS20090348-01	MW-3	17 Jun 2020 12:33			24 Jun 2020 15:40	1
HS20090348-02	MW-5S	18 Jun 2020 11:10			24 Jun 2020 15:40	1
HS20090348-03	MW-7S	17 Jun 2020 16:00			24 Jun 2020 15:40	1
HS20090348-04	MW-13	17 Jun 2020 09:35			24 Jun 2020 15:40	1
HS20090348-05	MW-14A	17 Jun 2020 11:04			24 Jun 2020 15:40	1
HS20090348-06	MW-15A	18 Jun 2020 12:23			24 Jun 2020 15:40	1
HS20090348-07	MW-16	18 Jun 2020 10:22			24 Jun 2020 15:40	1
HS20090348-08	MW-17	18 Jun 2020 09:16			24 Jun 2020 15:40	1
HS20090348-09	MW-18	17 Jun 2020 17:30			24 Jun 2020 15:40	1
HS20090348-10	MW-19S	17 Jun 2020 16:56			24 Jun 2020 15:40	1
HS20090348-11	DUP 2	17 Jun 2020 16:56			24 Jun 2020 15:40	1
HS20090348-12	MW-20	17 Jun 2020 15:08			24 Jun 2020 15:40	1
HS20090348-13	MW-21	17 Jun 2020 14:03			24 Jun 2020 15:40	1
HS20090348-19	MW-22A	18 Jun 2020 14:02			24 Jun 2020 15:40	1

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154671 (0) **Instrument: HG03** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-154671** Units: **mg/L** Analysis Date: **22-Jun-2020 17:00**
Client ID: Run ID: **HG03_363747** SeqNo: **5631388** PrepDate: **22-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.000200								

LCS Sample ID: **LCS-154671** Units: **mg/L** Analysis Date: **22-Jun-2020 17:02**
Client ID: Run ID: **HG03_363747** SeqNo: **5631389** PrepDate: **22-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00516	0.000200	0.005	0	103	80 - 120				

MS Sample ID: **HS20060955-04MS** Units: **mg/L** Analysis Date: **22-Jun-2020 17:05**
Client ID: Run ID: **HG03_363747** SeqNo: **5631391** PrepDate: **22-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00498	0.000200	0.005	-0.000005	99.7	75 - 125				

MSD Sample ID: **HS20060955-04MSD** Units: **mg/L** Analysis Date: **22-Jun-2020 17:07**
Client ID: Run ID: **HG03_363747** SeqNo: **5631392** PrepDate: **22-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00517	0.000200	0.005	-0.000005	104	75 - 125	0.00498	3.74	20	

The following samples were analyzed in this batch: HS20090348-14 HS20090348-15 HS20090348-16 HS20090348-20 HS20090348-21

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154876 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-154876** Units: **mg/L** Analysis Date: **29-Jun-2020 15:04**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5641960** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Antimony	U	0.00200							
Arsenic	U	0.00200							
Barium	U	0.00400							
Beryllium	U	0.00200							
Boron	U	0.0200							
Cadmium	U	0.00200							
Calcium	U	0.500							
Chromium	U	0.00400							
Cobalt	U	0.00500							
Lead	U	0.00200							
Lithium	U	0.00500							
Molybdenum	U	0.00500							
Selenium	U	0.00200							
Thallium	U	0.00200							

LCS Sample ID: **LCS-154876** Units: **mg/L** Analysis Date: **29-Jun-2020 15:06**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5641961** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Antimony	0.04535	0.00200	0.05	0	90.7	80 - 120			
Arsenic	0.04537	0.00200	0.05	0	90.7	80 - 120			
Barium	0.04805	0.00400	0.05	0	96.1	80 - 120			
Beryllium	0.04675	0.00200	0.05	0	93.5	80 - 120			
Boron	0.4988	0.0200	0.5	0	99.8	80 - 120			
Cadmium	0.04749	0.00200	0.05	0	95.0	80 - 120			
Calcium	4.477	0.500	5	0	89.5	80 - 120			
Chromium	0.04389	0.00400	0.05	0	87.8	80 - 120			
Cobalt	0.04616	0.00500	0.05	0	92.3	80 - 120			
Lead	0.04486	0.00200	0.05	0	89.7	80 - 120			
Lithium	0.09533	0.00500	0.1	0	95.3	80 - 120			
Molybdenum	0.04237	0.00500	0.05	0	84.7	80 - 120			
Selenium	0.04413	0.00200	0.05	0	88.3	80 - 120			
Thallium	0.04754	0.00200	0.05	0	95.1	80 - 120			

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154876 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MS Sample ID: **HS20060899-01MS** Units: **mg/L** Analysis Date: **29-Jun-2020 15:11**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5641964** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04769	0.00200	0.05	0	95.4	80 - 120				
Arsenic	0.0477	0.00200	0.05	0	95.4	80 - 120				
Barium	0.06147	0.00400	0.05	0.01304	96.9	80 - 120				
Beryllium	0.04995	0.00200	0.05	0	99.9	80 - 120				
Boron	1.696	0.0200	0.5	1.179	104	80 - 120				E
Cadmium	0.048	0.00200	0.05	0	96.0	80 - 120				
Calcium	207	0.500	5	217.2	-205	80 - 120				SEO
Chromium	0.0451	0.00400	0.05	0	90.2	80 - 120				
Cobalt	0.04674	0.00500	0.05	0.000289	92.9	80 - 120				
Lead	0.04773	0.00200	0.05	0	95.5	80 - 120				
Lithium	0.2478	0.00500	0.1	0.1452	103	80 - 120				E
Molybdenum	0.04618	0.00500	0.05	0	92.4	80 - 120				
Selenium	0.04636	0.00200	0.05	0	92.7	80 - 120				
Thallium	0.05009	0.00200	0.05	0	100	80 - 120				

MSD Sample ID: **HS20060899-01MSD** Units: **mg/L** Analysis Date: **29-Jun-2020 15:13**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5641965** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.05063	0.00200	0.05	0	101	80 - 120	0.04769	5.98	20	
Arsenic	0.05109	0.00200	0.05	0	102	80 - 120	0.0477	6.87	20	
Barium	0.06476	0.00400	0.05	0.01304	103	80 - 120	0.06147	5.22	20	
Beryllium	0.05242	0.00200	0.05	0	105	80 - 120	0.04995	4.83	20	
Boron	1.83	0.0200	0.5	1.179	130	80 - 120	1.696	7.57	20	SE
Cadmium	0.05074	0.00200	0.05	0	101	80 - 120	0.048	5.55	20	
Calcium	221.9	0.500	5	217.2	95.2	80 - 120	207	6.99	20	EO
Chromium	0.0479	0.00400	0.05	0	95.8	80 - 120	0.0451	6.02	20	
Cobalt	0.04966	0.00500	0.05	0.000289	98.7	80 - 120	0.04674	6.06	20	
Lead	0.04974	0.00200	0.05	0	99.5	80 - 120	0.04773	4.13	20	
Lithium	0.2552	0.00500	0.1	0.1452	110	80 - 120	0.2478	2.93	20	E
Molybdenum	0.04894	0.00500	0.05	0	97.9	80 - 120	0.04618	5.8	20	
Selenium	0.04963	0.00200	0.05	0	99.3	80 - 120	0.04636	6.81	20	
Thallium	0.05182	0.00200	0.05	0	104	80 - 120	0.05009	3.4	20	

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154876 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS20060899-01PDS** Units: **mg/L** Analysis Date: **29-Jun-2020 15:15**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5641966** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.1071	0.00200	0.1	0.000137	107	75 - 125				
Arsenic	0.1175	0.00200	0.1	0.000216	117	75 - 125				
Barium	0.1285	0.00400	0.1	0.01304	115	75 - 125				
Beryllium	0.1169	0.00200	0.1	0.00002	117	75 - 125				
Cadmium	0.1142	0.00200	0.1	0.000013	114	75 - 125				
Chromium	0.1126	0.00400	0.1	-0.00004	113	75 - 125				
Cobalt	0.1207	0.00500	0.1	0.000289	120	75 - 125				
Lead	0.1151	0.00200	0.1	-0.00004	115	75 - 125				
Molybdenum	0.1082	0.00500	0.1	0.000419	108	75 - 125				
Selenium	0.1141	0.00200	0.1	0.000225	114	75 - 125				
Thallium	0.1178	0.00200	0.1	0.000063	118	75 - 125				

PDS Sample ID: **HS20060899-01PDS** Units: **mg/L** Analysis Date: **30-Jun-2020 12:55**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5644521** PrepDate: **26-Jun-2020** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	5.934	0.200	5	1.165	95.4	75 - 125				

PDS Sample ID: **HS20060899-01PDS** Units: **mg/L** Analysis Date: **30-Jun-2020 16:03**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645018** PrepDate: **26-Jun-2020** DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	413.9	10.0	200	214.5	99.7	75 - 125				

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154876 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS20060899-01SD** Units: **mg/L** Analysis Date: **29-Jun-2020 15:09**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5641963** PrepDate: **26-Jun-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Antimony	U	0.0100					0.000137	0	10	
Arsenic	U	0.0100					0.000216	0	10	
Barium	0.01294	0.0200					0.01304	0	10	J
Beryllium	U	0.0100					0.00002	0	10	
Cadmium	U	0.0100					0.000013	0	10	
Chromium	U	0.0200					-0.00004	0	10	
Cobalt	U	0.0250					0.000289	0	10	
Lead	U	0.0100					-0.00004	0	10	
Lithium	0.1552	0.0250					0.1452	6.87	10	
Molybdenum	U	0.0250					0.000419	0	10	
Selenium	U	0.0100					0.000225	0	10	
Thallium	U	0.0100					0.000063	0	10	

SD Sample ID: **HS20060899-01SD** Units: **mg/L** Analysis Date: **30-Jun-2020 12:53**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5644520** PrepDate: **26-Jun-2020** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Boron	1.18	1.00					1.165	1.33	10	

SD Sample ID: **HS20060899-01SD** Units: **mg/L** Analysis Date: **30-Jun-2020 16:01**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645017** PrepDate: **26-Jun-2020** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	244.1	50.0					214.5	13.8	10	R

The following samples were analyzed in this batch:

HS20090348-01	HS20090348-04	HS20090348-05	HS20090348-14
HS20090348-15	HS20090348-16	HS20090348-17	HS20090348-18
HS20090348-20	HS20090348-21	HS20090348-22	

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154920 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-154920** Units: **mg/L** Analysis Date: **29-Jun-2020 21:13**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642480** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	U	0.00200								
Arsenic	U	0.00200								
Barium	U	0.00400								
Beryllium	U	0.00200								
Boron	U	0.0200								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00400								
Cobalt	U	0.00500								
Lead	U	0.00200								
Lithium	U	0.00500								
Molybdenum	U	0.00500								
Selenium	U	0.00200								
Thallium	U	0.00200								

LCS Sample ID: **LCS-154920** Units: **mg/L** Analysis Date: **29-Jun-2020 21:15**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642481** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.05068	0.00200	0.05	0	101	80 - 120				
Arsenic	0.04854	0.00200	0.05	0	97.1	80 - 120				
Barium	0.0511	0.00400	0.05	0	102	80 - 120				
Beryllium	0.04922	0.00200	0.05	0	98.4	80 - 120				
Boron	0.5063	0.0200	0.5	0	101	80 - 120				
Cadmium	0.05065	0.00200	0.05	0	101	80 - 120				
Calcium	4.743	0.500	5	0	94.9	80 - 120				
Chromium	0.04832	0.00400	0.05	0	96.6	80 - 120				
Cobalt	0.05028	0.00500	0.05	0	101	80 - 120				
Lead	0.04879	0.00200	0.05	0	97.6	80 - 120				
Lithium	0.1012	0.00500	0.1	0	101	80 - 120				
Molybdenum	0.04639	0.00500	0.05	0	92.8	80 - 120				
Selenium	0.04639	0.00200	0.05	0	92.8	80 - 120				
Thallium	0.05123	0.00200	0.05	0	102	80 - 120				

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154920 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MS Sample ID: **HS20061133-61MS** Units: **mg/L** Analysis Date: **29-Jun-2020 21:21**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642484** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04645	0.00200	0.05	0	92.9	80 - 120				
Arsenic	0.0477	0.00200	0.05	0.001541	92.3	80 - 120				
Barium	0.243	0.00400	0.05	0.1978	90.3	80 - 120				
Beryllium	0.04613	0.00200	0.05	0	92.3	80 - 120				
Boron	0.999	0.0200	0.5	0.5178	96.2	80 - 120				
Cadmium	0.04533	0.00200	0.05	0	90.7	80 - 120				
Calcium	751.8	0.500	5	776.7	-497	80 - 120				SEO
Chromium	0.04584	0.00400	0.05	0	91.7	80 - 120				
Cobalt	0.0473	0.00500	0.05	0.002477	89.7	80 - 120				
Lead	0.04731	0.00200	0.05	0	94.6	80 - 120				
Lithium	0.3116	0.00500	0.1	0.211	101	80 - 120				E
Molybdenum	0.04987	0.00500	0.05	0.004289	91.2	80 - 120				
Selenium	0.04856	0.00200	0.05	0.00525	86.6	80 - 120				
Thallium	0.04916	0.00200	0.05	0	98.3	80 - 120				

MSD Sample ID: **HS20061133-61MSD** Units: **mg/L** Analysis Date: **29-Jun-2020 21:23**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642485** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.05008	0.00200	0.05	0	100	80 - 120	0.04645	7.53	20	
Arsenic	0.05076	0.00200	0.05	0.001541	98.4	80 - 120	0.0477	6.21	20	
Barium	0.2587	0.00400	0.05	0.1978	122	80 - 120	0.243	6.26	20	S
Beryllium	0.04921	0.00200	0.05	0	98.4	80 - 120	0.04613	6.47	20	
Boron	1.076	0.0200	0.5	0.5178	112	80 - 120	0.999	7.46	20	E
Cadmium	0.04801	0.00200	0.05	0	96.0	80 - 120	0.04533	5.74	20	
Calcium	816.2	0.500	5	776.7	791	80 - 120	751.8	8.21	20	SEO
Chromium	0.04862	0.00400	0.05	0	97.2	80 - 120	0.04584	5.89	20	
Cobalt	0.05107	0.00500	0.05	0.002477	97.2	80 - 120	0.0473	7.66	20	
Lead	0.05032	0.00200	0.05	0	101	80 - 120	0.04731	6.17	20	
Lithium	0.3341	0.00500	0.1	0.211	123	80 - 120	0.3116	6.97	20	SE
Molybdenum	0.05166	0.00500	0.05	0.004289	94.7	80 - 120	0.04987	3.53	20	
Selenium	0.05261	0.00200	0.05	0.00525	94.7	80 - 120	0.04856	8.01	20	
Thallium	0.05309	0.00200	0.05	0	106	80 - 120	0.04916	7.69	20	

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154920 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS20061133-61PDS** Units: **mg/L** Analysis Date: **29-Jun-2020 21:25**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642486** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.09302	0.00200	0.1	0.000155	92.9	75 - 125				
Arsenic	0.09505	0.00200	0.1	0.001541	93.5	75 - 125				
Barium	0.2904	0.00400	0.1	0.1978	92.6	75 - 125				
Beryllium	0.09498	0.00200	0.1	0.000084	94.9	75 - 125				
Cadmium	0.09022	0.00200	0.1	0.000098	90.1	75 - 125				
Chromium	0.09176	0.00400	0.1	0.000216	91.5	75 - 125				
Cobalt	0.09574	0.00500	0.1	0.002477	93.3	75 - 125				
Lead	0.09731	0.00200	0.1	0.000268	97.0	75 - 125				
Molybdenum	0.09462	0.00500	0.1	0.004289	90.3	75 - 125				
Selenium	0.09348	0.00200	0.1	0.00525	88.2	75 - 125				
Thallium	0.1001	0.00200	0.1	0.000143	100	75 - 125				

PDS Sample ID: **HS20061133-61PDS** Units: **mg/L** Analysis Date: **30-Jun-2020 14:23**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5644557** PrepDate: **27-Jun-2020** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	737.7	5.00	10	768	-303	75 - 125				SO
Lithium	0.6189	0.0500	0.5	0.2155	80.7	70 - 125				

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154920 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS20061133-61SD** Units: **mg/L** Analysis Date: **29-Jun-2020 21:19**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642483** PrepDate: **27-Jun-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Antimony	U	0.0100					0.000155	0	10	
Arsenic	U	0.0100					0.001541	0	10	
Barium	0.1976	0.0200					0.1978	0.0996	10	
Beryllium	U	0.0100					0.000084	0	10	
Boron	0.5515	0.100					0.5178	6.5	10	
Cadmium	U	0.0100					0.000098	0	10	
Chromium	U	0.0200					0.000216	0	10	
Cobalt	0.002456	0.0250					0.002477	0	10	J
Lead	U	0.0100					0.000268	0	10	
Molybdenum	0.004355	0.0250					0.004289	0	10	J
Selenium	0.006436	0.0100					0.00525	0	10	J
Thallium	U	0.0100					0.000143	0	10	

SD Sample ID: **HS20061133-61SD** Units: **mg/L** Analysis Date: **30-Jun-2020 14:21**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5644556** PrepDate: **27-Jun-2020** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	802.1	25.0					768	4.43	10	
Lithium	0.2285	0.250					0.2155	0	10	J

The following samples were analyzed in this batch:

HS20090348-02	HS20090348-03	HS20090348-07	HS20090348-08
HS20090348-09	HS20090348-10	HS20090348-11	HS20090348-12
HS20090348-13			

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154932 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-154932** Units: **mg/L** Analysis Date: **30-Jun-2020 16:10**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645020** PrepDate: **28-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	U	0.00200								
Arsenic	U	0.00200								
Barium	U	0.00400								
Beryllium	U	0.00200								
Boron	U	0.0200								
Cadmium	U	0.00200								
Calcium	U	0.500								
Chromium	U	0.00400								
Cobalt	U	0.00500								
Lead	U	0.00200								
Lithium	U	0.00500								
Molybdenum	U	0.00500								
Selenium	U	0.00200								
Thallium	U	0.00200								

LCS Sample ID: **LCS-154932** Units: **mg/L** Analysis Date: **30-Jun-2020 16:12**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645021** PrepDate: **28-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04951	0.00200	0.05	0	99.0	80 - 120				
Arsenic	0.05223	0.00200	0.05	0	104	80 - 120				
Barium	0.0507	0.00400	0.05	0	101	80 - 120				
Beryllium	0.05	0.00200	0.05	0	100.0	80 - 120				
Boron	0.4908	0.0200	0.5	0	98.2	80 - 120				
Cadmium	0.05212	0.00200	0.05	0	104	80 - 120				
Calcium	5.182	0.500	5	0	104	80 - 120				
Chromium	0.05264	0.00400	0.05	0	105	80 - 120				
Cobalt	0.05371	0.00500	0.05	0	107	80 - 120				
Lead	0.04908	0.00200	0.05	0	98.2	80 - 120				
Lithium	0.1028	0.00500	0.1	0	103	80 - 120				
Molybdenum	0.05031	0.00500	0.05	0	101	80 - 120				
Selenium	0.05384	0.00200	0.05	0	108	80 - 120				
Thallium	0.0499	0.00200	0.05	0	99.8	80 - 120				

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154932 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MS Sample ID: **HS20061290-02MS** Units: **mg/L** Analysis Date: **01-Jul-2020 11:38**
Client ID: Run ID: **ICPMS06_364311** SeqNo: **5646388** PrepDate: **28-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.05136	0.00200	0.05	0.001334	100	80 - 120				
Arsenic	0.05734	0.00200	0.05	0.003739	107	80 - 120				
Barium	0.1294	0.00400	0.05	0.07583	107	80 - 120				
Beryllium	0.0521	0.00200	0.05	0	104	80 - 120				
Cadmium	0.05023	0.00200	0.05	0.000671	99.1	80 - 120				
Chromium	0.04931	0.00400	0.05	0.001073	96.5	80 - 120				
Cobalt	0.1558	0.00500	0.05	0.0983	115	80 - 120				
Lead	0.05514	0.00200	0.05	0.002399	105	80 - 120				
Lithium	0.1154	0.00500	0.1	0.00885	107	80 - 120				
Molybdenum	0.07386	0.00500	0.05	0.02359	101	80 - 120				
Selenium	0.06112	0.00200	0.05	0.003877	114	80 - 120				
Thallium	0.05513	0.00200	0.05	0.000239	110	80 - 120				

MS Sample ID: **HS20061290-02MS** Units: **mg/L** Analysis Date: **30-Jun-2020 16:30**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645088** PrepDate: **28-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.7273	0.0200	0.5	0.183	109	80 - 120				

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154932 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS20061290-02MSD** Units: **mg/L** Analysis Date: **30-Jun-2020 16:32**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645089** PrepDate: **28-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.05333	0.00200	0.05	0.001334	104	80 - 120	0.05939	10.8	20	
Arsenic	0.05564	0.00200	0.05	0.003739	104	80 - 120	0.06371	13.5	20	
Barium	0.1316	0.00400	0.05	0.07583	112	80 - 120	0.1464	10.7	20	
Beryllium	0.05453	0.00200	0.05	0	109	80 - 120	0.05888	7.66	20	
Boron	0.711	0.0200	0.5	0.183	106	80 - 120	0.7273	2.27	20	
Cadmium	0.04955	0.00200	0.05	0.000671	97.8	80 - 120	0.05582	11.9	20	
Chromium	0.04694	0.00400	0.05	0.001073	91.7	80 - 120	0.05464	15.1	20	
Cobalt	0.1488	0.00500	0.05	0.0983	101	80 - 120	0.1664	11.1	20	
Lead	0.05352	0.00200	0.05	0.002399	102	80 - 120	0.05937	10.4	20	
Lithium	0.1178	0.00500	0.1	0.00885	109	80 - 120	0.1183	0.473	20	
Molybdenum	0.07155	0.00500	0.05	0.02359	95.9	80 - 120	0.07974	10.8	20	
Selenium	0.05929	0.00200	0.05	0.003877	111	80 - 120	0.06944	15.8	20	
Thallium	0.05327	0.00200	0.05	0.000239	106	80 - 120	0.05922	10.6	20	

PDS Sample ID: **HS20061290-02PDS** Units: **mg/L** Analysis Date: **30-Jun-2020 17:29**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645372** PrepDate: **28-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.08578	0.00200	0.1	0.001334	84.4	75 - 125				
Arsenic	0.09278	0.00200	0.1	0.003739	89.0	75 - 125				
Barium	0.162	0.00400	0.1	0.07583	86.2	75 - 125				
Beryllium	0.08407	0.00200	0.1	0	84.1	75 - 125				
Boron	0.6657	0.0200	0.5	0.183	96.6	75 - 125				
Cadmium	0.08142	0.00200	0.1	0.000671	80.8	75 - 125				
Chromium	0.0837	0.00400	0.1	0.001073	82.6	75 - 125				
Cobalt	0.1787	0.00500	0.1	0.0983	80.4	75 - 125				
Lead	0.08804	0.00200	0.1	0.002399	85.6	75 - 125				
Molybdenum	0.1059	0.00500	0.1	0.02359	82.3	75 - 125				
Selenium	0.09848	0.00200	0.1	0.003877	94.6	75 - 125				
Thallium	0.08678	0.00200	0.1	0.000239	86.5	75 - 125				

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154932 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS20061290-02PDS** Units: **mg/L** Analysis Date: **01-Jul-2020 11:44**
Client ID: Run ID: **ICPMS06_364311** SeqNo: **5646391** PrepDate: **28-Jun-2020** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	1163	25.0	500	631.4	106	75 - 125				

SD Sample ID: **HS20061290-02SD** Units: **mg/L** Analysis Date: **30-Jun-2020 16:28**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645087** PrepDate: **28-Jun-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Antimony	U	0.0100					0.001334	0	10	
Arsenic	0.003724	0.0100					0.003739	0	10	J
Barium	0.07414	0.0200					0.07583	2.22	10	
Beryllium	U	0.0100					0.00005	0	10	
Cadmium	U	0.0100					0.000671	0	10	
Chromium	U	0.0200					0.001073	0	10	
Cobalt	0.09928	0.0250					0.0983	0.998	10	
Lead	U	0.0100					0.002399	0	10	
Lithium	0.01043	0.0250					0.00885	0	10	J
Molybdenum	0.0219	0.0250					0.02359	0	10	J
Selenium	U	0.0100					0.003877	0	10	
Thallium	U	0.0100					0.000239	0	10	

SD Sample ID: **HS20061290-02SD** Units: **mg/L** Analysis Date: **01-Jul-2020 11:42**
Client ID: Run ID: **ICPMS06_364311** SeqNo: **5646390** PrepDate: **28-Jun-2020** DF: **250**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	637.2	125					631.4	0.924	10	

The following samples were analyzed in this batch: HS20090348-06 HS20090348-19

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154982 (0) **Instrument: HG03** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-154982** Units: **mg/L** Analysis Date: **29-Jun-2020 16:33**
Client ID: Run ID: **HG03_364143** SeqNo: **5643400** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.000200								

LCS Sample ID: **LCS-154982** Units: **mg/L** Analysis Date: **29-Jun-2020 16:35**
Client ID: Run ID: **HG03_364143** SeqNo: **5643401** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00514	0.000200	0.005	0	103	80 - 120				

MS Sample ID: **HS20090348-01MS** Units: **mg/L** Analysis Date: **29-Jun-2020 16:38**
Client ID: **MW-3** Run ID: **HG03_364143** SeqNo: **5741966** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00513	0.000200	0.005	0	103	75 - 125				

MS Sample ID: **HS20060899-01MS** Units: **mg/L** Analysis Date: **29-Jun-2020 16:38**
Client ID: Run ID: **HG03_364143** SeqNo: **5643403** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00513	0.000200	0.005	-0.000001	103	75 - 125				

MSD Sample ID: **HS20090348-01MSD** Units: **mg/L** Analysis Date: **29-Jun-2020 16:40**
Client ID: **MW-3** Run ID: **HG03_364143** SeqNo: **5741967** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00527	0.000200	0.005	0	105	75 - 125	0.00513	2.69	20	

MSD Sample ID: **HS20060899-01MSD** Units: **mg/L** Analysis Date: **29-Jun-2020 16:40**
Client ID: Run ID: **HG03_364143** SeqNo: **5643404** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00527	0.000200	0.005	-0.000001	105	75 - 125	0.00513	2.69	20	

The following samples were analyzed in this batch: HS20090348-01 HS20090348-04 HS20090348-05 HS20090348-17 HS20090348-18 HS20090348-22

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 154985 (0) **Instrument: HG03** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-154985** Units: **mg/L** Analysis Date: **29-Jun-2020 18:38**
Client ID: Run ID: **HG03_364143** SeqNo: **5643458** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.000200								

LCS Sample ID: **LCS-154985** Units: **mg/L** Analysis Date: **29-Jun-2020 18:40**
Client ID: Run ID: **HG03_364143** SeqNo: **5643459** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00513	0.000200	0.005	0	103	80 - 120				

MS Sample ID: **HS20060849-01MS** Units: **ug/L** Analysis Date: **29-Jun-2020 18:44**
Client ID: Run ID: **HG03_364143** SeqNo: **5643483** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.2	0.200	5	0	104	82 - 119				

MSD Sample ID: **HS20060849-01MSD** Units: **ug/L** Analysis Date: **29-Jun-2020 18:45**
Client ID: Run ID: **HG03_364143** SeqNo: **5643484** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	5.18	0.200	5	0	104	82 - 119	5.2	0.385	20	

The following samples were analyzed in this batch: HS20090348-06 HS20090348-19

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: 155064 (0) **Instrument: HG03** **Method: MERCURY BY SW7470A**

MBLK Sample ID: **MBLK-155064** Units: **mg/L** Analysis Date: **01-Jul-2020 15:09**
Client ID: Run ID: **HG03_364350** SeqNo: **5646910** PrepDate: **01-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.000200								

LCS Sample ID: **LCS-155064** Units: **mg/L** Analysis Date: **01-Jul-2020 15:10**
Client ID: Run ID: **HG03_364350** SeqNo: **5646911** PrepDate: **01-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00487	0.000200	0.005	0	97.4	80 - 120				

MS Sample ID: **HS20061283-02MS** Units: **mg/L** Analysis Date: **01-Jul-2020 15:14**
Client ID: Run ID: **HG03_364350** SeqNo: **5646913** PrepDate: **01-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00516	0.000200	0.005	-0.000005	103	75 - 125				

MSD Sample ID: **HS20061283-02MSD** Units: **mg/L** Analysis Date: **01-Jul-2020 15:16**
Client ID: Run ID: **HG03_364350** SeqNo: **5646914** PrepDate: **01-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00504	0.000200	0.005	-0.000005	101	75 - 125	0.00516	2.35	20	

The following samples were analyzed in this batch:

HS20090348-02	HS20090348-03	HS20090348-07	HS20090348-08
HS20090348-09	HS20090348-10	HS20090348-11	HS20090348-12
HS20090348-13			

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R363532 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **WBLKW1-061720** Units: **mg/L** Analysis Date: **18-Jun-2020 08:58**
Client ID: Run ID: **ICS-Integrion_363532** SeqNo: **5625736** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Fluoride	U	0.100								
Nitrogen, Nitrate (As N)	U	0.100								

LCS Sample ID: **WLCSW1-061720** Units: **mg/L** Analysis Date: **18-Jun-2020 09:16**
Client ID: Run ID: **ICS-Integrion_363532** SeqNo: **5625737** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.73	0.500	20	0	98.7	90 - 110				
Fluoride	4.071	0.100	4	0	102	90 - 110				
Nitrogen, Nitrate (As N)	4.038	0.100	4	0	101	90 - 110				

MS Sample ID: **HS20060818-02MS** Units: **mg/L** Analysis Date: **17-Jun-2020 19:59**
Client ID: Run ID: **ICS-Integrion_363532** SeqNo: **5625719** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	66.16	0.500	10	56.67	94.9	80 - 120				O
Fluoride	2.122	0.100	2	0.0533	103	80 - 120				
Nitrogen, Nitrate (As N)	4.615	0.100	2	2.692	96.2	80 - 120				

MS Sample ID: **HS20060786-02MS** Units: **mg/L** Analysis Date: **17-Jun-2020 13:02**
Client ID: Run ID: **ICS-Integrion_363532** SeqNo: **5625705** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	78.56	0.500	10	69.57	89.8	80 - 120				O
Fluoride	3.255	0.100	2	1.252	100	80 - 120				
Nitrogen, Nitrate (As N)	2.218	0.100	2	0	111	80 - 120				

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R363532 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MSD Sample ID: **HS20060818-02MSD** Units: **mg/L** Analysis Date: **17-Jun-2020 20:17**
Client ID: Run ID: **ICS-Integrion_363532** SeqNo: **5625720** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	66.75	0.500	10	56.67	101	80 - 120	66.16	0.898	20	O
Fluoride	2.128	0.100	2	0.0533	104	80 - 120	2.122	0.259	20	
Nitrogen, Nitrate (As N)	4.612	0.100	2	2.692	96.0	80 - 120	4.615	0.0737	20	

MSD Sample ID: **HS20060786-02MSD** Units: **mg/L** Analysis Date: **17-Jun-2020 13:20**
Client ID: Run ID: **ICS-Integrion_363532** SeqNo: **5625706** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	78.49	0.500	10	69.57	89.2	80 - 120	78.56	0.0879	20	O
Fluoride	3.193	0.100	2	1.252	97.0	80 - 120	3.255	1.94	20	
Nitrogen, Nitrate (As N)	2.219	0.100	2	0	111	80 - 120	2.218	0.0541	20	

The following samples were analyzed in this batch: HS20090348-14 HS20090348-16 HS20090348-20 HS20090348-21

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R363534 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **WBLKW1-061720** Units: **mg/L** Analysis Date: **18-Jun-2020 10:46**
Client ID: Run ID: **ICS-Integrion_363534** SeqNo: **5625848** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	U	0.100								
Nitrogen, Nitrate (As N)	U	0.100								
Sulfate	0.2446	0.500								J

LCS Sample ID: **WLCSW1-061720** Units: **mg/L** Analysis Date: **18-Jun-2020 10:28**
Client ID: Run ID: **ICS-Integrion_363534** SeqNo: **5625847** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	4.063	0.100	4	0	102	90 - 110				
Nitrogen, Nitrate (As N)	3.929	0.100	4	0	98.2	90 - 110				
Sulfate	19.45	0.500	20	0	97.2	90 - 110				

MS Sample ID: **HS20060846-07MS** Units: **mg/L** Analysis Date: **18-Jun-2020 03:32**
Client ID: Run ID: **ICS-Integrion_363534** SeqNo: **5625864** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	5.656	0.100	2	3.687	98.4	80 - 120				
Nitrogen, Nitrate (As N)	2.341	0.100	2	0	117	80 - 120				
Sulfate	284.8	0.500	10	279.2	56.1	80 - 120				SEO

MS Sample ID: **HS20060843-02MS** Units: **mg/L** Analysis Date: **18-Jun-2020 00:31**
Client ID: Run ID: **ICS-Integrion_363534** SeqNo: **5625817** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	2.273	0.100	2	0.1336	107	80 - 120				
Nitrogen, Nitrate (As N)	2.12	0.100	2	0.1191	100	80 - 120				
Sulfate	15.82	0.500	10	5.953	98.7	80 - 120				

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R363534 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MSD Sample ID: **HS20060846-07MSD** Units: **mg/L** Analysis Date: **18-Jun-2020 03:50**
Client ID: Run ID: **ICS-Integrion_363534** SeqNo: **5625865** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	5.76	0.100	2	3.687	104	80 - 120	5.656	1.83	20	
Nitrogen, Nitrate (As N)	2.386	0.100	2	0	119	80 - 120	2.341	1.9	20	
Sulfate	287.2	0.500	10	279.2	80.4	80 - 120	284.8	0.849	20	EO

MSD Sample ID: **HS20060843-02MSD** Units: **mg/L** Analysis Date: **18-Jun-2020 00:49**
Client ID: Run ID: **ICS-Integrion_363534** SeqNo: **5625818** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Fluoride	2.274	0.100	2	0.1336	107	80 - 120	2.273	0.0352	20	
Nitrogen, Nitrate (As N)	2.114	0.100	2	0.1191	99.8	80 - 120	2.12	0.283	20	
Sulfate	15.79	0.500	10	5.953	98.4	80 - 120	15.82	0.181	20	

The following samples were analyzed in this batch: HS20090348-14 HS20090348-15 HS20090348-20

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R363618 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK061820** Units: **mg/L** Analysis Date: **18-Jun-2020 12:28**
Client ID: Run ID: **ICS-Integrion_363618** SeqNo: **5627899** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Fluoride	U	0.100								
Nitrogen, Nitrate (As N)	U	0.100								
Sulfate	U	0.500								

LCS Sample ID: **WLCSW1-061820** Units: **mg/L** Analysis Date: **19-Jun-2020 14:51**
Client ID: Run ID: **ICS-Integrion_363618** SeqNo: **5627930** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.57	0.500	20	0	97.9	90 - 110				
Fluoride	4.069	0.100	4	0	102	90 - 110				
Nitrogen, Nitrate (As N)	3.946	0.100	4	0	98.6	90 - 110				
Sulfate	20.12	0.500	20	0	101	90 - 110				

MS Sample ID: **HS20060899-01MS** Units: **mg/L** Analysis Date: **19-Jun-2020 03:40**
Client ID: Run ID: **ICS-Integrion_363618** SeqNo: **5630335** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	23.42	0.500	10	13.75	96.7	80 - 120				
Fluoride	2.408	0.100	2	0.2031	110	80 - 120				
Nitrogen, Nitrate (As N)	2.498	0.100	2	0	125	80 - 120				S
Sulfate	1198	0.500	10	0	12000	80 - 120				SE

MS Sample ID: **HS20060882-01MS** Units: **mg/L** Analysis Date: **18-Jun-2020 21:01**
Client ID: Run ID: **ICS-Integrion_363618** SeqNo: **5627908** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	12.79	0.500	10	2.763	100	80 - 120				
Fluoride	1.344	0.100	2	0.0214	66.1	80 - 120				S
Nitrogen, Nitrate (As N)	2.011	0.100	2	0.0703	97.0	80 - 120				
Sulfate	10.79	0.500	10	1.734	90.5	80 - 120				

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R363618 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MSD Sample ID: **HS20060899-01MSD** Units: **mg/L** Analysis Date: **19-Jun-2020 03:58**
Client ID: Run ID: **ICS-Integrion_363618** SeqNo: **5630336** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	23.46	0.500	10	13.75	97.1	80 - 120	23.42	0.179	20	
Fluoride	2.072	0.100	2	0.2031	93.4	80 - 120	2.408	15	20	
Nitrogen, Nitrate (As N)	2.446	0.100	2	0	122	80 - 120	2.498	2.11	20	S
Sulfate	U	0.500	10	0	0	80 - 120	1198	0	20	S

MSD Sample ID: **HS20060882-01MSD** Units: **mg/L** Analysis Date: **18-Jun-2020 21:20**
Client ID: Run ID: **ICS-Integrion_363618** SeqNo: **5627909** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	12.74	0.500	10	2.763	99.8	80 - 120	12.79	0.392	20	
Fluoride	1.352	0.100	2	0.0214	66.5	80 - 120	1.344	0.586	20	S
Nitrogen, Nitrate (As N)	1.993	0.100	2	0.0703	96.2	80 - 120	2.011	0.864	20	
Sulfate	10.78	0.500	10	1.734	90.5	80 - 120	10.79	0.0417	20	

The following samples were analyzed in this batch: HS20090348-01 HS20090348-04 HS20090348-05 HS20090348-18 HS20090348-22

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R363936 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **WBLKW1-061820** Units: **mg/L** Analysis Date: **19-Jun-2020 20:53**
Client ID: Run ID: **ICS-Integrion_363936** SeqNo: **5636155** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Fluoride	U	0.100								
Nitrogen, Nitrate (As N)	U	0.100								

LCS Sample ID: **WLCSW1-061820** Units: **mg/L** Analysis Date: **19-Jun-2020 20:35**
Client ID: Run ID: **ICS-Integrion_363936** SeqNo: **5636154** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.54	0.500	20	0	97.7	90 - 110				
Fluoride	4.057	0.100	4	0	101	90 - 110				
Nitrogen, Nitrate (As N)	3.957	0.100	4	0	98.9	90 - 110				

MS Sample ID: **HS20060948-03MS** Units: **mg/L** Analysis Date: **20-Jun-2020 02:37**
Client ID: Run ID: **ICS-Integrion_363936** SeqNo: **5636364** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	63.74	2.50	50	14.71	98.0	80 - 120				
Fluoride	11.14	0.500	10	0.5375	106	80 - 120				
Nitrogen, Nitrate (As N)	12.17	0.500	10	0	122	80 - 120				S

MS Sample ID: **HS20060877-01MS** Units: **mg/L** Analysis Date: **19-Jun-2020 12:07**
Client ID: Run ID: **ICS-Integrion_363936** SeqNo: **5636140** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	987.5	2.50	50	946.4	82.2	80 - 120				EO
Fluoride	9.614	0.500	10	0.3275	92.9	80 - 120				
Nitrogen, Nitrate (As N)	27.2	0.500	10	17.1	101	80 - 120				

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R363936 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MSD Sample ID: **HS20060948-03MSD** Units: **mg/L** Analysis Date: **20-Jun-2020 02:55**
Client ID: Run ID: **ICS-Integrion_363936** SeqNo: **5636365** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	63.28	2.50	50	14.71	97.2	80 - 120	63.74	0.709	20	
Fluoride	9.787	0.500	10	0.5375	92.5	80 - 120	11.14	13	20	
Nitrogen, Nitrate (As N)	12.11	0.500	10	0	121	80 - 120	12.17	0.523	20	S

MSD Sample ID: **HS20060877-01MSD** Units: **mg/L** Analysis Date: **19-Jun-2020 12:25**
Client ID: Run ID: **ICS-Integrion_363936** SeqNo: **5636141** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	985.8	2.50	50	946.4	78.6	80 - 120	987.5	0.179	20	SEO
Fluoride	10.77	0.500	10	0.3275	104	80 - 120	9.614	11.4	20	
Nitrogen, Nitrate (As N)	27.1	0.500	10	17.1	100	80 - 120	27.2	0.357	20	

The following samples were analyzed in this batch:

HS20090348-02	HS20090348-03	HS20090348-06	HS20090348-07
HS20090348-08	HS20090348-09	HS20090348-10	HS20090348-11
HS20090348-12	HS20090348-13	HS20090348-17	HS20090348-19

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R364046 (0) **Instrument: WetChem_HS** **Method: PH BY SM4500H+ B**

DUP Sample ID: **HS20060843-05DUP** Units: **pH Units** Analysis Date: **27-Jun-2020 11:36**
Client ID: Run ID: **WetChem_HS_364046** SeqNo: **5639311** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.28	0.100					6.24	0.639	10	
Temp Deg C @pH	24.2	0					24.1	0.414	10	

The following samples were analyzed in this batch:

HS20090348-04	HS20090348-05	HS20090348-11	HS20090348-14
HS20090348-15	HS20090348-16	HS20090348-17	HS20090348-18
HS20090348-20	HS20090348-21	HS20090348-22	

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R364111 (0) **Instrument: WetChem_HS** **Method: PH BY SM4500H+ B**

DUP Sample ID: **HS20060899-01DUP** Units: **pH Units** Analysis Date: **29-Jun-2020 12:10**
Client ID: Run ID: **WetChem_HS_364111** SeqNo: **5641053** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.93	0.100					6.9	0.434	10	
Temp Deg C @pH	21.7	0					21.8	0.46	10	

The following samples were analyzed in this batch:

HS20090348-01	HS20090348-02	HS20090348-03	HS20090348-06
HS20090348-07	HS20090348-08	HS20090348-09	HS20090348-10
HS20090348-12	HS20090348-13	HS20090348-19	

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R364132 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK-062920** Units: **mg/L** Analysis Date: **29-Jun-2020 11:58**
Client ID: Run ID: **ICS-Integrion_364132** SeqNo: **5641658** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Sulfate	0.2146	0.500								J

LCS Sample ID: **LCS-062920** Units: **mg/L** Analysis Date: **29-Jun-2020 12:16**
Client ID: Run ID: **ICS-Integrion_364132** SeqNo: **5641659** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.95	0.500	20	0	99.7	90 - 110				
Sulfate	19.42	0.500	20	0	97.1	90 - 110				

MS Sample ID: **HS20060950-05MS** Units: **mg/L** Analysis Date: **29-Jun-2020 10:45**
Client ID: Run ID: **ICS-Integrion_364132** SeqNo: **5641655** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	23.78	0.500	10	13.95	98.3	80 - 120				
Sulfate	11.27	0.500	10	1.387	98.8	80 - 120				

MS Sample ID: **HS20060843-02MS** Units: **mg/L** Analysis Date: **29-Jun-2020 17:29**
Client ID: Run ID: **ICS-Integrion_364132** SeqNo: **5643906** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	10.98	0.500	10	0.883	101	80 - 120				
Sulfate	16.07	0.500	10	6.365	97.1	80 - 120				

MSD Sample ID: **HS20060950-05MSD** Units: **mg/L** Analysis Date: **29-Jun-2020 11:03**
Client ID: Run ID: **ICS-Integrion_364132** SeqNo: **5641656** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	23.71	0.500	10	13.95	97.6	80 - 120	23.78	0.291	20	
Sulfate	11.35	0.500	10	1.387	99.7	80 - 120	11.27	0.728	20	

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R364132 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MSD Sample ID: **HS20060843-02MSD** Units: **mg/L** Analysis Date: **29-Jun-2020 17:47**
Client ID: Run ID: **ICS-Integrion_364132** SeqNo: **5643907** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	10.99	0.500	10	0.883	101	80 - 120	10.98	0.137	20	
Sulfate	16.05	0.500	10	6.365	96.9	80 - 120	16.07	0.127	20	

The following samples were analyzed in this batch: HS20090348-04 HS20090348-14 HS20090348-15 HS20090348-16 HS20090348-18 HS20090348-20 HS20090348-22

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R364222 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK-062920** Units: **mg/L** Analysis Date: **29-Jun-2020 13:28**
Client ID: Run ID: **ICS-Integrion_364222** SeqNo: **5644056** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	0.2205	0.500								J

LCS Sample ID: **LCS-062920** Units: **mg/L** Analysis Date: **29-Jun-2020 13:10**
Client ID: Run ID: **ICS-Integrion_364222** SeqNo: **5644055** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	19.34	0.500	20	0	96.7	90 - 110				

MS Sample ID: **HS20060948-01MS** Units: **mg/L** Analysis Date: **29-Jun-2020 21:25**
Client ID: Run ID: **ICS-Integrion_364222** SeqNo: **5644062** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	490.8	5.00	100	408.1	82.8	80 - 120				O

MSD Sample ID: **HS20060948-01MSD** Units: **mg/L** Analysis Date: **29-Jun-2020 21:43**
Client ID: Run ID: **ICS-Integrion_364222** SeqNo: **5644063** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	486.8	5.00	100	408.1	78.7	80 - 120	490.8	0.832	20	SO

The following samples were analyzed in this batch:

HS20090348-02	HS20090348-03	HS20090348-07	HS20090348-08
HS20090348-09	HS20090348-10	HS20090348-11	HS20090348-12
HS20090348-13			

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R364276 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK-063020** Units: **mg/L** Analysis Date: **30-Jun-2020 09:53**
Client ID: Run ID: **ICS-Integrion_364276** SeqNo: **5645029** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Fluoride	U	0.100								
Sulfate	U	0.500								

LCS Sample ID: **LCS-063020** Units: **mg/L** Analysis Date: **30-Jun-2020 10:11**
Client ID: Run ID: **ICS-Integrion_364276** SeqNo: **5645030** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.84	0.500	20	0	99.2	90 - 110				
Fluoride	3.71	0.100	4	0	92.7	90 - 110				
Sulfate	19.36	0.500	20	0	96.8	90 - 110				

MS Sample ID: **HS20061091-16MS** Units: **mg/L** Analysis Date: **30-Jun-2020 13:49**
Client ID: Run ID: **ICS-Integrion_364276** SeqNo: **5645035** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	15.51	0.500	10	5.245	103	80 - 120				
Fluoride	2.166	0.100	2	0.0394	106	80 - 120				
Sulfate	15.73	0.500	10	5.604	101	80 - 120				

MS Sample ID: **HS20060843-04MS** Units: **mg/L** Analysis Date: **30-Jun-2020 20:47**
Client ID: Run ID: **ICS-Integrion_364276** SeqNo: **5646263** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1020	50.0	1000	0	102	80 - 120				
Fluoride	209.8	10.0	200	0	105	80 - 120				
Sulfate	2920	50.0	1000	1988	93.2	80 - 120				

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R364276 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MSD Sample ID: **HS20061091-16MSD** Units: **mg/L** Analysis Date: **30-Jun-2020 14:07**
Client ID: Run ID: **ICS-Integrion_364276** SeqNo: **5645036** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	15.53	0.500	10	5.245	103	80 - 120	15.51	0.122	20	
Fluoride	2.174	0.100	2	0.0394	107	80 - 120	2.166	0.396	20	
Sulfate	15.83	0.500	10	5.604	102	80 - 120	15.73	0.633	20	

MSD Sample ID: **HS20060843-04MSD** Units: **mg/L** Analysis Date: **30-Jun-2020 21:05**
Client ID: Run ID: **ICS-Integrion_364276** SeqNo: **5646264** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1023	50.0	1000	0	102	80 - 120	1020	0.255	20	
Fluoride	209.1	10.0	200	0	105	80 - 120	209.8	0.334	20	
Sulfate	2928	50.0	1000	1988	93.9	80 - 120	2920	0.261	20	

The following samples were analyzed in this batch: HS20090348-17 HS20090348-21

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R364568 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK-070620** Units: **mg/L** Analysis Date: **06-Jul-2020 10:40**
Client ID: Run ID: **ICS-Integrion_364568** SeqNo: **5651647** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	0.500								

LCS Sample ID: **LCS-070620** Units: **mg/L** Analysis Date: **06-Jul-2020 10:58**
Client ID: Run ID: **ICS-Integrion_364568** SeqNo: **5651648** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	19.77	0.500	20	0	98.9	90 - 110				

MS Sample ID: **HS20061133-15MS** Units: **mg/L** Analysis Date: **06-Jul-2020 13:49**
Client ID: Run ID: **ICS-Integrion_364568** SeqNo: **5651655** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	1176	50.0	1000	175.9	100	80 - 120				

MS Sample ID: **HS20061004-01MS** Units: **mg/L** Analysis Date: **06-Jul-2020 17:04**
Client ID: Run ID: **ICS-Integrion_364568** SeqNo: **5652507** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	2656	50.0	1000	1682	97.4	80 - 120				

MSD Sample ID: **HS20061133-15MSD** Units: **mg/L** Analysis Date: **06-Jul-2020 14:07**
Client ID: Run ID: **ICS-Integrion_364568** SeqNo: **5651656** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	1179	50.0	1000	175.9	100	80 - 120	1176	0.196	20	

MSD Sample ID: **HS20061004-01MSD** Units: **mg/L** Analysis Date: **06-Jul-2020 17:23**
Client ID: Run ID: **ICS-Integrion_364568** SeqNo: **5652508** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	2602	50.0	1000	1682	92.1	80 - 120	2656	2.02	20	

The following samples were analyzed in this batch: HS20090348-06 HS20090348-19

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R368927 (0) **Instrument: Balance1** **Method: TOTAL DISSOLVED SOLIDS BY SM2540C**

MBLK Sample ID: **WBLK-060320** Units: **mg/L** Analysis Date: **23-Jun-2020 16:30**
Client ID: Run ID: **Balance1_368927** SeqNo: **5746427** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-062320** Units: **mg/L** Analysis Date: **23-Jun-2020 16:30**
Client ID: Run ID: **Balance1_368927** SeqNo: **5746428** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1022	10.0	1000	0	102	85 - 115				

DUP Sample ID: **HS20090353-14DUP** Units: **mg/L** Analysis Date: **23-Jun-2020 16:30**
Client ID: Run ID: **Balance1_368927** SeqNo: **5746426** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1628	10.0					1632	0.245	5	

DUP Sample ID: **HS20090348-14DUP** Units: **mg/L** Analysis Date: **23-Jun-2020 16:30**
Client ID: **MW-8** Run ID: **Balance1_368927** SeqNo: **5746409** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	2546	10.0					2540	0.236	5	

The following samples were analyzed in this batch:

HS20090348-14	HS20090348-15	HS20090348-16	HS20090348-17
HS20090348-18	HS20090348-20	HS20090348-21	HS20090348-22

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: HS20090348

QC BATCH REPORT

Batch ID: R368972 (0) **Instrument: Balance1** **Method: TOTAL DISSOLVED SOLIDS BY SM2540C**

MBLK Sample ID: **WBLK-062420** Units: **mg/L** Analysis Date: **24-Jun-2020 15:40**
Client ID: Run ID: **Balance1_368972** SeqNo: **5747315** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-062420** Units: **mg/L** Analysis Date: **24-Jun-2020 15:40**
Client ID: Run ID: **Balance1_368972** SeqNo: **5747316** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	994	10.0	1000	0	99.4	85 - 115				

DUP Sample ID: **HS20090348-01DUP** Units: **mg/L** Analysis Date: **24-Jun-2020 15:40**
Client ID: **MW-3** Run ID: **Balance1_368972** SeqNo: **5747294** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	2156	10.0					2154	0.0928	5	

The following samples were analyzed in this batch:

HS20090348-01	HS20090348-02	HS20090348-03	HS20090348-04
HS20090348-05	HS20090348-06	HS20090348-07	HS20090348-08
HS20090348-09	HS20090348-10	HS20090348-11	HS20090348-12
HS20090348-13	HS20090348-19		

Client: Altamira
Project: CCR Assessment Monitoring
WorkOrder: **HS20090348**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2020-2021	30-Apr-2021
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20090348 **Date/Time Received:** **04-Sep-2020 08:55**

Client Name: Enviro Clean Services-Tulsa **Received by:** **Paresh M. Giga**

Completed By:	/S/ Corey Grandits	08-Sep-2020 14:59	**Reviewed by:**		
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **W** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes	☑	No	☐	Not Present	☐
Custody seals intact on shipping container/cooler?	Yes	☑	No	☐	Not Present	☐
Custody seals intact on sample bottles?	Yes	☐	No	☑	Not Present	☐
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes	☐	No	☐	Not Present	☑
Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Samplers name present on COC?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Samples in proper container/bottle?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		
All samples received within holding time?	Yes	☑	No	☐		
Container/Temp Blank temperature in compliance?	Yes	☑	No	☐		

Temperature(s)/Thermometer(s):	1.4c, 1.7c				IR25	
Cooler(s)/Kit(s):	45588/46120					
Date/Time sample(s) sent to storage:	6/18/2020 15:45					
Water - VOA vials have zero headspace?	Yes	☐	No	☐	No VOA vials submitted	☑
Water - pH acceptable upon receipt?	Yes	☐	No	☑	N/A	☐
pH adjusted?	Yes	☑	No	☐	N/A	☐
pH adjusted by:	Si Ma					

Login Notes: MW-3 Metals botlle 3 of 3 pH >2 (6).
Preserved with 0.5ml HNO3 6/18/2020 @ 13:00.
Final pH (1)

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Sample Receipt Checklist

Work Order ID: HS20090348 **Date/Time Received:** **04-Sep-2020 08:55**

Client Name: Enviro Clean Services-Tulsa **Received by:** **Paresh M. Giga**

Completed By:	/S/ Corey Grandits	08-Sep-2020 15:00	**Reviewed by:**		
	eSignature	Date/Time		eSignature	Date/Time

Matrices: Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes	☑	No	☐	Not Present	☐
Custody seals intact on shipping container/cooler?	Yes	☑	No	☐	Not Present	☐
Custody seals intact on sample bottles?	Yes	☐	No	☑	Not Present	☐
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes	☐	No	☐	Not Present	☑
Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Samplers name present on COC?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☐	No	☑		
Samples in proper container/bottle?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		
All samples received within holding time?	Yes	☑	No	☐		
Container/Temp Blank temperature in compliance?	Yes	☑	No	☐		

Temperature(s)/Thermometer(s):	0.9c, 1.2c		IR25			
Cooler(s)/Kit(s):	44917/44331					
Date/Time sample(s) sent to storage:	6/19/2020 12:25					
Water - VOA vials have zero headspace?	Yes	☐	No	☐	No VOA vials submitted	☑
Water - pH acceptable upon receipt?	Yes	☑	No	☐	N/A	☐
pH adjusted?	Yes	☐	No	☑	N/A	☐
pH adjusted by:						

Login Notes: Times Differ :
MW-7S COC - 16:00 Labels - 16:05
MW-18 COC - 17:30 Labels - 17:58

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Sample Receipt Checklist

Work Order ID: HS20090348 **Date/Time Received:** **04-Sep-2020 08:55**

Client Name: Enviro Clean Services-Tulsa **Received by:** **Paresh M. Giga**

Completed By:	/S/ Corey Grandits	08-Sep-2020 15:02	**Reviewed by:**		
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **W** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☑	Not Present ☐
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.2c	IR25
Cooler(s)/Kit(s):	2811	
Date/Time sample(s) sent to storage:	6/20/2020 11:45	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Extra Sample received not on COC "DUP 3".

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Sample Receipt Checklist

Work Order ID: HS20090348 **Date/Time Received:** **04-Sep-2020 08:55**

Client Name: Enviro Clean Services-Tulsa **Received by:** **Paresh M. Giga**

Completed By:	/S/ Corey Grandits	08-Sep-2020 15:03	**Reviewed by:**		
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **W** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☑	Not Present ☐
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.7c	IR25
Cooler(s)/Kit(s):	44144	
Date/Time sample(s) sent to storage:	6/17/2020 16:45	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Trip Blank logged in on hold

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY RECORD

ALTAMIRA
formerly known as Enviro Clean Cardinal

PROJECT NUMBER: WFEE160020		PROJECT NAME: WFEC / CCR Program, Impoundment Wells	COC : ____ of ____
CLIENT CONTACT: Heather Tiffany, Bert Smith		CLIENT EMAIL: Heather.N.Tiffany@Altamira-us.com, LabData@Altamira-us.com	CLIENT PHONE: 405-618-2021
LABORATORY / LAB PM: ALS / RJ Modashia	CLIENT ADDRESS: 3700 West Robinson Street, Suite 200, Norman, OK 73072	TAT: STANDARD	
LAB ADDRESS: 10450 Stancliff Road, Suite 210, Houston, TX 77099	SPECIAL INSTRUCTIONS: Also on MNA Program: MW-22A on separate COC		
SHIPMENT METHOD: FEDEX	TRACKING: 1891 8877 4915		

NO.	SAMPLE DESCRIPTION	DATE	TIME	MATRIX	PRES.	NUMBER OF CONTAINERS	FIELD FILTERED (YES / NO)	Appendix III	Appendix IV	Nitrate as N	Mo, Total	Mo, Dissolved	K, Mg	Sulfide	Fe, Total	Fe, Dissolved	Fe, Ferrous	HCO3, CO3, Hydroxide Alkalinity		HOLD
1	MW-8	6/16/2020	1047	Water	2, 9	5		X	X	X										
2	MW-9	6/16/2020	1254	Water	2, 9	5		X	X	X										
3	~~MW-10~~			~~Water~~	~~2, 9~~			~~X~~	~~X~~	~~X~~										
4	~~MW-11~~			Water	2, 9			~~X~~	~~X~~	~~X~~										
5	~~MW-22A~~			~~Water~~	~~1, 2, 4, 9~~			~~X~~	~~X~~	~~X~~	X	X	X	X	X	X	X	X		
6	MW-23A	6/16/2020	928	Water	2, 9	5		X	X	X										
7	MW-24	6/16/2020	1147	Water	2, 9	5		X	X	X										
8	~~MW-25R~~			Water	~~2, 9~~			~~X~~	~~X~~	~~X~~										
9	Dup 1	6/16/2020	—	Water	2, 9	5		X	X	X										
10	Trip Blank	—	—	—	—	2														
11	Temp Blank	—	—	—	—	1														
12																				
13																				
14																				
15																				

HS20090348
Altamira
CCR Assessment Monitoring

SAMPLER(S) NAME: Bradley VanCleave	DATE: 6/16/2020 TIME: 1400	Total # of Containers:	SAMPLER(S) SIGNATURE:	DATE: 6/16/2020 TIME: 1400			
RELINQUISHED BY:	DATE: 6/16/2020 TIME: 1400	RECEIVED BY:	DATE: 6/17/2020 TIME: 09:12	LOGGED BY:	DATE:	TIME:	COOLER TEMP:

PRESERVATION KEY: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7- 4 Degrees C 8-9035 9-Other : Non-Preserve

POINT OF ORIGIN: ☑ Norman ☐ Oklahoma City ☐ Tulsa ☐ Yukon ☐ Midland ☐ Other:

ALTAMIRA-US, LLC

44144 0.7°
#25
CH-0-0

APPENDIX G

LABORATORY REPORT FOR JUNE/JULY 2020 SAMPLING FOR TOTAL AND DISSOLVED MOLYBDENUM AND FOR PARAMETERS TO EVALUATE MNA (ALS)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

October 16, 2020

Heather Tiffany
Altamira
525 central park Dr
Suite 500
Oklahoma City, OK 73013

Work Order: **HS20090350**

Laboratory Results for: **Corrective Action Assessment (MNA)**

Dear Heather Tiffany,

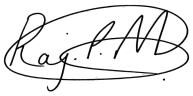
ALS Environmental received 22 sample(s) on Sep 04, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: RJ.MODASHIA
RJ Modashia
Project Manager

Client: Altamira
Project: Corrective Action Assessment (MNA)
Work Order: HS20090350

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20090350-01	CM-1A	Water	HS20071175-03	24-Jul-2020 10:20	04-Sep-2020 09:20	☐
HS20090350-02	CM-1B	Water	HS20071175-04	24-Jul-2020 13:00	04-Sep-2020 09:20	☐
HS20090350-03	CM-2	Water	HS20071175-05	24-Jul-2020 10:56	04-Sep-2020 09:20	☐
HS20090350-04	CM-3A	Water	HS20080996-01/02	21-Aug-2020 14:25	04-Sep-2020 09:20	☐
HS20090350-05	CM-3B	Water	HS20080996-03/04	21-Aug-2020 14:30	04-Sep-2020 09:20	☐
HS20090350-06	CM-4A	Water	HS20071175-06	24-Jul-2020 12:37	04-Sep-2020 09:20	☐
HS20090350-07	CM-4B	Water	HS20071175-07	24-Jul-2020 12:41	04-Sep-2020 09:20	☐
HS20090350-08	CM-5A	Water	HS20071175-08	24-Jul-2020 12:50	04-Sep-2020 09:20	☐
HS20090350-09	CM-5B	Water	HS20071175-09	24-Jul-2020 12:56	04-Sep-2020 09:20	☐
HS20090350-10	MW-5S	Water	HS20060948-01	18-Jun-2020 11:10	04-Sep-2020 09:20	☐
HS20090350-11	MW-7S	Water	HS20060948-02	17-Jun-2020 16:00	04-Sep-2020 09:20	☐
HS20090350-12	MW-15A	Water	HS20061004-01	18-Jun-2020 12:23	04-Sep-2020 09:20	☐
HS20090350-13	MW-15B	Water	HS20071175-02	24-Jul-2020 11:11	04-Sep-2020 09:20	☐
HS20090350-14	MW-16	Water	HS20060948-03	18-Jun-2020 10:22	04-Sep-2020 09:20	☐
HS20090350-15	MW-17	Water	HS20060948-04	18-Jun-2020 09:16	04-Sep-2020 09:20	☐
HS20090350-16	MW-18	Water	HS20060948-05	17-Jun-2020 17:30	04-Sep-2020 09:20	☐
HS20090350-17	MW-19S	Water	HS20060948-06	17-Jun-2020 16:56	04-Sep-2020 09:20	☐
HS20090350-18	DUP 2	Water	HS20060948-09	17-Jun-2020 16:56	04-Sep-2020 09:20	☐
HS20090350-19	MW-22A	Water	HS20061004-09	18-Jun-2020 14:02	04-Sep-2020 09:20	☐
HS20090350-20	MW-22B	Water	HS20071175-01	24-Jul-2020 11:26	04-Sep-2020 09:20	☐
HS20090350-21	DUP 1	Water	HS20060948-09	24-Jul-2020 10:56	04-Sep-2020 09:20	☐
HS20090350-22	MW-14A	Water	HS20071175-01	17-Jun-2020 11:04	04-Sep-2020 09:20	☐

Client: Altamira **CASE NARRATIVE**
Project: Corrective Action Assessment (MNA)
Work Order: HS20090350

Work Order Comments

- At the request of the client, select samples in ALS work orders HS20060948, HS20061004, HS20071175 & HS20080996 were consolidated and reported under a new work order HS20090350.

Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

Metals by Method SW6020

Batch ID: 154932

Sample ID: HS20061290-02MSD

- MS/MSD and DUPs are for an unrelated sample

Batch ID: 156772

Sample ID: HS20081136-06MSD

- MS and MSD are for an unrelated sample

Batch ID: 155866

Sample ID: HS20071180-02MS

- MS/MSD and DUPs are for an unrelated sample

Batch ID: 154920

Sample ID: HS20061133-61MS

- MS/MSD and DUPs are for an unrelated sample

Batch ID: 154696,154748,155834,156744

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Wet Chemistry by Method E300

Batch ID: R367542

Sample ID: HS20081136-06MS

- MS and MSD are for an unrelated sample

WetChemistry by Method SM4500H+ B

Batch ID: R364046,R364111,R366063,R367467

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method M2540C

Batch ID: R368972,R368976,R369035,R369100

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R364568,R365834,R367311

Client: Altamira **CASE NARRATIVE**
Project: Corrective Action Assessment (MNA)
Work Order: HS20090350

WetChemistry by Method E300

Batch ID: R364568,R365834,R367311

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R365937

Sample ID: HS20071305-04MS

- MS and MSD are for an unrelated sample (Chloride,Sulfate)

Batch ID: R365759

Sample ID: CM-4A (HS20090350-06)

- Sample ran at 5X due to high concentration of Sulfate

Sample ID: CM-4B (HS20090350-07)

- Sample ran at 5X due to high concentration of Sulfate

Sample ID: CM-5B (HS20090350-09)

- Sample ran at 5X due to high concentration of Sulfate

Sample ID: HS20071189-01MS

- MS and MSD are for an unrelated sample (Chloride)

Batch ID: R364222

Sample ID: HS20060948-01MSD

- MSD is for an unrelated sample (Sulfate)

Batch ID: R363936

Sample ID: DUP 2 (HS20090350-18)

- Sample ran at 2x due to high concentration of Sulfate.

Sample ID: HS20060877-01MSD

- MSD is for an unrelated sample (Chloride)

Sample ID: MW-15A (HS20090350-12)

- Sample ran at 2X due to high concentration of Sulfate

Sample ID: MW-16 (HS20090350-14)

- Sample ran at 2x due to high concentration of Sulfate.

Sample ID: MW-17 (HS20090350-15)

- Sample ran at 2x due to high concentration of Sulfate.

Sample ID: MW-18 (HS20090350-16)

Client: Altamira **CASE NARRATIVE**
Project: Corrective Action Assessment (MNA)
Work Order: HS20090350

WetChemistry by Method E300

Batch ID: R363936

- Sample ran at 2x due to high concentration of Sulfate.

Sample ID: MW-19S (HS20090350-17)

- Sample ran at 2x due to high concentration of Sulfate.

Sample ID: MW-22A (HS20090350-19)

- Sample ran at 2X due to high concentration of Sulfate

WetChemistry by Method SM4500 S2-F

Batch ID: R363865,R365873

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R363643,R363953,R365961

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM3500FED

Batch ID: R363621,R363827,R365669

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: CM-1A
Collection Date: 24-Jul-2020 10:20

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2020		Analyst: JHD
Boron	**0.748**		**0.110**	**0.200**	**mg/L**	10	29-Jul-2020 21:02
Calcium	**452**		**0.340**	**5.00**	**mg/L**	10	29-Jul-2020 21:02
Iron	**5.34**		**0.0120**	**0.200**	**mg/L**	1	30-Jul-2020 14:15
Magnesium	**65.7**		**0.0100**	**0.200**	**mg/L**	1	30-Jul-2020 14:15
Molybdenum	**0.00880**		**0.000600**	**0.00500**	**mg/L**	1	30-Jul-2020 14:15
Potassium	**12.4**		**0.0180**	**0.200**	**mg/L**	1	30-Jul-2020 14:15
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 28-Jul-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	28-Jul-2020 17:08
Molybdenum	**0.00385**	J	**0.000600**	**0.00500**	**mg/L**	1	28-Jul-2020 17:08
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**49.5**		**0.200**	**0.500**	**mg/L**	1	28-Jul-2020 06:17
Fluoride	**0.382**		**0.0500**	**0.100**	**mg/L**	1	28-Jul-2020 06:17
Sulfate	**1,970**		**10.0**	**25.0**	**mg/L**	50	29-Jul-2020 02:11
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,980**		**5.00**	**10.0**	**mg/L**	1	31-Jul-2020 16:17
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**326**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 01:53
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 01:53
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 01:53
Alkalinity, Total (As CaCO3)	**326**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 01:53
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: TH
Ferrous Iron	**0.114**		**0.0200**	**0.0500**	**mg/L**	1	25-Jul-2020 13:30
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	U		1.00	1.00	mg/L	1	28-Jul-2020 17:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**6.52**	H	**0.100**	**0.100**	**pH Units**	1	03-Aug-2020 14:49
Temp Deg C @pH	**24.3**	H	**0**	**0**	**°C**	1	03-Aug-2020 14:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: CM-1B
Collection Date: 24-Jul-2020 13:00

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2020		Analyst: JHD
Boron	**3.86**		**0.110**	**0.200**	**mg/L**	10	29-Jul-2020 21:03
Calcium	**233**		**0.340**	**5.00**	**mg/L**	10	29-Jul-2020 21:03
Iron	**47.5**		**0.0120**	**0.200**	**mg/L**	1	30-Jul-2020 14:17
Magnesium	**50.8**		**0.0100**	**0.200**	**mg/L**	1	30-Jul-2020 14:17
Molybdenum	**0.0133**		**0.000600**	**0.00500**	**mg/L**	1	30-Jul-2020 14:17
Potassium	**19.7**		**0.0180**	**0.200**	**mg/L**	1	30-Jul-2020 14:17
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 28-Jul-2020		Analyst: JHD
Iron	**0.0150**	J	**0.0120**	**0.200**	**mg/L**	1	28-Jul-2020 17:12
Molybdenum	**0.0190**		**0.000600**	**0.00500**	**mg/L**	1	28-Jul-2020 17:12
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**107**		**1.00**	**2.50**	**mg/L**	5	29-Jul-2020 02:29
Fluoride	**0.626**		**0.250**	**0.500**	**mg/L**	5	29-Jul-2020 02:29
Sulfate	**2,490**		**10.0**	**25.0**	**mg/L**	50	29-Jul-2020 02:47
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**3,490**		**5.00**	**10.0**	**mg/L**	1	31-Jul-2020 16:17
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**432**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:00
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 02:00
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 02:00
Alkalinity, Total (As CaCO3)	**432**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:00
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: TH
Ferrous Iron	**26.0**		**1.00**	**2.50**	**mg/L**	50	25-Jul-2020 13:30
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**5.00**		**1.00**	**1.00**	**mg/L**	1	28-Jul-2020 17:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.67**	H	**0.100**	**0.100**	**pH Units**	1	03-Aug-2020 14:49
Temp Deg C @pH	**24.6**	H	**0**	**0**	**°C**	1	03-Aug-2020 14:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: CM-2
Collection Date: 24-Jul-2020 10:56

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2020		Analyst: JHD
Boron	**0.930**		**0.110**	**0.200**	**mg/L**	10	29-Jul-2020 21:05
Calcium	**492**		**0.340**	**5.00**	**mg/L**	10	29-Jul-2020 21:05
Iron	**2.78**		**0.0120**	**0.200**	**mg/L**	1	30-Jul-2020 14:19
Magnesium	**31.6**		**0.0100**	**0.200**	**mg/L**	1	30-Jul-2020 14:19
Molybdenum	**0.00209**	J	**0.000600**	**0.00500**	**mg/L**	1	30-Jul-2020 14:19
Potassium	**8.78**		**0.0180**	**0.200**	**mg/L**	1	30-Jul-2020 14:19
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 28-Jul-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	28-Jul-2020 17:14
Molybdenum	**0.00158**	J	**0.000600**	**0.00500**	**mg/L**	1	28-Jul-2020 17:14
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**3.79**		**0.200**	**0.500**	**mg/L**	1	28-Jul-2020 07:30
Fluoride	**0.558**		**0.0500**	**0.100**	**mg/L**	1	28-Jul-2020 07:30
Sulfate	**1,680**		**10.0**	**25.0**	**mg/L**	50	29-Jul-2020 17:25
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,490**		**5.00**	**10.0**	**mg/L**	1	31-Jul-2020 16:17
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**337**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:07
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 02:07
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 02:07
Alkalinity, Total (As CaCO3)	**337**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:07
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: TH
Ferrous Iron	**0.109**		**0.0200**	**0.0500**	**mg/L**	1	25-Jul-2020 13:30
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	U		1.00	1.00	mg/L	1	28-Jul-2020 17:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**6.66**	H	**0.100**	**0.100**	**pH Units**	1	03-Aug-2020 14:49
Temp Deg C @pH	**24.6**	H	**0**	**0**	**°C**	1	03-Aug-2020 14:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: CM-3A
Collection Date: 21-Aug-2020 14:25

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 27-Aug-2020		Analyst: JHD
Boron	**4.84**		**0.110**	**0.200**	**mg/L**	10	28-Aug-2020 18:38
Calcium	**50.9**		**0.0340**	**0.500**	**mg/L**	1	28-Aug-2020 18:34
Iron	**2.78**		**0.0120**	**0.200**	**mg/L**	1	28-Aug-2020 18:34
Magnesium	**6.26**		**0.0100**	**0.200**	**mg/L**	1	28-Aug-2020 18:34
Molybdenum	**0.0457**		**0.000600**	**0.00500**	**mg/L**	1	28-Aug-2020 18:34
Potassium	**6.13**		**0.0180**	**0.200**	**mg/L**	1	28-Aug-2020 18:34
DISSOLVED METALS BY SW6020A	**Method:SW6020 (dissolved)**				Prep:SW3010A / 26-Aug-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	28-Aug-2020 21:46
Molybdenum	**0.0445**		**0.000600**	**0.00500**	**mg/L**	1	28-Aug-2020 21:46
ANIONS BY E300.0	**Method:E300**						Analyst: YP
Chloride	**52.9**		**0.200**	**0.500**	**mg/L**	1	22-Aug-2020 12:56
Fluoride	**0.425**		**0.0500**	**0.100**	**mg/L**	1	22-Aug-2020 12:56
Nitrogen, Nitrate (As N)	**1.67**		**0.0300**	**0.100**	**mg/L**	1	22-Aug-2020 12:56
Sulfate	**554**		**2.00**	**5.00**	**mg/L**	10	22-Aug-2020 12:20
TOTAL DISSOLVED SOLIDS BY SM2540C	**Method:M2540C**						Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,700**		**5.00**	**10.0**	**mg/L**	1	28-Aug-2020 15:50
PH BY SM4500H+ B	**Method:SM4500H+ B**						Analyst: JAC
pH	**8.76**	H	**0.100**	**0.100**	**pH Units**	1	26-Aug-2020 12:27
Temp Deg C @pH	**23.4**	H	**0**	**0**	**°C**	1	26-Aug-2020 12:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: CM-3B
Collection Date: 21-Aug-2020 14:30

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-05
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Aug-2020		Analyst: JHD
Boron	**3.82**		**0.110**	**0.200**	**mg/L**	10	28-Aug-2020 18:52
Calcium	**70.0**		**0.0340**	**0.500**	**mg/L**	1	28-Aug-2020 18:36
Iron	**23.5**		**0.0120**	**0.200**	**mg/L**	1	28-Aug-2020 18:36
Magnesium	**13.6**		**0.0100**	**0.200**	**mg/L**	1	28-Aug-2020 18:36
Molybdenum	**0.0327**		**0.000600**	**0.00500**	**mg/L**	1	28-Aug-2020 18:36
Potassium	**11.1**		**0.0180**	**0.200**	**mg/L**	1	28-Aug-2020 18:36
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 26-Aug-2020		Analyst: JHD
Iron	**0.0140**	J	**0.0120**	**0.200**	**mg/L**	1	28-Aug-2020 21:48
Molybdenum	**0.0394**		**0.000600**	**0.00500**	**mg/L**	1	28-Aug-2020 21:48
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**48.9**		**0.200**	**0.500**	**mg/L**	1	22-Aug-2020 13:14
Fluoride	**1.90**		**0.0500**	**0.100**	**mg/L**	1	22-Aug-2020 13:14
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	22-Aug-2020 13:14
Sulfate	**1,090**		**20.0**	**50.0**	**mg/L**	100	26-Aug-2020 22:55
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,240**		**5.00**	**10.0**	**mg/L**	1	28-Aug-2020 15:50
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**8.11**	H	**0.100**	**0.100**	**pH Units**	1	26-Aug-2020 12:27
Temp Deg C @pH	**24.1**	H	**0**	**0**	**°C**	1	26-Aug-2020 12:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: CM-4A
Collection Date: 24-Jul-2020 12:37

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-06
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2020		Analyst: JHD
Boron	**3.03**		**0.110**	**0.200**	**mg/L**	10	29-Jul-2020 21:11
Calcium	**103**		**0.340**	**5.00**	**mg/L**	10	29-Jul-2020 21:11
Iron	**40.0**		**0.0120**	**0.200**	**mg/L**	1	30-Jul-2020 14:22
Magnesium	**16.7**		**0.0100**	**0.200**	**mg/L**	1	30-Jul-2020 14:22
Molybdenum	**0.0269**		**0.000600**	**0.00500**	**mg/L**	1	30-Jul-2020 14:22
Potassium	**14.3**		**0.0180**	**0.200**	**mg/L**	1	30-Jul-2020 14:22
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 28-Jul-2020		Analyst: JHD
Iron	**0.0205**	J	**0.0120**	**0.200**	**mg/L**	1	28-Jul-2020 17:21
Molybdenum	**0.0529**		**0.000600**	**0.00500**	**mg/L**	1	28-Jul-2020 17:21
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**92.4**		**1.00**	**2.50**	**mg/L**	5	28-Jul-2020 08:24
Fluoride	**0.879**		**0.250**	**0.500**	**mg/L**	5	28-Jul-2020 08:24
Sulfate	**1,050**		**10.0**	**25.0**	**mg/L**	50	29-Jul-2020 03:59
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,900**		**5.00**	**10.0**	**mg/L**	1	31-Jul-2020 16:17
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**450**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:14
Alkalinity, Carbonate (As CaCO3)	**20.0**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:14
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 02:14
Alkalinity, Total (As CaCO3)	**470**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:14
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: TH
Ferrous Iron	**1.92**		**0.0400**	**0.100**	**mg/L**	2	25-Jul-2020 13:30
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**4.00**		**1.00**	**1.00**	**mg/L**	1	28-Jul-2020 17:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.82**	H	**0.100**	**0.100**	**pH Units**	1	03-Aug-2020 14:49
Temp Deg C @pH	**25.0**	H	**0**	**0**	**°C**	1	03-Aug-2020 14:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: CM-4B
Collection Date: 24-Jul-2020 12:41

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-07
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 29-Jul-2020		Analyst: JHD
Boron	**3.14**		**0.110**	**0.200**	**mg/L**	10	29-Jul-2020 21:13
Calcium	**56.5**		**0.340**	**5.00**	**mg/L**	10	29-Jul-2020 21:13
Iron	**4.25**		**0.0120**	**0.200**	**mg/L**	1	30-Jul-2020 14:24
Magnesium	**14.0**		**0.0100**	**0.200**	**mg/L**	1	30-Jul-2020 14:24
Molybdenum	**0.0307**		**0.000600**	**0.00500**	**mg/L**	1	30-Jul-2020 14:24
Potassium	**10.2**		**0.0180**	**0.200**	**mg/L**	1	30-Jul-2020 14:24
DISSOLVED METALS BY SW6020A	**Method:SW6020 (dissolved)**				Prep:SW3010A / 28-Jul-2020		Analyst: JHD
Iron	**0.0123**	J	**0.0120**	**0.200**	**mg/L**	1	28-Jul-2020 17:23
Molybdenum	**0.0354**		**0.000600**	**0.00500**	**mg/L**	1	28-Jul-2020 17:23
ANIONS BY E300.0	**Method:E300**						Analyst: YP
Chloride	**69.9**		**1.00**	**2.50**	**mg/L**	5	28-Jul-2020 08:42
Fluoride	**1.01**		**0.250**	**0.500**	**mg/L**	5	28-Jul-2020 08:42
Sulfate	**1,360**		**10.0**	**25.0**	**mg/L**	50	29-Jul-2020 04:18
TOTAL DISSOLVED SOLIDS BY SM2540C	**Method:M2540C**						Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,240**		**5.00**	**10.0**	**mg/L**	1	31-Jul-2020 16:17
ALKALINITY BY SM2320B	**Method:SM2320B**						Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**420**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:22
Alkalinity, Carbonate (As CaCO3)	**15.7**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:22
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 02:22
Alkalinity, Total (As CaCO3)	**436**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:22
FERROUS IRON BY SM3500 FE B	**Method:SM3500FED**						Analyst: TH
Ferrous Iron	**19.2**		**1.00**	**2.50**	**mg/L**	50	25-Jul-2020 13:30
SULFIDE BY SM4500 S2-F	**Method:SM4500 S2-F**						Analyst: KVL
Sulfide	**5.00**		**1.00**	**1.00**	**mg/L**	1	28-Jul-2020 17:00
PH BY SM4500H+ B	**Method:SM4500H+ B**						Analyst: JAC
pH	**7.78**	H	**0.100**	**0.100**	**pH Units**	1	03-Aug-2020 14:49
Temp Deg C @pH	**24.6**	H	**0**	**0**	**°C**	1	03-Aug-2020 14:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: CM-5A
Collection Date: 24-Jul-2020 12:50

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-08
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2020		Analyst: JHD
Boron	**3.92**		**0.110**	**0.200**	**mg/L**	10	29-Jul-2020 21:15
Calcium	**102**		**0.340**	**5.00**	**mg/L**	10	29-Jul-2020 21:15
Iron	**28.4**		**0.0120**	**0.200**	**mg/L**	1	30-Jul-2020 14:26
Magnesium	**15.8**		**0.0100**	**0.200**	**mg/L**	1	30-Jul-2020 14:26
Molybdenum	**0.0205**		**0.000600**	**0.00500**	**mg/L**	1	30-Jul-2020 14:26
Potassium	**13.3**		**0.0180**	**0.200**	**mg/L**	1	30-Jul-2020 14:26
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 28-Jul-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	28-Jul-2020 17:25
Molybdenum	**0.0352**		**0.000600**	**0.00500**	**mg/L**	1	28-Jul-2020 17:25
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**93.9**		**0.200**	**0.500**	**mg/L**	1	28-Jul-2020 09:00
Fluoride	**1.09**		**0.0500**	**0.100**	**mg/L**	1	28-Jul-2020 09:00
Sulfate	**808**		**10.0**	**25.0**	**mg/L**	50	29-Jul-2020 04:36
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,840**		**5.00**	**10.0**	**mg/L**	1	31-Jul-2020 16:17
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**443**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:29
Alkalinity, Carbonate (As CaCO3)	**7.91**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:29
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 02:29
Alkalinity, Total (As CaCO3)	**451**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:29
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: TH
Ferrous Iron	**0.561**		**0.0200**	**0.0500**	**mg/L**	1	25-Jul-2020 13:30
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	U		1.00	1.00	mg/L	1	28-Jul-2020 17:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.70**	H	**0.100**	**0.100**	**pH Units**	1	03-Aug-2020 14:49
Temp Deg C @pH	**25.0**	H	**0**	**0**	**°C**	1	03-Aug-2020 14:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: CM-5B
Collection Date: 24-Jul-2020 12:56

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-09
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2020		Analyst: JHD
Boron	**3.80**		**0.110**	**0.200**	**mg/L**	10	29-Jul-2020 21:17
Calcium	**115**		**0.340**	**5.00**	**mg/L**	10	29-Jul-2020 21:17
Iron	**32.3**		**0.0120**	**0.200**	**mg/L**	1	30-Jul-2020 14:29
Magnesium	**22.0**		**0.0100**	**0.200**	**mg/L**	1	30-Jul-2020 14:29
Molybdenum	**0.0400**		**0.000600**	**0.00500**	**mg/L**	1	30-Jul-2020 14:29
Potassium	**15.2**		**0.0180**	**0.200**	**mg/L**	1	30-Jul-2020 14:29
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 28-Jul-2020		Analyst: JHD
Iron	**0.0246**	J	**0.0120**	**0.200**	**mg/L**	1	28-Jul-2020 17:29
Molybdenum	**0.0515**		**0.000600**	**0.00500**	**mg/L**	1	28-Jul-2020 17:29
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**107**		**1.00**	**2.50**	**mg/L**	5	28-Jul-2020 09:19
Fluoride	**0.636**		**0.250**	**0.500**	**mg/L**	5	28-Jul-2020 09:19
Sulfate	**1,470**		**10.0**	**25.0**	**mg/L**	50	29-Jul-2020 04:54
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,570**		**5.00**	**10.0**	**mg/L**	1	31-Jul-2020 16:17
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**398**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:37
Alkalinity, Carbonate (As CaCO3)	**22.6**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:37
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 02:37
Alkalinity, Total (As CaCO3)	**421**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 02:37
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: TH
Ferrous Iron	**0.671**		**0.0200**	**0.0500**	**mg/L**	1	25-Jul-2020 13:30
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**8.00**		**1.00**	**1.00**	**mg/L**	1	28-Jul-2020 17:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.94**	H	**0.100**	**0.100**	**pH Units**	1	03-Aug-2020 14:49
Temp Deg C @pH	**24.8**	H	**0**	**0**	**°C**	1	03-Aug-2020 14:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: MW-5S
Collection Date: 18-Jun-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-10
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Boron	**0.811**		**0.0110**	**0.0200**	**mg/L**	1	30-Jun-2020 14:24
Calcium	**68.2**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 21:36
Iron	U		0.0120	0.200	mg/L	1	29-Jun-2020 21:36
Magnesium	**5.16**		**0.0100**	**0.200**	**mg/L**	1	29-Jun-2020 21:36
Molybdenum	**0.00361**	J	**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 21:36
Potassium	**3.48**		**0.0180**	**0.200**	**mg/L**	1	29-Jun-2020 21:36
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 23-Jun-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	25-Jun-2020 21:27
Molybdenum	**0.00308**	J	**0.000600**	**0.00500**	**mg/L**	1	25-Jun-2020 21:27
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**19.5**		**0.200**	**0.500**	**mg/L**	1	20-Jun-2020 10:10
Fluoride	**0.824**		**0.0500**	**0.100**	**mg/L**	1	20-Jun-2020 10:10
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	20-Jun-2020 10:10
Sulfate	**408**		**2.00**	**5.00**	**mg/L**	10	29-Jun-2020 21:07
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**904**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**397**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 14:37
Alkalinity, Carbonate (As CaCO3)	**15.0**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 14:37
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	21-Jun-2020 14:37
Alkalinity, Total (As CaCO3)	**412**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 14:37
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: KVL
Ferrous Iron	**0.0290**	J	**0.0200**	**0.0500**	**mg/L**	1	19-Jun-2020 13:20
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	U		1.00	1.00	mg/L	1	23-Jun-2020 16:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.65**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.3**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: MW-7S
Collection Date: 17-Jun-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-11
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Boron	**1.33**		**0.0220**	**0.0400**	**mg/L**	2	30-Jun-2020 14:26
Calcium	**160**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 21:38
Iron	**0.278**		**0.0120**	**0.200**	**mg/L**	1	29-Jun-2020 21:38
Magnesium	**17.1**		**0.0100**	**0.200**	**mg/L**	1	29-Jun-2020 21:38
Molybdenum	**0.00105**	J	**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 21:38
Potassium	**5.33**		**0.0180**	**0.200**	**mg/L**	1	29-Jun-2020 21:38
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 23-Jun-2020		Analyst: JHD
Iron	**0.0340**	J	**0.0120**	**0.200**	**mg/L**	1	25-Jun-2020 21:29
Molybdenum	**0.000987**	J	**0.000600**	**0.00500**	**mg/L**	1	25-Jun-2020 21:29
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**18.0**		**0.200**	**0.500**	**mg/L**	1	19-Jun-2020 15:09
Fluoride	**0.479**		**0.0500**	**0.100**	**mg/L**	1	19-Jun-2020 15:09
Nitrogen, Nitrate (As N)	U		0.0300	0.100	mg/L	1	19-Jun-2020 15:09
Sulfate	**970**		**4.00**	**10.0**	**mg/L**	20	29-Jun-2020 22:01
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,680**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**264**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 14:44
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	21-Jun-2020 14:44
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	21-Jun-2020 14:44
Alkalinity, Total (As CaCO3)	**264**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 14:44
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: KVL
Ferrous Iron	**0.306**		**0.0200**	**0.0500**	**mg/L**	1	19-Jun-2020 13:20
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	U		1.00	1.00	mg/L	1	23-Jun-2020 16:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.55**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.3**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: MW-15A
Collection Date: 18-Jun-2020 12:23

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-12
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 28-Jun-2020		Analyst: JHD
Boron	**4.57**		**0.0550**	**0.100**	**mg/L**	5	30-Jun-2020 16:14
Calcium	**141**		**0.170**	**2.50**	**mg/L**	5	30-Jun-2020 16:14
Iron	**0.0535**	J	**0.0120**	**0.200**	**mg/L**	1	01-Jul-2020 11:36
Magnesium	**16.5**		**0.0100**	**0.200**	**mg/L**	1	01-Jul-2020 11:36
Molybdenum	**0.269**		**0.000600**	**0.00500**	**mg/L**	1	01-Jul-2020 11:36
Potassium	**8.24**		**0.0180**	**0.200**	**mg/L**	1	01-Jul-2020 11:36
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 23-Jun-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	25-Jun-2020 22:18
Molybdenum	**0.168**		**0.000600**	**0.00500**	**mg/L**	1	25-Jun-2020 22:18
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**26.3**		**0.400**	**1.00**	**mg/L**	2	20-Jun-2020 11:23
Fluoride	**0.860**		**0.100**	**0.200**	**mg/L**	2	20-Jun-2020 11:23
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	20-Jun-2020 11:23
Sulfate	**1,680**		**20.0**	**50.0**	**mg/L**	100	06-Jul-2020 16:46
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,520**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**209**		**5.00**	**5.00**	**mg/L**	1	26-Jun-2020 05:54
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	26-Jun-2020 05:54
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	26-Jun-2020 05:54
Alkalinity, Total (As CaCO3)	**209**		**5.00**	**5.00**	**mg/L**	1	26-Jun-2020 05:54
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: TH
Ferrous Iron	**0.0410**	J	**0.0200**	**0.0500**	**mg/L**	1	20-Jun-2020 12:00
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**1.12**		**1.00**	**1.00**	**mg/L**	1	23-Jun-2020 16:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.68**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.7**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: MW-15B
Collection Date: 24-Jul-2020 11:11

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-13
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 29-Jul-2020		Analyst: JHD
Boron	**4.27**		**0.110**	**0.200**	**mg/L**	10	29-Jul-2020 21:00
Calcium	**39.3**		**0.340**	**5.00**	**mg/L**	10	29-Jul-2020 21:00
Iron	**22.7**		**0.0120**	**0.200**	**mg/L**	1	30-Jul-2020 14:12
Magnesium	**13.2**		**0.0100**	**0.200**	**mg/L**	1	30-Jul-2020 14:12
Molybdenum	**0.0109**		**0.000600**	**0.00500**	**mg/L**	1	30-Jul-2020 14:12
Potassium	**10.3**		**0.0180**	**0.200**	**mg/L**	1	30-Jul-2020 14:12
DISSOLVED METALS BY SW6020A	**Method:SW6020 (dissolved)**				Prep:SW3010A / 28-Jul-2020		Analyst: JHD
Iron	**2.11**		**0.0120**	**0.200**	**mg/L**	1	28-Jul-2020 17:00
Molybdenum	**0.0160**		**0.000600**	**0.00500**	**mg/L**	1	28-Jul-2020 17:00
ANIONS BY E300.0	**Method:E300**						Analyst: YP
Chloride	**60.1**		**1.00**	**2.50**	**mg/L**	5	29-Jul-2020 00:58
Fluoride	**1.23**		**0.250**	**0.500**	**mg/L**	5	29-Jul-2020 00:58
Sulfate	**1,280**		**10.0**	**25.0**	**mg/L**	50	29-Jul-2020 01:17
TOTAL DISSOLVED SOLIDS BY SM2540C	**Method:M2540C**						Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,390**		**5.00**	**10.0**	**mg/L**	1	31-Jul-2020 16:17
ALKALINITY BY SM2320B	**Method:SM2320B**						Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**642**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 01:46
Alkalinity, Carbonate (As CaCO3)	**38.1**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 01:46
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 01:46
Alkalinity, Total (As CaCO3)	**680**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 01:46
FERROUS IRON BY SM3500 FE B	**Method:SM3500FED**						Analyst: TH
Ferrous Iron	**2.67**		**0.200**	**0.500**	**mg/L**	10	25-Jul-2020 13:30
SULFIDE BY SM4500 S2-F	**Method:SM4500 S2-F**						Analyst: KVL
Sulfide	**3.00**		**1.00**	**1.00**	**mg/L**	1	28-Jul-2020 17:00
PH BY SM4500H+ B	**Method:SM4500H+ B**						Analyst: JAC
pH	**7.66**	H	**0.100**	**0.100**	**pH Units**	1	03-Aug-2020 14:49
Temp Deg C @pH	**24.4**	H	**0**	**0**	**°C**	1	03-Aug-2020 14:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: MW-16
Collection Date: 18-Jun-2020 10:22

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-14
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Boron	**1.43**		**0.0220**	**0.0400**	**mg/L**	2	30-Jun-2020 14:28
Calcium	**186**		**0.0680**	**1.00**	**mg/L**	2	30-Jun-2020 14:28
Iron	**0.0358**	J	**0.0120**	**0.200**	**mg/L**	1	29-Jun-2020 21:40
Magnesium	**8.44**		**0.0100**	**0.200**	**mg/L**	1	29-Jun-2020 21:40
Molybdenum	**0.172**		**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 21:40
Potassium	**2.85**		**0.0180**	**0.200**	**mg/L**	1	29-Jun-2020 21:40
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 23-Jun-2020		Analyst: JHD
Iron	**0.0160**	J	**0.0120**	**0.200**	**mg/L**	1	25-Jun-2020 21:31
Molybdenum	**0.173**		**0.000600**	**0.00500**	**mg/L**	1	25-Jun-2020 21:31
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**14.7**		**0.400**	**1.00**	**mg/L**	2	19-Jun-2020 23:00
Fluoride	**0.694**		**0.100**	**0.200**	**mg/L**	2	19-Jun-2020 23:00
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	19-Jun-2020 23:00
Sulfate	**1,030**		**10.0**	**25.0**	**mg/L**	50	29-Jun-2020 22:19
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,610**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**232**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 14:51
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	21-Jun-2020 14:51
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	21-Jun-2020 14:51
Alkalinity, Total (As CaCO3)	**232**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 14:51
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: KVL
Ferrous Iron	**0.0380**	J	**0.0200**	**0.0500**	**mg/L**	1	19-Jun-2020 13:20
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	U		1.00	1.00	mg/L	1	23-Jun-2020 16:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.60**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.7**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: MW-17
Collection Date: 18-Jun-2020 09:16

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-15
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Boron	**0.652**		**0.0220**	**0.0400**	**mg/L**	2	30-Jun-2020 14:30
Calcium	**494**		**0.680**	**10.0**	**mg/L**	20	30-Jun-2020 14:32
Iron	U		0.0120	0.200	mg/L	1	29-Jun-2020 21:42
Magnesium	**37.8**		**0.0100**	**0.200**	**mg/L**	1	29-Jun-2020 21:42
Molybdenum	U		0.000600	0.00500	mg/L	1	29-Jun-2020 21:42
Potassium	**5.15**		**0.0180**	**0.200**	**mg/L**	1	29-Jun-2020 21:42
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 23-Jun-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	25-Jun-2020 21:33
Molybdenum	**0.00123**	J	**0.000600**	**0.00500**	**mg/L**	1	25-Jun-2020 21:33
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**4.29**		**0.400**	**1.00**	**mg/L**	2	19-Jun-2020 22:42
Fluoride	**0.211**		**0.100**	**0.200**	**mg/L**	2	19-Jun-2020 22:42
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	19-Jun-2020 22:42
Sulfate	**1,390**		**10.0**	**25.0**	**mg/L**	50	29-Jun-2020 22:37
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,230**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 13:00
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**284**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 14:58
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	21-Jun-2020 14:58
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	21-Jun-2020 14:58
Alkalinity, Total (As CaCO3)	**284**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 14:58
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: KVL
Ferrous Iron	**0.0200**	J	**0.0200**	**0.0500**	**mg/L**	1	19-Jun-2020 13:20
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	U		1.00	1.00	mg/L	1	23-Jun-2020 16:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.38**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.9**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: MW-18
Collection Date: 17-Jun-2020 17:30

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-16
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Boron	**5.49**		**0.110**	**0.200**	**mg/L**	10	30-Jun-2020 14:34
Calcium	**21.6**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 21:44
Iron	U		0.0120	0.200	mg/L	1	29-Jun-2020 21:44
Magnesium	**0.141**	J	**0.0100**	**0.200**	**mg/L**	1	29-Jun-2020 21:44
Molybdenum	**0.194**		**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 21:44
Potassium	**15.9**		**0.0180**	**0.200**	**mg/L**	1	29-Jun-2020 21:44
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 23-Jun-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	25-Jun-2020 21:35
Molybdenum	**0.180**		**0.000600**	**0.00500**	**mg/L**	1	25-Jun-2020 21:35
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**4.06**		**0.400**	**1.00**	**mg/L**	2	19-Jun-2020 16:58
Fluoride	**1.28**		**0.100**	**0.200**	**mg/L**	2	19-Jun-2020 16:58
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	19-Jun-2020 16:58
Sulfate	**888**		**4.00**	**10.0**	**mg/L**	20	29-Jun-2020 22:55
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**1,340**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	U		5.00	5.00	mg/L	1	21-Jun-2020 15:05
Alkalinity, Carbonate (As CaCO3)	**60.6**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 15:05
Alkalinity, Hydroxide (As CaCO3)	**10.4**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 15:05
Alkalinity, Total (As CaCO3)	**71.0**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 15:05
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: KVL
Ferrous Iron	**0.0200**	J	**0.0200**	**0.0500**	**mg/L**	1	19-Jun-2020 13:20
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	U		1.00	1.00	mg/L	1	23-Jun-2020 16:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**9.35**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**22.1**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: MW-19S
Collection Date: 17-Jun-2020 16:56

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-17
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Boron	**6.80**		**0.110**	**0.200**	**mg/L**	10	30-Jun-2020 14:45
Calcium	**43.6**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 21:46
Iron	**0.0153**	J	**0.0120**	**0.200**	**mg/L**	1	29-Jun-2020 21:46
Magnesium	**0.0553**	J	**0.0100**	**0.200**	**mg/L**	1	29-Jun-2020 21:46
Molybdenum	**0.402**		**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 21:46
Potassium	**35.2**		**0.0180**	**0.200**	**mg/L**	1	29-Jun-2020 21:46
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 23-Jun-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	25-Jun-2020 21:37
Molybdenum	**0.373**		**0.000600**	**0.00500**	**mg/L**	1	25-Jun-2020 21:37
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**13.8**		**0.400**	**1.00**	**mg/L**	2	19-Jun-2020 16:03
Fluoride	**1.15**		**0.100**	**0.200**	**mg/L**	2	19-Jun-2020 16:03
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	19-Jun-2020 16:03
Sulfate	**1,490**		**20.0**	**50.0**	**mg/L**	100	29-Jun-2020 23:13
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,300**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	U		5.00	5.00	mg/L	1	21-Jun-2020 15:30
Alkalinity, Carbonate (As CaCO3)	**92.6**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 15:30
Alkalinity, Hydroxide (As CaCO3)	**35.1**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 15:30
Alkalinity, Total (As CaCO3)	**128**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 15:30
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: KVL
Ferrous Iron	**0.0430**	J	**0.0200**	**0.0500**	**mg/L**	1	19-Jun-2020 13:20
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**1.52**		**1.00**	**1.00**	**mg/L**	1	23-Jun-2020 16:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**10.2**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**22.1**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: DUP 2
Collection Date: 17-Jun-2020 16:56

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-18
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-Jun-2020		Analyst: JHD
Boron	**7.18**		**0.110**	**0.200**	**mg/L**	10	30-Jun-2020 14:53
Calcium	**42.1**		**0.0340**	**0.500**	**mg/L**	1	29-Jun-2020 22:25
Iron	U		0.0120	0.200	mg/L	1	29-Jun-2020 22:25
Magnesium	**0.0510**	J	**0.0100**	**0.200**	**mg/L**	1	29-Jun-2020 22:25
Molybdenum	**0.394**		**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 22:25
Potassium	**34.1**		**0.0180**	**0.200**	**mg/L**	1	29-Jun-2020 22:25
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 23-Jun-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	25-Jun-2020 21:39
Molybdenum	**0.383**		**0.000600**	**0.00500**	**mg/L**	1	25-Jun-2020 21:39
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**14.0**		**0.400**	**1.00**	**mg/L**	2	19-Jun-2020 23:54
Fluoride	**1.04**		**0.100**	**0.200**	**mg/L**	2	19-Jun-2020 23:54
Nitrogen, Nitrate (As N)	U	H	0.0600	0.200	mg/L	2	19-Jun-2020 23:54
Sulfate	**1,590**		**20.0**	**50.0**	**mg/L**	100	30-Jun-2020 00:44
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,290**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 15:40
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	U		5.00	5.00	mg/L	1	21-Jun-2020 15:37
Alkalinity, Carbonate (As CaCO3)	**98.7**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 15:37
Alkalinity, Hydroxide (As CaCO3)	**31.4**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 15:37
Alkalinity, Total (As CaCO3)	**130**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 15:37
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: KVL
Ferrous Iron	**0.0330**	J	**0.0200**	**0.0500**	**mg/L**	1	19-Jun-2020 13:20
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	U		1.00	1.00	mg/L	1	23-Jun-2020 16:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**9.88**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**23.2**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: MW-22A
Collection Date: 18-Jun-2020 14:02

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-19
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 28-Jun-2020		Analyst: JHD
Boron	**2.82**		**0.0550**	**0.100**	**mg/L**	5	30-Jun-2020 17:11
Calcium	**754**		**0.170**	**2.50**	**mg/L**	5	30-Jun-2020 17:11
Iron	**0.0509**	J	**0.0120**	**0.200**	**mg/L**	1	01-Jul-2020 11:54
Magnesium	**126**		**0.0500**	**1.00**	**mg/L**	5	30-Jun-2020 17:11
Molybdenum	U		0.000600	0.00500	mg/L	1	01-Jul-2020 11:54
Potassium	**21.7**		**0.0180**	**0.200**	**mg/L**	1	01-Jul-2020 11:54
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 23-Jun-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	25-Jun-2020 22:39
Molybdenum	**0.000773**	J	**0.000600**	**0.00500**	**mg/L**	1	25-Jun-2020 22:39
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**2.34**		**0.400**	**1.00**	**mg/L**	2	20-Jun-2020 13:19
Fluoride	**0.237**		**0.100**	**0.200**	**mg/L**	2	20-Jun-2020 13:19
Nitrogen, Nitrate (As N)	U		0.0600	0.200	mg/L	2	20-Jun-2020 13:19
Sulfate	**2,160**		**20.0**	**50.0**	**mg/L**	100	06-Jul-2020 21:54
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**3,390**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 13:00
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**249**		**5.00**	**5.00**	**mg/L**	1	26-Jun-2020 06:01
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	26-Jun-2020 06:01
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	26-Jun-2020 06:01
Alkalinity, Total (As CaCO3)	**249**		**5.00**	**5.00**	**mg/L**	1	26-Jun-2020 06:01
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: TH
Ferrous Iron	U		0.0200	0.0500	mg/L	1	20-Jun-2020 12:00
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**1.52**		**1.00**	**1.00**	**mg/L**	1	23-Jun-2020 16:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.08**	H	**0.100**	**0.100**	**pH Units**	1	29-Jun-2020 12:10
Temp Deg C @pH	**21.0**	H	**0**	**0**	**°C**	1	29-Jun-2020 12:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: MW-22B
Collection Date: 24-Jul-2020 11:26

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-20
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2020		Analyst: JHD
Boron	**2.97**		**0.110**	**0.200**	**mg/L**	10	29-Jul-2020 20:58
Calcium	**90.1**		**0.340**	**5.00**	**mg/L**	10	29-Jul-2020 20:58
Iron	**11.7**		**0.0120**	**0.200**	**mg/L**	1	30-Jul-2020 14:10
Magnesium	**24.1**		**0.0100**	**0.200**	**mg/L**	1	30-Jul-2020 14:10
Molybdenum	**0.00878**		**0.000600**	**0.00500**	**mg/L**	1	30-Jul-2020 14:10
Potassium	**10.3**		**0.0180**	**0.200**	**mg/L**	1	30-Jul-2020 14:10
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 28-Jul-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	28-Jul-2020 16:58
Molybdenum	**0.0111**		**0.000600**	**0.00500**	**mg/L**	1	28-Jul-2020 16:58
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**55.5**		**1.00**	**2.50**	**mg/L**	5	29-Jul-2020 00:40
Fluoride	**1.14**		**0.250**	**0.500**	**mg/L**	5	29-Jul-2020 00:40
Sulfate	**2,180**		**10.0**	**25.0**	**mg/L**	50	29-Jul-2020 17:07
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**3,000**		**5.00**	**10.0**	**mg/L**	1	31-Jul-2020 16:17
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**328**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 01:38
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 01:38
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 01:38
Alkalinity, Total (As CaCO3)	**333**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 01:38
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: TH
Ferrous Iron	**3.06**		**0.200**	**0.500**	**mg/L**	10	25-Jul-2020 13:30
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**4.00**		**1.00**	**1.00**	**mg/L**	1	28-Jul-2020 17:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.57**	H	**0.100**	**0.100**	**pH Units**	1	03-Aug-2020 14:49
Temp Deg C @pH	**24.5**	H	**0**	**0**	**°C**	1	03-Aug-2020 14:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: DUP 1
Collection Date: 24-Jul-2020 10:56

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-21
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2020		Analyst: JHD
Boron	**0.941**		**0.110**	**0.200**	**mg/L**	10	29-Jul-2020 21:19
Calcium	**533**		**0.340**	**5.00**	**mg/L**	10	29-Jul-2020 21:19
Iron	**2.97**		**0.0120**	**0.200**	**mg/L**	1	30-Jul-2020 14:31
Magnesium	**32.8**		**0.0100**	**0.200**	**mg/L**	1	30-Jul-2020 14:31
Molybdenum	**0.00218**	J	**0.000600**	**0.00500**	**mg/L**	1	30-Jul-2020 14:31
Potassium	**8.74**		**0.0180**	**0.200**	**mg/L**	1	30-Jul-2020 14:31
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 28-Jul-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	28-Jul-2020 17:31
Molybdenum	**0.00134**	J	**0.000600**	**0.00500**	**mg/L**	1	28-Jul-2020 17:31
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**3.12**		**0.200**	**0.500**	**mg/L**	1	28-Jul-2020 09:37
Fluoride	**0.565**		**0.0500**	**0.100**	**mg/L**	1	28-Jul-2020 09:37
Sulfate	**1,730**		**10.0**	**25.0**	**mg/L**	50	29-Jul-2020 17:43
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,660**		**5.00**	**10.0**	**mg/L**	1	31-Jul-2020 12:39
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**347**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 03:00
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 03:00
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	31-Jul-2020 03:00
Alkalinity, Total (As CaCO3)	**347**		**5.00**	**5.00**	**mg/L**	1	31-Jul-2020 03:00
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: TH
Ferrous Iron	**0.146**		**0.0200**	**0.0500**	**mg/L**	1	25-Jul-2020 13:30
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	U		1.00	1.00	mg/L	1	28-Jul-2020 17:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**6.60**	H	**0.100**	**0.100**	**pH Units**	1	03-Aug-2020 14:49
Temp Deg C @pH	**24.2**	H	**0**	**0**	**°C**	1	03-Aug-2020 14:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Altamira
Project: Corrective Action Assessment (MNA)
Sample ID: MW-14A
Collection Date: 17-Jun-2020 11:04

ANALYTICAL REPORT
WorkOrder:HS20090350
Lab ID:HS20090350-22
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 26-Jun-2020		Analyst: JHD
Boron	**0.907**		**0.0550**	**0.100**	**mg/L**	5	30-Jun-2020 13:04
Calcium	**280**		**0.170**	**2.50**	**mg/L**	5	30-Jun-2020 13:04
Iron	**0.0771**	J	**0.0120**	**0.200**	**mg/L**	1	29-Jun-2020 15:49
Magnesium	**26.6**		**0.0100**	**0.200**	**mg/L**	1	29-Jun-2020 15:49
Molybdenum	**0.000760**	J	**0.000600**	**0.00500**	**mg/L**	1	29-Jun-2020 15:49
Potassium	**7.66**		**0.0180**	**0.200**	**mg/L**	1	29-Jun-2020 15:49
DISSOLVED METALS BY SW6020A		**Method:SW6020 (dissolved)**			Prep:SW3010A / 23-Jun-2020		Analyst: JHD
Iron	U		0.0120	0.200	mg/L	1	25-Jun-2020 21:25
Molybdenum	**0.000768**	J	**0.000600**	**0.00500**	**mg/L**	1	25-Jun-2020 21:25
ANIONS BY E300.0		**Method:E300**					Analyst: YP
Chloride	**13.3**		**0.200**	**0.500**	**mg/L**	1	18-Jun-2020 23:26
Fluoride	**0.230**		**0.0500**	**0.100**	**mg/L**	1	18-Jun-2020 23:26
Nitrogen, Nitrate (As N)	**0.316**		**0.0300**	**0.100**	**mg/L**	1	18-Jun-2020 23:26
Sulfate	**1,650**	E	**1.00**	**2.50**	**mg/L**	5	19-Jun-2020 09:06
TOTAL DISSOLVED SOLIDS BY SM2540C		**Method:M2540C**					Analyst: KAH
Total Dissolved Solids (Residue, Filterable)	**2,780**		**5.00**	**10.0**	**mg/L**	1	24-Jun-2020 14:52
ALKALINITY BY SM2320B		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**327**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 14:30
Alkalinity, Carbonate (As CaCO3)	U		5.00	5.00	mg/L	1	21-Jun-2020 14:30
Alkalinity, Hydroxide (As CaCO3)	U		5.00	5.00	mg/L	1	21-Jun-2020 14:30
Alkalinity, Total (As CaCO3)	**327**		**5.00**	**5.00**	**mg/L**	1	21-Jun-2020 14:30
FERROUS IRON BY SM3500 FE B		**Method:SM3500FED**					Analyst: KVL
Ferrous Iron	**0.0980**		**0.0200**	**0.0500**	**mg/L**	1	18-Jun-2020 16:45
SULFIDE BY SM4500 S2-F		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	U		1.00	1.00	mg/L	1	23-Jun-2020 16:00
PH BY SM4500H+ B		**Method:SM4500H+ B**					Analyst: JAC
pH	**7.44**	H	**0.100**	**0.100**	**pH Units**	1	27-Jun-2020 11:36
Temp Deg C @pH	**23.6**	H	**0**	**0**	**°C**	1	27-Jun-2020 11:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

Batch ID: 154696 **Start Date:** 23 Jun 2020 07:00 **End Date:** 23 Jun 2020 11:00
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090350-10		10 (mL)	10 (mL)	1
HS20090350-11		10 (mL)	10 (mL)	1
HS20090350-14		10 (mL)	10 (mL)	1
HS20090350-15		10 (mL)	10 (mL)	1
HS20090350-16		10 (mL)	10 (mL)	1
HS20090350-17		10 (mL)	10 (mL)	1
HS20090350-18		10 (mL)	10 (mL)	1
HS20090350-22		10 (mL)	10 (mL)	1

Batch ID: 154748 **Start Date:** 23 Jun 2020 12:00 **End Date:** 23 Jun 2020 16:00
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090350-12		10 (mL)	10 (mL)	1
HS20090350-19		10 (mL)	10 (mL)	1

Batch ID: 154876 **Start Date:** 26 Jun 2020 12:00 **End Date:** 26 Jun 2020 16:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090350-22		10 (mL)	10 (mL)	1

Batch ID: 154920 **Start Date:** 27 Jun 2020 10:30 **End Date:** 27 Jun 2020 14:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090350-10		10 (mL)	10 (mL)	1
HS20090350-11		10 (mL)	10 (mL)	1
HS20090350-14		10 (mL)	10 (mL)	1
HS20090350-15		10 (mL)	10 (mL)	1
HS20090350-16		10 (mL)	10 (mL)	1
HS20090350-17		10 (mL)	10 (mL)	1
HS20090350-18		10 (mL)	10 (mL)	1

Batch ID: 154932 **Start Date:** 28 Jun 2020 10:00 **End Date:** 28 Jun 2020 16:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090350-12		10 (mL)	10 (mL)	1
HS20090350-19		10 (mL)	10 (mL)	1

Weight / Prep Log

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

Batch ID: 155834 **Start Date:** 28 Jul 2020 08:00 **End Date:** 28 Jul 2020 12:00
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090350-01		10 (mL)	10 (mL)	1
HS20090350-02		10 (mL)	10 (mL)	1
HS20090350-03		10 (mL)	10 (mL)	1
HS20090350-06		10 (mL)	10 (mL)	1
HS20090350-07		10 (mL)	10 (mL)	1
HS20090350-08		10 (mL)	10 (mL)	1
HS20090350-09		10 (mL)	10 (mL)	1
HS20090350-13		10 (mL)	10 (mL)	1
HS20090350-20		10 (mL)	10 (mL)	1
HS20090350-21		10 (mL)	10 (mL)	1

Batch ID: 155866 **Start Date:** 29 Jul 2020 10:00 **End Date:** 29 Jul 2020 14:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090350-01		10 (mL)	10 (mL)	1
HS20090350-02		10 (mL)	10 (mL)	1
HS20090350-03		10 (mL)	10 (mL)	1
HS20090350-06		10 (mL)	10 (mL)	1
HS20090350-07		10 (mL)	10 (mL)	1
HS20090350-08		10 (mL)	10 (mL)	1
HS20090350-09		10 (mL)	10 (mL)	1
HS20090350-13		10 (mL)	10 (mL)	1
HS20090350-20		10 (mL)	10 (mL)	1
HS20090350-21		10 (mL)	10 (mL)	1

Batch ID: 156744 **Start Date:** 26 Aug 2020 09:00 **End Date:** 26 Aug 2020 13:00
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090350-04		10 (mL)	10 (mL)	1
HS20090350-05		10 (mL)	10 (mL)	1

Batch ID: 156772 **Start Date:** 27 Aug 2020 09:00 **End Date:** 27 Aug 2020 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20090350-04		10 (mL)	10 (mL)	1
HS20090350-05		10 (mL)	10 (mL)	1

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154696 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS20090350-10	MW-5S	18 Jun 2020 11:10		23 Jun 2020 11:00	25 Jun 2020 21:27	1
HS20090350-11	MW-7S	17 Jun 2020 16:00		23 Jun 2020 11:00	25 Jun 2020 21:29	1
HS20090350-14	MW-16	18 Jun 2020 10:22		23 Jun 2020 11:00	25 Jun 2020 21:31	1
HS20090350-15	MW-17	18 Jun 2020 09:16		23 Jun 2020 11:00	25 Jun 2020 21:33	1
HS20090350-16	MW-18	17 Jun 2020 17:30		23 Jun 2020 11:00	25 Jun 2020 21:35	1
HS20090350-17	MW-19S	17 Jun 2020 16:56		23 Jun 2020 11:00	25 Jun 2020 21:37	1
HS20090350-18	DUP 2	17 Jun 2020 16:56		23 Jun 2020 11:00	25 Jun 2020 21:39	1
HS20090350-22	MW-14A	17 Jun 2020 11:04		23 Jun 2020 11:00	25 Jun 2020 21:25	1
Batch ID: 154748 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS20090350-12	MW-15A	18 Jun 2020 12:23		23 Jun 2020 16:00	25 Jun 2020 22:18	1
HS20090350-19	MW-22A	18 Jun 2020 14:02		23 Jun 2020 16:00	25 Jun 2020 22:39	1
Batch ID: 154876 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20090350-22	MW-14A	17 Jun 2020 11:04		26 Jun 2020 16:00	30 Jun 2020 13:04	5
HS20090350-22	MW-14A	17 Jun 2020 11:04		26 Jun 2020 16:00	29 Jun 2020 15:49	1
Batch ID: 154920 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20090350-10	MW-5S	18 Jun 2020 11:10		27 Jun 2020 14:30	30 Jun 2020 14:24	1
HS20090350-10	MW-5S	18 Jun 2020 11:10		27 Jun 2020 14:30	29 Jun 2020 21:36	1
HS20090350-11	MW-7S	17 Jun 2020 16:00		27 Jun 2020 14:30	30 Jun 2020 14:26	2
HS20090350-11	MW-7S	17 Jun 2020 16:00		27 Jun 2020 14:30	29 Jun 2020 21:38	1
HS20090350-14	MW-16	18 Jun 2020 10:22		27 Jun 2020 14:30	30 Jun 2020 14:28	2
HS20090350-14	MW-16	18 Jun 2020 10:22		27 Jun 2020 14:30	29 Jun 2020 21:40	1
HS20090350-15	MW-17	18 Jun 2020 09:16		27 Jun 2020 14:30	30 Jun 2020 14:32	20
HS20090350-15	MW-17	18 Jun 2020 09:16		27 Jun 2020 14:30	30 Jun 2020 14:30	2
HS20090350-15	MW-17	18 Jun 2020 09:16		27 Jun 2020 14:30	29 Jun 2020 21:42	1
HS20090350-16	MW-18	17 Jun 2020 17:30		27 Jun 2020 14:30	30 Jun 2020 14:34	10
HS20090350-16	MW-18	17 Jun 2020 17:30		27 Jun 2020 14:30	29 Jun 2020 21:44	1
HS20090350-17	MW-19S	17 Jun 2020 16:56		27 Jun 2020 14:30	30 Jun 2020 14:45	10
HS20090350-17	MW-19S	17 Jun 2020 16:56		27 Jun 2020 14:30	29 Jun 2020 21:46	1
HS20090350-18	DUP 2	17 Jun 2020 16:56		27 Jun 2020 14:30	30 Jun 2020 14:53	10
HS20090350-18	DUP 2	17 Jun 2020 16:56		27 Jun 2020 14:30	29 Jun 2020 22:25	1
Batch ID: 154932 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20090350-12	MW-15A	18 Jun 2020 12:23		28 Jun 2020 10:00	30 Jun 2020 16:14	5
HS20090350-12	MW-15A	18 Jun 2020 12:23		28 Jun 2020 10:00	01 Jul 2020 11:36	1
HS20090350-19	MW-22A	18 Jun 2020 14:02		28 Jun 2020 10:00	30 Jun 2020 17:11	5
HS20090350-19	MW-22A	18 Jun 2020 14:02		28 Jun 2020 10:00	01 Jul 2020 11:54	1

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 155834 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS20090350-01	CM-1A	24 Jul 2020 10:20		28 Jul 2020 12:00	28 Jul 2020 17:08	1
HS20090350-02	CM-1B	24 Jul 2020 13:00		28 Jul 2020 12:00	28 Jul 2020 17:12	1
HS20090350-03	CM-2	24 Jul 2020 10:56		28 Jul 2020 12:00	28 Jul 2020 17:14	1
HS20090350-06	CM-4A	24 Jul 2020 12:37		28 Jul 2020 12:00	28 Jul 2020 17:21	1
HS20090350-07	CM-4B	24 Jul 2020 12:41		28 Jul 2020 12:00	28 Jul 2020 17:23	1
HS20090350-08	CM-5A	24 Jul 2020 12:50		28 Jul 2020 12:00	28 Jul 2020 17:25	1
HS20090350-09	CM-5B	24 Jul 2020 12:56		28 Jul 2020 12:00	28 Jul 2020 17:29	1
HS20090350-13	MW-15B	24 Jul 2020 11:11		28 Jul 2020 12:00	28 Jul 2020 17:00	1
HS20090350-20	MW-22B	24 Jul 2020 11:26		28 Jul 2020 12:00	28 Jul 2020 16:58	1
HS20090350-21	DUP 1	24 Jul 2020 10:56		28 Jul 2020 12:00	28 Jul 2020 17:31	1
Batch ID: 155866 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20090350-01	CM-1A	24 Jul 2020 10:20		29 Jul 2020 14:00	30 Jul 2020 14:15	1
HS20090350-01	CM-1A	24 Jul 2020 10:20		29 Jul 2020 14:00	29 Jul 2020 21:02	10
HS20090350-02	CM-1B	24 Jul 2020 13:00		29 Jul 2020 14:00	30 Jul 2020 14:17	1
HS20090350-02	CM-1B	24 Jul 2020 13:00		29 Jul 2020 14:00	29 Jul 2020 21:03	10
HS20090350-03	CM-2	24 Jul 2020 10:56		29 Jul 2020 14:00	30 Jul 2020 14:19	1
HS20090350-03	CM-2	24 Jul 2020 10:56		29 Jul 2020 14:00	29 Jul 2020 21:05	10
HS20090350-06	CM-4A	24 Jul 2020 12:37		29 Jul 2020 14:00	30 Jul 2020 14:22	1
HS20090350-06	CM-4A	24 Jul 2020 12:37		29 Jul 2020 14:00	29 Jul 2020 21:11	10
HS20090350-07	CM-4B	24 Jul 2020 12:41		29 Jul 2020 14:00	30 Jul 2020 14:24	1
HS20090350-07	CM-4B	24 Jul 2020 12:41		29 Jul 2020 14:00	29 Jul 2020 21:13	10
HS20090350-08	CM-5A	24 Jul 2020 12:50		29 Jul 2020 14:00	30 Jul 2020 14:26	1
HS20090350-08	CM-5A	24 Jul 2020 12:50		29 Jul 2020 14:00	29 Jul 2020 21:15	10
HS20090350-09	CM-5B	24 Jul 2020 12:56		29 Jul 2020 14:00	30 Jul 2020 14:29	1
HS20090350-09	CM-5B	24 Jul 2020 12:56		29 Jul 2020 14:00	29 Jul 2020 21:17	10
HS20090350-13	MW-15B	24 Jul 2020 11:11		29 Jul 2020 14:00	30 Jul 2020 14:12	1
HS20090350-13	MW-15B	24 Jul 2020 11:11		29 Jul 2020 14:00	29 Jul 2020 21:00	10
HS20090350-20	MW-22B	24 Jul 2020 11:26		29 Jul 2020 14:00	30 Jul 2020 14:10	1
HS20090350-20	MW-22B	24 Jul 2020 11:26		29 Jul 2020 14:00	29 Jul 2020 20:58	10
HS20090350-21	DUP 1	24 Jul 2020 10:56		29 Jul 2020 14:00	30 Jul 2020 14:31	1
HS20090350-21	DUP 1	24 Jul 2020 10:56		29 Jul 2020 14:00	29 Jul 2020 21:19	10
Batch ID: 156744 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS20090350-04	CM-3A	21 Aug 2020 14:25		26 Aug 2020 13:00	28 Aug 2020 21:46	1
HS20090350-05	CM-3B	21 Aug 2020 14:30		26 Aug 2020 13:00	28 Aug 2020 21:48	1

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 156772 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20090350-04	CM-3A	21 Aug 2020 14:25		27 Aug 2020 13:00	28 Aug 2020 18:38	10
HS20090350-04	CM-3A	21 Aug 2020 14:25		27 Aug 2020 13:00	28 Aug 2020 18:34	1
HS20090350-05	CM-3B	21 Aug 2020 14:30		27 Aug 2020 13:00	28 Aug 2020 18:52	10
HS20090350-05	CM-3B	21 Aug 2020 14:30		27 Aug 2020 13:00	28 Aug 2020 18:36	1
Batch ID: R363539 (0)	**Test Name :** FERROUS IRON BY SM3500 FE B				**Matrix:** Water	
HS20090350-22	MW-14A	17 Jun 2020 11:04			18 Jun 2020 16:45	1
Batch ID: R363618 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090350-22	MW-14A	17 Jun 2020 11:04			19 Jun 2020 09:06	5
HS20090350-22	MW-14A	17 Jun 2020 11:04			18 Jun 2020 23:26	1
Batch ID: R363621 (0)	**Test Name :** FERROUS IRON BY SM3500 FE B				**Matrix:** Water	
HS20090350-10	MW-5S	18 Jun 2020 11:10			19 Jun 2020 13:20	1
HS20090350-11	MW-7S	17 Jun 2020 16:00			19 Jun 2020 13:20	1
HS20090350-14	MW-16	18 Jun 2020 10:22			19 Jun 2020 13:20	1
HS20090350-15	MW-17	18 Jun 2020 09:16			19 Jun 2020 13:20	1
HS20090350-16	MW-18	17 Jun 2020 17:30			19 Jun 2020 13:20	1
HS20090350-17	MW-19S	17 Jun 2020 16:56			19 Jun 2020 13:20	1
HS20090350-18	DUP 2	17 Jun 2020 16:56			19 Jun 2020 13:20	1
Batch ID: R363643 (0)	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Water	
HS20090350-10	MW-5S	18 Jun 2020 11:10			21 Jun 2020 14:37	1
HS20090350-11	MW-7S	17 Jun 2020 16:00			21 Jun 2020 14:44	1
HS20090350-14	MW-16	18 Jun 2020 10:22			21 Jun 2020 14:51	1
HS20090350-15	MW-17	18 Jun 2020 09:16			21 Jun 2020 14:58	1
HS20090350-16	MW-18	17 Jun 2020 17:30			21 Jun 2020 15:05	1
HS20090350-17	MW-19S	17 Jun 2020 16:56			21 Jun 2020 15:30	1
HS20090350-18	DUP 2	17 Jun 2020 16:56			21 Jun 2020 15:37	1
HS20090350-22	MW-14A	17 Jun 2020 11:04			21 Jun 2020 14:30	1
Batch ID: R363827 (0)	**Test Name :** FERROUS IRON BY SM3500 FE B				**Matrix:** Water	
HS20090350-12	MW-15A	18 Jun 2020 12:23			20 Jun 2020 12:00	1
HS20090350-19	MW-22A	18 Jun 2020 14:02			20 Jun 2020 12:00	1

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R363865 (0)	**Test Name :** SULFIDE BY SM4500 S2-F				**Matrix:** Water	
HS20090350-10	MW-5S	18 Jun 2020 11:10			23 Jun 2020 16:00	1
HS20090350-11	MW-7S	17 Jun 2020 16:00			23 Jun 2020 16:00	1
HS20090350-12	MW-15A	18 Jun 2020 12:23			23 Jun 2020 16:00	1
HS20090350-14	MW-16	18 Jun 2020 10:22			23 Jun 2020 16:00	1
HS20090350-15	MW-17	18 Jun 2020 09:16			23 Jun 2020 16:00	1
HS20090350-16	MW-18	17 Jun 2020 17:30			23 Jun 2020 16:00	1
HS20090350-17	MW-19S	17 Jun 2020 16:56			23 Jun 2020 16:00	1
HS20090350-18	DUP 2	17 Jun 2020 16:56			23 Jun 2020 16:00	1
HS20090350-19	MW-22A	18 Jun 2020 14:02			23 Jun 2020 16:00	1
HS20090350-22	MW-14A	17 Jun 2020 11:04			23 Jun 2020 16:00	1
Batch ID: R363936 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090350-10	MW-5S	18 Jun 2020 11:10			20 Jun 2020 10:10	1
HS20090350-11	MW-7S	17 Jun 2020 16:00			19 Jun 2020 15:09	1
HS20090350-12	MW-15A	18 Jun 2020 12:23			20 Jun 2020 11:23	2
HS20090350-14	MW-16	18 Jun 2020 10:22			19 Jun 2020 23:00	2
HS20090350-15	MW-17	18 Jun 2020 09:16			19 Jun 2020 22:42	2
HS20090350-16	MW-18	17 Jun 2020 17:30			19 Jun 2020 16:58	2
HS20090350-17	MW-19S	17 Jun 2020 16:56			19 Jun 2020 16:03	2
HS20090350-18	DUP 2	17 Jun 2020 16:56			19 Jun 2020 23:54	2
HS20090350-19	MW-22A	18 Jun 2020 14:02			20 Jun 2020 13:19	2
Batch ID: R363953 (0)	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Water	
HS20090350-12	MW-15A	18 Jun 2020 12:23			26 Jun 2020 05:54	1
HS20090350-19	MW-22A	18 Jun 2020 14:02			26 Jun 2020 06:01	1
Batch ID: R364046 (0)	**Test Name :** PH BY SM4500H+ B				**Matrix:** Water	
HS20090350-18	DUP 2	17 Jun 2020 16:56			27 Jun 2020 11:36	1
HS20090350-22	MW-14A	17 Jun 2020 11:04			27 Jun 2020 11:36	1
Batch ID: R364111 (0)	**Test Name :** PH BY SM4500H+ B				**Matrix:** Water	
HS20090350-10	MW-5S	18 Jun 2020 11:10			29 Jun 2020 12:10	1
HS20090350-11	MW-7S	17 Jun 2020 16:00			29 Jun 2020 12:10	1
HS20090350-12	MW-15A	18 Jun 2020 12:23			29 Jun 2020 12:10	1
HS20090350-14	MW-16	18 Jun 2020 10:22			29 Jun 2020 12:10	1
HS20090350-15	MW-17	18 Jun 2020 09:16			29 Jun 2020 12:10	1
HS20090350-16	MW-18	17 Jun 2020 17:30			29 Jun 2020 12:10	1
HS20090350-17	MW-19S	17 Jun 2020 16:56			29 Jun 2020 12:10	1
HS20090350-19	MW-22A	18 Jun 2020 14:02			29 Jun 2020 12:10	1

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R364222 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090350-10	MW-5S	18 Jun 2020 11:10			29 Jun 2020 21:07	10
HS20090350-11	MW-7S	17 Jun 2020 16:00			29 Jun 2020 22:01	20
HS20090350-14	MW-16	18 Jun 2020 10:22			29 Jun 2020 22:19	50
HS20090350-15	MW-17	18 Jun 2020 09:16			29 Jun 2020 22:37	50
HS20090350-16	MW-18	17 Jun 2020 17:30			29 Jun 2020 22:55	20
HS20090350-17	MW-19S	17 Jun 2020 16:56			29 Jun 2020 23:13	100
HS20090350-18	DUP 2	17 Jun 2020 16:56			30 Jun 2020 00:44	100
Batch ID: R364568 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090350-12	MW-15A	18 Jun 2020 12:23			06 Jul 2020 16:46	100
HS20090350-19	MW-22A	18 Jun 2020 14:02			06 Jul 2020 21:54	100
Batch ID: R365669 (0)	**Test Name :** FERROUS IRON BY SM3500 FE B				**Matrix:** Water	
HS20090350-01	CM-1A	24 Jul 2020 10:20			25 Jul 2020 13:30	1
HS20090350-02	CM-1B	24 Jul 2020 13:00			25 Jul 2020 13:30	50
HS20090350-03	CM-2	24 Jul 2020 10:56			25 Jul 2020 13:30	1
HS20090350-06	CM-4A	24 Jul 2020 12:37			25 Jul 2020 13:30	2
HS20090350-07	CM-4B	24 Jul 2020 12:41			25 Jul 2020 13:30	50
HS20090350-08	CM-5A	24 Jul 2020 12:50			25 Jul 2020 13:30	1
HS20090350-09	CM-5B	24 Jul 2020 12:56			25 Jul 2020 13:30	1
HS20090350-13	MW-15B	24 Jul 2020 11:11			25 Jul 2020 13:30	10
HS20090350-20	MW-22B	24 Jul 2020 11:26			25 Jul 2020 13:30	10
HS20090350-21	DUP 1	24 Jul 2020 10:56			25 Jul 2020 13:30	1
Batch ID: R365759 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090350-01	CM-1A	24 Jul 2020 10:20			28 Jul 2020 06:17	1
HS20090350-03	CM-2	24 Jul 2020 10:56			28 Jul 2020 07:30	1
HS20090350-06	CM-4A	24 Jul 2020 12:37			28 Jul 2020 08:24	5
HS20090350-07	CM-4B	24 Jul 2020 12:41			28 Jul 2020 08:42	5
HS20090350-08	CM-5A	24 Jul 2020 12:50			28 Jul 2020 09:00	1
HS20090350-09	CM-5B	24 Jul 2020 12:56			28 Jul 2020 09:19	5
HS20090350-21	DUP 1	24 Jul 2020 10:56			28 Jul 2020 09:37	1

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R365834 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090350-01	CM-1A	24 Jul 2020 10:20			29 Jul 2020 02:11	50
HS20090350-02	CM-1B	24 Jul 2020 13:00			29 Jul 2020 02:47	50
HS20090350-02	CM-1B	24 Jul 2020 13:00			29 Jul 2020 02:29	5
HS20090350-06	CM-4A	24 Jul 2020 12:37			29 Jul 2020 03:59	50
HS20090350-07	CM-4B	24 Jul 2020 12:41			29 Jul 2020 04:18	50
HS20090350-08	CM-5A	24 Jul 2020 12:50			29 Jul 2020 04:36	50
HS20090350-09	CM-5B	24 Jul 2020 12:56			29 Jul 2020 04:54	50
HS20090350-13	MW-15B	24 Jul 2020 11:11			29 Jul 2020 01:17	50
HS20090350-13	MW-15B	24 Jul 2020 11:11			29 Jul 2020 00:58	5
HS20090350-20	MW-22B	24 Jul 2020 11:26			29 Jul 2020 00:40	5
Batch ID: R365873 (0)	**Test Name :** SULFIDE BY SM4500 S2-F				**Matrix:** Water	
HS20090350-01	CM-1A	24 Jul 2020 10:20			28 Jul 2020 17:00	1
HS20090350-02	CM-1B	24 Jul 2020 13:00			28 Jul 2020 17:00	1
HS20090350-03	CM-2	24 Jul 2020 10:56			28 Jul 2020 17:00	1
HS20090350-06	CM-4A	24 Jul 2020 12:37			28 Jul 2020 17:00	1
HS20090350-07	CM-4B	24 Jul 2020 12:41			28 Jul 2020 17:00	1
HS20090350-08	CM-5A	24 Jul 2020 12:50			28 Jul 2020 17:00	1
HS20090350-09	CM-5B	24 Jul 2020 12:56			28 Jul 2020 17:00	1
HS20090350-13	MW-15B	24 Jul 2020 11:11			28 Jul 2020 17:00	1
HS20090350-20	MW-22B	24 Jul 2020 11:26			28 Jul 2020 17:00	1
HS20090350-21	DUP 1	24 Jul 2020 10:56			28 Jul 2020 17:00	1
Batch ID: R365937 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090350-03	CM-2	24 Jul 2020 10:56			29 Jul 2020 17:25	50
HS20090350-20	MW-22B	24 Jul 2020 11:26			29 Jul 2020 17:07	50
HS20090350-21	DUP 1	24 Jul 2020 10:56			29 Jul 2020 17:43	50
Batch ID: R365961 (0)	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Water	
HS20090350-01	CM-1A	24 Jul 2020 10:20			31 Jul 2020 01:53	1
HS20090350-02	CM-1B	24 Jul 2020 13:00			31 Jul 2020 02:00	1
HS20090350-03	CM-2	24 Jul 2020 10:56			31 Jul 2020 02:07	1
HS20090350-06	CM-4A	24 Jul 2020 12:37			31 Jul 2020 02:14	1
HS20090350-07	CM-4B	24 Jul 2020 12:41			31 Jul 2020 02:22	1
HS20090350-08	CM-5A	24 Jul 2020 12:50			31 Jul 2020 02:29	1
HS20090350-09	CM-5B	24 Jul 2020 12:56			31 Jul 2020 02:37	1
HS20090350-13	MW-15B	24 Jul 2020 11:11			31 Jul 2020 01:46	1
HS20090350-20	MW-22B	24 Jul 2020 11:26			31 Jul 2020 01:38	1
HS20090350-21	DUP 1	24 Jul 2020 10:56			31 Jul 2020 03:00	1

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R366063 (0)	**Test Name :** PH BY SM4500H+ B				**Matrix:** Water	
HS20090350-01	CM-1A	24 Jul 2020 10:20			03 Aug 2020 14:49	1
HS20090350-02	CM-1B	24 Jul 2020 13:00			03 Aug 2020 14:49	1
HS20090350-03	CM-2	24 Jul 2020 10:56			03 Aug 2020 14:49	1
HS20090350-06	CM-4A	24 Jul 2020 12:37			03 Aug 2020 14:49	1
HS20090350-07	CM-4B	24 Jul 2020 12:41			03 Aug 2020 14:49	1
HS20090350-08	CM-5A	24 Jul 2020 12:50			03 Aug 2020 14:49	1
HS20090350-09	CM-5B	24 Jul 2020 12:56			03 Aug 2020 14:49	1
HS20090350-13	MW-15B	24 Jul 2020 11:11			03 Aug 2020 14:49	1
HS20090350-20	MW-22B	24 Jul 2020 11:26			03 Aug 2020 14:49	1
HS20090350-21	DUP 1	24 Jul 2020 10:56			03 Aug 2020 14:49	1
Batch ID: R367311 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090350-04	CM-3A	21 Aug 2020 14:25			22 Aug 2020 12:56	1
HS20090350-04	CM-3A	21 Aug 2020 14:25			22 Aug 2020 12:20	10
HS20090350-05	CM-3B	21 Aug 2020 14:30			22 Aug 2020 13:14	1
Batch ID: R367467 (0)	**Test Name :** PH BY SM4500H+ B				**Matrix:** Water	
HS20090350-04	CM-3A	21 Aug 2020 14:25			26 Aug 2020 12:27	1
HS20090350-05	CM-3B	21 Aug 2020 14:30			26 Aug 2020 12:27	1
Batch ID: R367542 (0)	**Test Name :** ANIONS BY E300.0				**Matrix:** Water	
HS20090350-05	CM-3B	21 Aug 2020 14:30			26 Aug 2020 22:55	100
Batch ID: R368972 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C				**Matrix:** Water	
HS20090350-10	MW-5S	18 Jun 2020 11:10			24 Jun 2020 15:40	1
HS20090350-11	MW-7S	17 Jun 2020 16:00			24 Jun 2020 15:40	1
HS20090350-12	MW-15A	18 Jun 2020 12:23			24 Jun 2020 15:40	1
HS20090350-14	MW-16	18 Jun 2020 10:22			24 Jun 2020 15:40	1
HS20090350-16	MW-18	17 Jun 2020 17:30			24 Jun 2020 15:40	1
HS20090350-17	MW-19S	17 Jun 2020 16:56			24 Jun 2020 15:40	1
HS20090350-18	DUP 2	17 Jun 2020 16:56			24 Jun 2020 15:40	1
Batch ID: R368976 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C				**Matrix:** Water	
HS20090350-01	CM-1A	24 Jul 2020 10:20			31 Jul 2020 16:17	1
HS20090350-02	CM-1B	24 Jul 2020 13:00			31 Jul 2020 16:17	1
HS20090350-03	CM-2	24 Jul 2020 10:56			31 Jul 2020 16:17	1
HS20090350-06	CM-4A	24 Jul 2020 12:37			31 Jul 2020 16:17	1
HS20090350-07	CM-4B	24 Jul 2020 12:41			31 Jul 2020 16:17	1
HS20090350-08	CM-5A	24 Jul 2020 12:50			31 Jul 2020 16:17	1
HS20090350-09	CM-5B	24 Jul 2020 12:56			31 Jul 2020 16:17	1
HS20090350-13	MW-15B	24 Jul 2020 11:11			31 Jul 2020 16:17	1
HS20090350-20	MW-22B	24 Jul 2020 11:26			31 Jul 2020 16:17	1

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R369035 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C				**Matrix:** Water	
HS20090350-15	MW-17	18 Jun 2020 09:16			24 Jun 2020 13:00	1
HS20090350-19	MW-22A	18 Jun 2020 14:02			24 Jun 2020 13:00	1
Batch ID: R369100 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C				**Matrix:** Water	
HS20090350-04	CM-3A	21 Aug 2020 14:25			28 Aug 2020 15:50	1
HS20090350-05	CM-3B	21 Aug 2020 14:30			28 Aug 2020 15:50	1
Batch ID: R370295 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C				**Matrix:** Water	
HS20090350-21	DUP 1	24 Jul 2020 10:56			31 Jul 2020 12:39	1
HS20090350-22	MW-14A	17 Jun 2020 11:04			24 Jun 2020 14:52	1

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154696 (0) **Instrument: ICPMS04** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

MBLK Sample ID: **MBLKF2-154696** Units: **mg/L** Analysis Date: **25-Jun-2020 20:14**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636521** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	0.02098	0.200								J
Molybdenum	U	0.00500								

MBLK Sample ID: **MBLKF3-154696** Units: **mg/L** Analysis Date: **25-Jun-2020 20:16**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636522** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	U	0.200								
Molybdenum	U	0.00500								

MBLK Sample ID: **MBLKF1-154696** Units: **mg/L** Analysis Date: **25-Jun-2020 20:12**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636520** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	U	0.200								
Molybdenum	U	0.00500								

MBLK Sample ID: **MBLK-154696** Units: **mg/L** Analysis Date: **25-Jun-2020 20:10**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636519** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	U	0.200								
Molybdenum	U	0.00500								

LCS Sample ID: **LCS-154696** Units: **mg/L** Analysis Date: **25-Jun-2020 20:18**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636523** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.414	0.200	5	0	88.3	80 - 120				
Molybdenum	0.04032	0.00500	0.05	0	80.6	80 - 120				

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154696 (0) **Instrument: ICPMS04** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

MS Sample ID: **HS20060785-01MS** Units: **mg/L** Analysis Date: **26-Jun-2020 12:48**
Client ID: Run ID: **ICPMS04_363979** SeqNo: **5637976** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.856	0.200	5	0.009467	96.9	75 - 125				
Molybdenum	0.04907	0.00500	0.05	0.000873	96.4	75 - 125				

MSD Sample ID: **HS20060785-01MSD** Units: **mg/L** Analysis Date: **26-Jun-2020 12:50**
Client ID: Run ID: **ICPMS04_363979** SeqNo: **5637977** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.897	0.200	5	0.009467	97.8	75 - 125	4.856	0.85	20	
Molybdenum	0.04868	0.00500	0.05	0.000873	95.6	75 - 125	0.04907	0.796	20	

PDS Sample ID: **HS20060785-01PDS** Units: **mg/L** Analysis Date: **26-Jun-2020 12:52**
Client ID: Run ID: **ICPMS04_363979** SeqNo: **5637978** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.683	0.200	10	0.009467	96.7	75 - 125				
Molybdenum	0.09511	0.00500	0.1	0.000873	94.2	75 - 125				

The following samples were analyzed in this batch:

HS20090350-10	HS20090350-11	HS20090350-14	HS20090350-15
HS20090350-16	HS20090350-17	HS20090350-18	HS20090350-22

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154748 (0) **Instrument: ICPMS04** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

MBLK Sample ID: **MBLKF2-154748** Units: **mg/L** Analysis Date: **25-Jun-2020 21:56**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636566** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	U	0.200								
Molybdenum	U	0.00500								

MBLK Sample ID: **MBLKF1-154748** Units: **mg/L** Analysis Date: **25-Jun-2020 21:54**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636565** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	U	0.200								
Molybdenum	U	0.00500								

MBLK Sample ID: **MBLK-154748** Units: **mg/L** Analysis Date: **25-Jun-2020 21:52**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636564** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	U	0.200								
Molybdenum	U	0.00500								

LCS Sample ID: **LCS-154748** Units: **mg/L** Analysis Date: **25-Jun-2020 21:58**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636567** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.877	0.200	5	0	97.5	80 - 120				
Molybdenum	0.04563	0.00500	0.05	0	91.3	80 - 120				

MS Sample ID: **HS20061004-01MS** Units: **mg/L** Analysis Date: **25-Jun-2020 22:22**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636575** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.747	0.200	5	0.01064	94.7	75 - 125				
Molybdenum	0.2226	0.00500	0.05	0.1676	110	75 - 125				

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154748 (0) **Instrument: ICPMS04** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

MSD Sample ID: **HS20061004-01MSD** Units: **mg/L** Analysis Date: **25-Jun-2020 22:24**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636576** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.45	0.200	5	0.01064	88.8	75 - 125	4.747	6.45	20	
Molybdenum	0.2094	0.00500	0.05	0.1676	83.6	75 - 125	0.2226	6.1	20	

PDS Sample ID: **HS20061004-01PDS** Units: **mg/L** Analysis Date: **25-Jun-2020 22:26**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636577** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.275	0.200	10	0.01064	92.6	75 - 125				
Molybdenum	0.2569	0.00500	0.1	0.1676	89.2	75 - 125				

SD Sample ID: **HS20061004-01SD** Units: **mg/L** Analysis Date: **25-Jun-2020 22:20**
Client ID: Run ID: **ICPMS04_363883** SeqNo: **5636574** PrepDate: **23-Jun-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	U	1.00					0.01064	0	10	
Molybdenum	0.1643	0.0250					0.1676	1.99	10	

The following samples were analyzed in this batch: HS20090350-12 HS20090350-19

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154876 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-154876** Units: **mg/L** Analysis Date: **29-Jun-2020 15:04**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5641960** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	U	0.0200								
Calcium	U	0.500								
Iron	U	0.200								
Magnesium	0.02133	0.200								J
Molybdenum	U	0.00500								
Potassium	U	0.200								

LCS Sample ID: **LCS-154876** Units: **mg/L** Analysis Date: **29-Jun-2020 15:06**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5641961** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.4988	0.0200	0.5	0	99.8	80 - 120				
Calcium	4.477	0.500	5	0	89.5	80 - 120				
Iron	4.549	0.200	5	0	91.0	80 - 120				
Magnesium	4.649	0.200	5	0	93.0	80 - 120				
Molybdenum	0.04237	0.00500	0.05	0	84.7	80 - 120				
Potassium	4.521	0.200	5	0	90.4	80 - 120				

MS Sample ID: **HS20060899-01MS** Units: **mg/L** Analysis Date: **29-Jun-2020 15:11**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5641964** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	1.696	0.0200	0.5	1.179	104	80 - 120				E
Calcium	207	0.500	5	217.2	-205	80 - 120				SEO
Iron	4.708	0.200	5	0.146	91.2	80 - 120				
Magnesium	29.08	0.200	5	26.84	45.0	80 - 120				SO
Molybdenum	0.04618	0.00500	0.05	0	92.4	80 - 120				
Potassium	12.22	0.200	5	8.287	78.6	80 - 120				S

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154876 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS20060899-01MSD** Units: **mg/L** Analysis Date: **29-Jun-2020 15:13**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5641965** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	1.83	0.0200	0.5	1.179	130	80 - 120	1.696	7.57	20	SE
Calcium	221.9	0.500	5	217.2	95.2	80 - 120	207	6.99	20	EO
Iron	5.053	0.200	5	0.146	98.1	80 - 120	4.708	7.05	20	
Magnesium	31.37	0.200	5	26.84	90.8	80 - 120	29.08	7.57	20	O
Molybdenum	0.04894	0.00500	0.05	0	97.9	80 - 120	0.04618	5.8	20	
Potassium	13.14	0.200	5	8.287	97.0	80 - 120	12.22	7.25	20	

PDS Sample ID: **HS20060899-01PDS** Units: **mg/L** Analysis Date: **30-Jun-2020 12:55**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5644521** PrepDate: **26-Jun-2020** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	5.934	0.200	5	1.165	95.4	75 - 125				

PDS Sample ID: **HS20060899-01PDS** Units: **mg/L** Analysis Date: **30-Jun-2020 16:03**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645018** PrepDate: **26-Jun-2020** DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	413.9	10.0	200	214.5	99.7	75 - 125				

PDS Sample ID: **HS20060899-01PDS** Units: **mg/L** Analysis Date: **29-Jun-2020 15:15**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5641966** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	11.62	0.200	10	0.146	115	75 - 125				
Magnesium	37.17	0.200	10	26.84	103	75 - 125				
Molybdenum	0.1082	0.00500	0.1	0.000419	108	75 - 125				
Potassium	19.17	0.200	10	8.287	109	75 - 125				

SD Sample ID: **HS20060899-01SD** Units: **mg/L** Analysis Date: **30-Jun-2020 12:53**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5644520** PrepDate: **26-Jun-2020** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Boron	1.18	1.00					1.165	1.33	10	

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154876 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS20060899-01SD** Units: **mg/L** Analysis Date: **30-Jun-2020 16:01**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645017** PrepDate: **26-Jun-2020** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	244.1	50.0					214.5	13.8	10	R

SD Sample ID: **HS20060899-01SD** Units: **mg/L** Analysis Date: **29-Jun-2020 15:09**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5641963** PrepDate: **26-Jun-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	0.1468	1.00					0.146	0	10	J
Magnesium	26.38	1.00					26.84	1.7	10	
Molybdenum	U	0.0250					0.000419	0	10	
Potassium	8.72	1.00					8.287	5.22	10	

The following samples were analyzed in this batch: HS20090350-22

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154920 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-154920** Units: **mg/L** Analysis Date: **29-Jun-2020 21:13**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642480** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	U	0.0200								
Calcium	U	0.500								
Iron	U	0.200								
Magnesium	0.01789	0.200								J
Molybdenum	U	0.00500								
Potassium	U	0.200								

LCS Sample ID: **LCS-154920** Units: **mg/L** Analysis Date: **29-Jun-2020 21:15**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642481** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.5063	0.0200	0.5	0	101	80 - 120				
Calcium	4.743	0.500	5	0	94.9	80 - 120				
Iron	4.929	0.200	5	0	98.6	80 - 120				
Magnesium	4.922	0.200	5	0	98.4	80 - 120				
Molybdenum	0.04639	0.00500	0.05	0	92.8	80 - 120				
Potassium	4.798	0.200	5	0	96.0	80 - 120				

MS Sample ID: **HS20061133-61MS** Units: **mg/L** Analysis Date: **29-Jun-2020 21:21**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642484** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.999	0.0200	0.5	0.5178	96.2	80 - 120				
Calcium	751.8	0.500	5	776.7	-497	80 - 120				SEO
Iron	4.581	0.200	5	0	91.6	80 - 120				
Magnesium	131.1	0.200	5	131.1	-1.07	80 - 120				SO
Molybdenum	0.04987	0.00500	0.05	0.004289	91.2	80 - 120				
Potassium	20.92	0.200	5	16.85	81.2	80 - 120				

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154920 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS20061133-61MSD** Units: **mg/L** Analysis Date: **29-Jun-2020 21:23**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642485** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	1.076	0.0200	0.5	0.5178	112	80 - 120	0.999	7.46	20	E
Calcium	816.2	0.500	5	776.7	791	80 - 120	751.8	8.21	20	SEO
Iron	4.952	0.200	5	0	99.0	80 - 120	4.581	7.79	20	
Magnesium	141.2	0.200	5	131.1	200	80 - 120	131.1	7.4	20	SO
Molybdenum	0.05166	0.00500	0.05	0.004289	94.7	80 - 120	0.04987	3.53	20	
Potassium	22.27	0.200	5	16.85	108	80 - 120	20.92	6.26	20	

PDS Sample ID: **HS20061133-61PDS** Units: **mg/L** Analysis Date: **30-Jun-2020 14:23**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5644557** PrepDate: **27-Jun-2020** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	737.7	5.00	10	768	-303	75 - 125				SO

PDS Sample ID: **HS20061133-61PDS** Units: **mg/L** Analysis Date: **29-Jun-2020 21:25**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642486** PrepDate: **27-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.233	0.200	10	0.01176	92.2	75 - 125				
Magnesium	133.7	0.200	10	131.1	25.2	75 - 125				SO
Molybdenum	0.09462	0.00500	0.1	0.004289	90.3	75 - 125				
Potassium	25.31	0.200	10	16.85	84.6	75 - 125				

SD Sample ID: **HS20061133-61SD** Units: **mg/L** Analysis Date: **29-Jun-2020 21:19**
Client ID: Run ID: **ICPMS06_364099** SeqNo: **5642483** PrepDate: **27-Jun-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Boron	0.5515	0.100					0.5178	6.5	10	
Iron	U	1.00					0.01176	0	10	
Magnesium	132.3	1.00					131.1	0.906	10	
Molybdenum	0.004355	0.0250					0.004289	0	10	J
Potassium	16.68	1.00					16.85	1.04	10	

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154920 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS20061133-61SD** Units: **mg/L** Analysis Date: **30-Jun-2020 14:21**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5644556** PrepDate: **27-Jun-2020** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	802.1	25.0					768	4.43	10	

The following samples were analyzed in this batch: HS20090350-10 HS20090350-11 HS20090350-14 HS20090350-15 HS20090350-16 HS20090350-17 HS20090350-18

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154932 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-154932** Units: **mg/L** Analysis Date: **30-Jun-2020 16:10**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645020** PrepDate: **28-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	U	0.0200								
Calcium	U	0.500								
Iron	U	0.200								
Magnesium	0.02086	0.200								J
Molybdenum	U	0.00500								
Potassium	U	0.200								

LCS Sample ID: **LCS-154932** Units: **mg/L** Analysis Date: **30-Jun-2020 16:12**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645021** PrepDate: **28-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.4908	0.0200	0.5	0	98.2	80 - 120				
Calcium	5.182	0.500	5	0	104	80 - 120				
Iron	5.237	0.200	5	0	105	80 - 120				
Magnesium	5.502	0.200	5	0	110	80 - 120				
Molybdenum	0.05031	0.00500	0.05	0	101	80 - 120				
Potassium	5.386	0.200	5	0	108	80 - 120				

MS Sample ID: **HS20061290-02MS** Units: **mg/L** Analysis Date: **30-Jun-2020 16:30**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645088** PrepDate: **28-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.7273	0.0200	0.5	0.183	109	80 - 120				

MS Sample ID: **HS20061290-02MS** Units: **mg/L** Analysis Date: **01-Jul-2020 11:38**
Client ID: Run ID: **ICPMS06_364311** SeqNo: **5646388** PrepDate: **28-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	8.944	0.200	5	3.528	108	80 - 120				
Magnesium	72.81	0.200	5	71.57	24.8	80 - 120				SO
Molybdenum	0.07386	0.00500	0.05	0.02359	101	80 - 120				
Potassium	9.352	0.200	5	4.573	95.6	80 - 120				

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154932 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS20061290-02MSD** Units: **mg/L** Analysis Date: **30-Jun-2020 16:32**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645089** PrepDate: **28-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.711	0.0200	0.5	0.183	106	80 - 120	0.7273	2.27	20	
Iron	8.257	0.200	5	3.528	94.6	80 - 120	9.403	13	20	
Magnesium	68.21	0.200	5	71.57	-67.1	80 - 120	79.27	15	20	SO
Molybdenum	0.07155	0.00500	0.05	0.02359	95.9	80 - 120	0.07974	10.8	20	
Potassium	8.858	0.200	5	4.573	85.7	80 - 120	10.13	13.4	20	

PDS Sample ID: **HS20061290-02PDS** Units: **mg/L** Analysis Date: **30-Jun-2020 17:29**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645372** PrepDate: **28-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.6657	0.0200	0.5	0.183	96.6	75 - 125				
Iron	11.5	0.200	10	3.528	79.7	75 - 125				
Magnesium	70.08	0.200	10	71.57	-14.9	75 - 125				SO
Molybdenum	0.1059	0.00500	0.1	0.02359	82.3	75 - 125				
Potassium	12.6	0.200	10	4.573	80.3	75 - 125				

PDS Sample ID: **HS20061290-02PDS** Units: **mg/L** Analysis Date: **01-Jul-2020 11:44**
Client ID: Run ID: **ICPMS06_364311** SeqNo: **5646391** PrepDate: **28-Jun-2020** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	1163	25.0	500	631.4	106	75 - 125				

SD Sample ID: **HS20061290-02SD** Units: **mg/L** Analysis Date: **01-Jul-2020 11:42**
Client ID: Run ID: **ICPMS06_364311** SeqNo: **5646390** PrepDate: **28-Jun-2020** DF: **250**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	637.2	125					631.4	0.924	10	

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 154932 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS20061290-02SD** Units: **mg/L** Analysis Date: **30-Jun-2020 16:28**
Client ID: Run ID: **ICPMS06_364204** SeqNo: **5645087** PrepDate: **28-Jun-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	3.519	1.00					3.528	0.261	10	
Magnesium	67.92	1.00					71.57	5.09	10	
Molybdenum	0.0219	0.0250					0.02359	0	10	J
Potassium	4.589	1.00					4.573	0.344	10	

The following samples were analyzed in this batch: HS20090350-12 HS20090350-19

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 155834 (0) **Instrument: ICPMS06** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

MBLK Sample ID: **MBLK-155834** Units: **mg/L** Analysis Date: **28-Jul-2020 16:28**
Client ID: Run ID: **ICPMS06_365755** SeqNo: **5677524** PrepDate: **28-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	U	0.200								
Molybdenum	U	0.00500								

LCS Sample ID: **LCS-155834** Units: **mg/L** Analysis Date: **28-Jul-2020 16:30**
Client ID: Run ID: **ICPMS06_365755** SeqNo: **5677525** PrepDate: **28-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.605	0.200	5	0	92.1	80 - 120				
Molybdenum	0.04538	0.00500	0.05	0	90.8	80 - 120				

MS Sample ID: **HS20070742-01MS** Units: **mg/L** Analysis Date: **28-Jul-2020 16:46**
Client ID: Run ID: **ICPMS06_365755** SeqNo: **5677531** PrepDate: **28-Jul-2020** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.894	2.00	5	0.05338	96.8	75 - 125				
Molybdenum	0.06319	0.0500	0.05	0.01255	101	75 - 125				

MSD Sample ID: **HS20070742-01MSD** Units: **mg/L** Analysis Date: **28-Jul-2020 16:48**
Client ID: Run ID: **ICPMS06_365755** SeqNo: **5677532** PrepDate: **28-Jul-2020** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.744	2.00	5	0.05338	93.8	75 - 125	4.894	3.11	20	
Molybdenum	0.06212	0.0500	0.05	0.01255	99.2	75 - 125	0.06319	1.7	20	

PDS Sample ID: **HS20070742-01PDS** Units: **mg/L** Analysis Date: **28-Jul-2020 16:50**
Client ID: Run ID: **ICPMS06_365755** SeqNo: **5677533** PrepDate: **28-Jul-2020** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	98.68	2.00	100	0	98.7	75 - 125				
Molybdenum	1.078	0.0500	1	0.01255	107	75 - 125				

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 155834 (0) **Instrument: ICPMS06** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

SD Sample ID: **HS20070742-01SD** Units: **mg/L** Analysis Date: **28-Jul-2020 16:44**
Client ID: Run ID: **ICPMS06_365755** SeqNo: **5677530** PrepDate: **28-Jul-2020** DF: **50**

Analyte	Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	U		10.0					0.05338	0	10	
Molybdenum	U		0.250					0.01255	0	10	

The following samples were analyzed in this batch:

HS20090350-01	HS20090350-02	HS20090350-03	HS20090350-06
HS20090350-07	HS20090350-08	HS20090350-09	HS20090350-13
HS20090350-20	HS20090350-21		

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 155866 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-155866** Units: **mg/L** Analysis Date: **29-Jul-2020 20:31**
Client ID: Run ID: **ICPMS06_365848** SeqNo: **5679101** PrepDate: **29-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	U	0.0200								
Calcium	U	0.500								
Iron	U	0.200								
Magnesium	0.0153	0.200								J
Molybdenum	U	0.00500								
Potassium	U	0.200								

LCS Sample ID: **LCS-155866** Units: **mg/L** Analysis Date: **29-Jul-2020 20:33**
Client ID: Run ID: **ICPMS06_365848** SeqNo: **5679102** PrepDate: **29-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.4722	0.0200	0.5	0	94.4	80 - 120				
Calcium	4.595	0.500	5	0	91.9	80 - 120				
Iron	4.427	0.200	5	0	88.5	80 - 120				
Magnesium	4.759	0.200	5	0	95.2	80 - 120				
Molybdenum	0.04711	0.00500	0.05	0	94.2	80 - 120				
Potassium	4.535	0.200	5	0	90.7	80 - 120				

MS Sample ID: **HS20071180-02MS** Units: **mg/L** Analysis Date: **29-Jul-2020 20:38**
Client ID: Run ID: **ICPMS06_365848** SeqNo: **5679105** PrepDate: **29-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.5593	0.0200	0.5	0.125	86.9	80 - 120				
Calcium	150.5	0.500	5	149.1	28.0	80 - 120				SO
Iron	31.8	0.200	5	28.6	64.0	80 - 120				SO
Magnesium	41.15	0.200	5	38.54	52.3	80 - 120				SO
Molybdenum	0.04637	0.00500	0.05	0	92.7	80 - 120				
Potassium	12.69	0.200	5	8.3	87.8	80 - 120				

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 155866 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS20071180-02MSD** Units: **mg/L** Analysis Date: **30-Jul-2020 13:54**
Client ID: Run ID: **ICPMS05_365944** SeqNo: **5680307** PrepDate: **29-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	0.6482	0.0200	0.5	0.125	105	80 - 120	0.5593	14.7	20	
Calcium	149.9	0.500	5	149.1	17.3	80 - 120	150.5	0.356	20	SO
Iron	32.65	0.200	5	28.6	80.9	80 - 120	31.8	2.62	20	O
Magnesium	43.89	0.200	5	38.54	107	80 - 120	41.15	6.44	20	O
Molybdenum	0.04592	0.00500	0.05	0	91.8	80 - 120	0.04637	0.982	20	
Potassium	12.75	0.200	5	8.3	89.0	80 - 120	12.69	0.483	20	

PDS Sample ID: **HS20071180-02PDS** Units: **mg/L** Analysis Date: **29-Jul-2020 20:42**
Client ID: Run ID: **ICPMS06_365848** SeqNo: **5679107** PrepDate: **29-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	150.9	0.500	10	149.1	17.9	75 - 125				SO
Iron	37.06	0.200	10	28.6	84.6	75 - 125				
Magnesium	46.5	0.200	10	38.54	79.6	75 - 125				
Molybdenum	0.1066	0.00500	0.1	0.000285	106	75 - 125				
Potassium	17.66	0.200	10	8.3	93.6	75 - 125				

SD Sample ID: **HS20071180-02SD** Units: **mg/L** Analysis Date: **29-Jul-2020 20:37**
Client ID: Run ID: **ICPMS06_365848** SeqNo: **5679104** PrepDate: **29-Jul-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	136.8	2.50					149.1	8.24	10	
Iron	27.66	1.00					28.6	3.3	10	
Magnesium	39.44	1.00					38.54	2.33	10	
Molybdenum	U	0.0250					0.000285	0	10	
Potassium	7.842	1.00					8.3	5.52	10	

The following samples were analyzed in this batch:

HS20090350-01	HS20090350-02	HS20090350-03	HS20090350-06
HS20090350-07	HS20090350-08	HS20090350-09	HS20090350-13
HS20090350-20	HS20090350-21		

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 156744 (0) **Instrument: ICPMS04** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

MBLK Sample ID: **MBLK-156744** Units: **mg/L** Analysis Date: **28-Aug-2020 21:17**
Client ID: Run ID: **ICPMS04_367653** SeqNo: **5719624** PrepDate: **26-Aug-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	U	0.200								
Molybdenum	U	0.00500								

MBLK Sample ID: **MBLK-156744** Units: **mg/L** Analysis Date: **28-Aug-2020 23:44**
Client ID: Run ID: **ICPMS04_367653** SeqNo: **5719684** PrepDate: **26-Aug-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	U	0.200								
Molybdenum	U	0.00500								

LCS Sample ID: **LCS-156744** Units: **mg/L** Analysis Date: **28-Aug-2020 21:19**
Client ID: Run ID: **ICPMS04_367653** SeqNo: **5719625** PrepDate: **26-Aug-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.502	0.200	5	0	90.0	80 - 120				
Molybdenum	0.04621	0.00500	0.05	0	92.4	80 - 120				

MS Sample ID: **HS20080852-01MS** Units: **mg/L** Analysis Date: **29-Aug-2020 10:44**
Client ID: Run ID: **ICPMS04_367680** SeqNo: **5719982** PrepDate: **26-Aug-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.912	0.200	5	0	98.2	75 - 125				
Molybdenum	0.05444	0.00500	0.05	0.004767	99.3	75 - 125				

MSD Sample ID: **HS20080852-01MSD** Units: **mg/L** Analysis Date: **28-Aug-2020 21:27**
Client ID: Run ID: **ICPMS04_367653** SeqNo: **5719629** PrepDate: **26-Aug-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.474	0.200	5	0	89.5	75 - 125	4.912	9.35	20	
Molybdenum	0.05372	0.00500	0.05	0.004767	97.9	75 - 125	0.05444	1.34	20	

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 156744 (0) **Instrument: ICPMS04** **Method: DISSOLVED METALS BY SW6020A (DISSOLVED)**

SD Sample ID: **HS20080852-01SD** Units: **mg/L** Analysis Date: **28-Aug-2020 21:23**
Client ID: Run ID: **ICPMS04_367653** SeqNo: **5719627** PrepDate: **26-Aug-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	U	1.00					0.008047	0	10	
Molybdenum	0.004852	0.0250					0.004767	0	10	J

The following samples were analyzed in this batch: HS20090350-04 HS20090350-05

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 156772 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-156772** Units: **mg/L** Analysis Date: **28-Aug-2020 16:22**
Client ID: Run ID: **ICPMS04_367653** SeqNo: **5719499** PrepDate: **27-Aug-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	U	0.500								
Iron	U	0.200								
Magnesium	U	0.200								
Potassium	U	0.200								

LCS Sample ID: **LCS-156772** Units: **mg/L** Analysis Date: **28-Aug-2020 16:24**
Client ID: Run ID: **ICPMS04_367653** SeqNo: **5719500** PrepDate: **27-Aug-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	4.829	0.500	5	0	96.6	80 - 120				
Iron	4.986	0.200	5	0	99.7	80 - 120				
Magnesium	5.182	0.200	5	0	104	80 - 120				
Potassium	5.19	0.200	5	0	104	80 - 120				

MS Sample ID: **HS20081136-06MS** Units: **mg/L** Analysis Date: **27-Aug-2020 23:36**
Client ID: Run ID: **ICPMS04_367559** SeqNo: **5718188** PrepDate: **27-Aug-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	163.5	0.500	5	165.4	-37.2	80 - 120				SO
Iron	5.006	0.200	5	0.004044	100	80 - 120				
Magnesium	25.49	0.200	5	21.5	79.8	80 - 120				SO
Potassium	11.34	0.200	5	6.584	95.1	80 - 120				

MSD Sample ID: **HS20081136-06MSD** Units: **mg/L** Analysis Date: **27-Aug-2020 23:39**
Client ID: Run ID: **ICPMS04_367559** SeqNo: **5718189** PrepDate: **27-Aug-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	157	0.500	5	165.4	-167	80 - 120	154.5	1.65	20	SO
Iron	4.8	0.200	5	0.004044	95.9	80 - 120	4.626	3.71	20	
Magnesium	24.8	0.200	5	21.5	66.0	80 - 120	23.46	5.57	20	SO
Potassium	10.95	0.200	5	6.584	87.3	80 - 120	10.89	0.535	20	

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: 156772 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS20081136-06PDS** Units: **mg/L** Analysis Date: **28-Aug-2020 16:33**
Client ID: Run ID: **ICPMS04_367653** SeqNo: **5719505** PrepDate: **27-Aug-2020** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	273.3	5.00	100	169.3	104	75 - 125				
Magnesium	131.1	2.00	100	21.67	109	75 - 125				

SD Sample ID: **HS20081136-06SD** Units: **mg/L** Analysis Date: **28-Aug-2020 16:28**
Client ID: Run ID: **ICPMS04_367653** SeqNo: **5719502** PrepDate: **27-Aug-2020** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	161.5	25.0					169.3	4.57	10	
Magnesium	22.37	10.0					21.67	3.21	10	

SD Sample ID: **HS20081136-06SD** Units: **mg/L** Analysis Date: **27-Aug-2020 23:34**
Client ID: Run ID: **ICPMS04_367559** SeqNo: **5718187** PrepDate: **27-Aug-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	U	1.00					0.004044	0	10	
Potassium	6.885	1.00					6.584	4.56	10	

The following samples were analyzed in this batch: HS20090350-04 HS20090350-05

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R363539 (0) **Instrument: UV-2450** **Method: FERROUS IRON BY SM3500 FE B**

MBLK Sample ID: **MBLK-R363539** Units: **mg/L** Analysis Date: **18-Jun-2020 16:45**
Client ID: Run ID: **UV-2450_363539** SeqNo: **5625911** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	U	0.0500				80 - 120				

LCS Sample ID: **LCS-R363539** Units: **mg/L** Analysis Date: **18-Jun-2020 16:45**
Client ID: Run ID: **UV-2450_363539** SeqNo: **5625910** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.24	0.0500	0.25	0	96.0	80 - 120				

MS Sample ID: **HS20060846-04MS** Units: **mg/L** Analysis Date: **18-Jun-2020 16:45**
Client ID: Run ID: **UV-2450_363539** SeqNo: **5625929** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.301	0.0500	0.25	0.083	87.2	75 - 125				

MSD Sample ID: **HS20060846-04MSD** Units: **mg/L** Analysis Date: **18-Jun-2020 16:45**
Client ID: Run ID: **UV-2450_363539** SeqNo: **5625928** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.322	0.0500	0.25	0.083	95.6	75 - 125	0.301	6.74	20	

The following samples were analyzed in this batch: HS20090350-22

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R363618 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK061820** Units: **mg/L** Analysis Date: **18-Jun-2020 12:28**
Client ID: Run ID: **ICS-Integrion_363618** SeqNo: **5627899** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Fluoride	U	0.100								
Nitrogen, Nitrate (As N)	U	0.100								
Sulfate	U	0.500								

LCS Sample ID: **WLCSW1-061820** Units: **mg/L** Analysis Date: **19-Jun-2020 14:51**
Client ID: Run ID: **ICS-Integrion_363618** SeqNo: **5627930** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.57	0.500	20	0	97.9	90 - 110				
Fluoride	4.069	0.100	4	0	102	90 - 110				
Nitrogen, Nitrate (As N)	3.946	0.100	4	0	98.6	90 - 110				
Sulfate	20.12	0.500	20	0	101	90 - 110				

MS Sample ID: **HS20060899-01MS** Units: **mg/L** Analysis Date: **19-Jun-2020 03:40**
Client ID: Run ID: **ICS-Integrion_363618** SeqNo: **5630335** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	23.42	0.500	10	13.75	96.7	80 - 120				
Fluoride	2.408	0.100	2	0.2031	110	80 - 120				
Nitrogen, Nitrate (As N)	2.498	0.100	2	0	125	80 - 120				S
Sulfate	1198	0.500	10	0	12000	80 - 120				SE

MS Sample ID: **HS20060882-01MS** Units: **mg/L** Analysis Date: **18-Jun-2020 21:01**
Client ID: Run ID: **ICS-Integrion_363618** SeqNo: **5627908** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	12.79	0.500	10	2.763	100	80 - 120				
Fluoride	1.344	0.100	2	0.0214	66.1	80 - 120				S
Nitrogen, Nitrate (As N)	2.011	0.100	2	0.0703	97.0	80 - 120				
Sulfate	10.79	0.500	10	1.734	90.5	80 - 120				

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R363618 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MSD Sample ID: **HS20060899-01MSD** Units: **mg/L** Analysis Date: **19-Jun-2020 03:58**
Client ID: Run ID: **ICS-Integrion_363618** SeqNo: **5630336** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	23.46	0.500	10	13.75	97.1	80 - 120	23.42	0.179	20	
Fluoride	2.072	0.100	2	0.2031	93.4	80 - 120	2.408	15	20	
Nitrogen, Nitrate (As N)	2.446	0.100	2	0	122	80 - 120	2.498	2.11	20	S
Sulfate	U	0.500	10	0	0	80 - 120	1198	0	20	S

MSD Sample ID: **HS20060882-01MSD** Units: **mg/L** Analysis Date: **18-Jun-2020 21:20**
Client ID: Run ID: **ICS-Integrion_363618** SeqNo: **5627909** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	12.74	0.500	10	2.763	99.8	80 - 120	12.79	0.392	20	
Fluoride	1.352	0.100	2	0.0214	66.5	80 - 120	1.344	0.586	20	S
Nitrogen, Nitrate (As N)	1.993	0.100	2	0.0703	96.2	80 - 120	2.011	0.864	20	
Sulfate	10.78	0.500	10	1.734	90.5	80 - 120	10.79	0.0417	20	

The following samples were analyzed in this batch: HS20090350-22

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R363621 (0) **Instrument: UV-2450** **Method: FERROUS IRON BY SM3500 FE B**

MBLK Sample ID: **MBLK-R363621** Units: **mg/L** Analysis Date: **19-Jun-2020 13:20**
Client ID: Run ID: **UV-2450_363621** SeqNo: **5627887** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	U	0.0500				80 - 120				

LCS Sample ID: **LCS-R363621** Units: **mg/L** Analysis Date: **19-Jun-2020 13:20**
Client ID: Run ID: **UV-2450_363621** SeqNo: **5627886** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.254	0.0500	0.25	0	102	80 - 120				

MS Sample ID: **HS20060948-09MS** Units: **mg/L** Analysis Date: **19-Jun-2020 13:20**
Client ID: Run ID: **UV-2450_363621** SeqNo: **5627889** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.29	0.0500	0.25	0.033	103	75 - 125				

MSD Sample ID: **HS20060948-09MSD** Units: **mg/L** Analysis Date: **19-Jun-2020 13:20**
Client ID: Run ID: **UV-2450_363621** SeqNo: **5627888** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.277	0.0500	0.25	0.033	97.6	75 - 125	0.29	4.59	20	

The following samples were analyzed in this batch:

HS20090350-10	HS20090350-11	HS20090350-14	HS20090350-15
HS20090350-16	HS20090350-17	HS20090350-18	

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R363643 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B**

MBLK Sample ID: **WBLKW2-200621** Units: **mg/L** Analysis Date: **21-Jun-2020 11:43**
Client ID: Run ID: **ManTech01_363643** SeqNo: **5628654** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	U	5.00								
Alkalinity, Carbonate (As CaCO3)	U	5.00								
Alkalinity, Hydroxide (As CaCO3)	U	5.00								
Alkalinity, Total (As CaCO3)	U	5.00								

LCS Sample ID: **WLCS2-200621** Units: **mg/L** Analysis Date: **21-Jun-2020 11:52**
Client ID: Run ID: **ManTech01_363643** SeqNo: **5628655** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1033	5.00	1000	0	103	85 - 115				
Alkalinity, Total (As CaCO3)	1047	5.00	1000	0	105	85 - 115				

LCSD Sample ID: **WLCSD2-200621** Units: **mg/L** Analysis Date: **21-Jun-2020 12:01**
Client ID: Run ID: **ManTech01_363643** SeqNo: **5628656** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1027	5.00	1000	0	103	85 - 115	1033	0.602	20	
Alkalinity, Total (As CaCO3)	1044	5.00	1000	0	104	85 - 115	1047	0.231	20	

DUP Sample ID: **HS20060961-01DUP** Units: **mg/L** Analysis Date: **21-Jun-2020 12:30**
Client ID: Run ID: **ManTech01_363643** SeqNo: **5628660** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	392.4	5.00					390.8	0.411	20	
Alkalinity, Carbonate (As CaCO3)	U	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	U	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	392.4	5.00					390.8	0.411	20	

The following samples were analyzed in this batch:

HS20090350-10	HS20090350-11	HS20090350-14	HS20090350-15
HS20090350-16	HS20090350-17	HS20090350-18	HS20090350-22

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R363827 (0) **Instrument: UV-2450** **Method: FERROUS IRON BY SM3500 FE B**

MBLK Sample ID: **MBLK-R363827** Units: **mg/L** Analysis Date: **20-Jun-2020 12:00**
Client ID: Run ID: **UV-2450_363827** SeqNo: **5633618** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	U	0.0500				80 - 120				

LCS Sample ID: **LCS-R363827** Units: **mg/L** Analysis Date: **20-Jun-2020 12:00**
Client ID: Run ID: **UV-2450_363827** SeqNo: **5633617** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.236	0.0500	0.25	0	94.4	80 - 120				

MS Sample ID: **HS20061004-01MS** Units: **mg/L** Analysis Date: **20-Jun-2020 12:00**
Client ID: Run ID: **UV-2450_363827** SeqNo: **5633620** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.302	0.0500	0.25	0.041	104	75 - 125				

MSD Sample ID: **HS20061004-01MSD** Units: **mg/L** Analysis Date: **20-Jun-2020 12:00**
Client ID: Run ID: **UV-2450_363827** SeqNo: **5633619** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.305	0.0500	0.25	0.041	106	75 - 125	0.302	0.988	20	

The following samples were analyzed in this batch: HS20090350-12 HS20090350-19

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R363865 (0) **Instrument: WetChem_HS** **Method: SULFIDE BY SM4500 S2-F**

MBLK Sample ID: **MBLK-R363865** Units: **mg/L** Analysis Date: **23-Jun-2020 16:00**
Client ID: Run ID: **WetChem_HS_363865** SeqNo: **5634392** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	U	1.00								

LCS Sample ID: **LCS-R363865** Units: **mg/L** Analysis Date: **23-Jun-2020 16:00**
Client ID: Run ID: **WetChem_HS_363865** SeqNo: **5634391** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	24.12	1.00	25	0	96.5	85 - 115				

LCSD Sample ID: **LCSD-R363865** Units: **mg/L** Analysis Date: **23-Jun-2020 16:00**
Client ID: Run ID: **WetChem_HS_363865** SeqNo: **5634390** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	23.92	1.00	25	0	95.7	85 - 115	24.12	0.833	20	

MS Sample ID: **HS20061045-01MS** Units: **mg/L** Analysis Date: **23-Jun-2020 16:00**
Client ID: Run ID: **WetChem_HS_363865** SeqNo: **5634393** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	23.92	1.00	25	-0.48	97.6	80 - 120				

The following samples were analyzed in this batch:

HS20090350-10	HS20090350-11	HS20090350-12	HS20090350-14
HS20090350-15	HS20090350-16	HS20090350-17	HS20090350-18
HS20090350-19	HS20090350-22		

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R363936 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **WBLKW1-061820** Units: **mg/L** Analysis Date: **19-Jun-2020 20:53**
Client ID: Run ID: **ICS-Integrion_363936** SeqNo: **5636155** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Fluoride	U	0.100								
Nitrogen, Nitrate (As N)	U	0.100								

LCS Sample ID: **WLCSW1-061820** Units: **mg/L** Analysis Date: **19-Jun-2020 20:35**
Client ID: Run ID: **ICS-Integrion_363936** SeqNo: **5636154** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.54	0.500	20	0	97.7	90 - 110				
Fluoride	4.057	0.100	4	0	101	90 - 110				
Nitrogen, Nitrate (As N)	3.957	0.100	4	0	98.9	90 - 110				

MS Sample ID: **HS20060948-03MS** Units: **mg/L** Analysis Date: **20-Jun-2020 02:37**
Client ID: Run ID: **ICS-Integrion_363936** SeqNo: **5636364** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	63.74	2.50	50	14.71	98.0	80 - 120				
Fluoride	11.14	0.500	10	0.5375	106	80 - 120				
Nitrogen, Nitrate (As N)	12.17	0.500	10	0	122	80 - 120				S

MS Sample ID: **HS20060877-01MS** Units: **mg/L** Analysis Date: **19-Jun-2020 12:07**
Client ID: Run ID: **ICS-Integrion_363936** SeqNo: **5636140** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	987.5	2.50	50	946.4	82.2	80 - 120				EO
Fluoride	9.614	0.500	10	0.3275	92.9	80 - 120				
Nitrogen, Nitrate (As N)	27.2	0.500	10	17.1	101	80 - 120				

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R363936 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MSD Sample ID: **HS20060948-03MSD** Units: **mg/L** Analysis Date: **20-Jun-2020 02:55**
Client ID: Run ID: **ICS-Integrion_363936** SeqNo: **5636365** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	63.28	2.50	50	14.71	97.2	80 - 120	63.74	0.709	20	
Fluoride	9.787	0.500	10	0.5375	92.5	80 - 120	11.14	13	20	
Nitrogen, Nitrate (As N)	12.11	0.500	10	0	121	80 - 120	12.17	0.523	20	S

MSD Sample ID: **HS20060877-01MSD** Units: **mg/L** Analysis Date: **19-Jun-2020 12:25**
Client ID: Run ID: **ICS-Integrion_363936** SeqNo: **5636141** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	985.8	2.50	50	946.4	78.6	80 - 120	987.5	0.179	20	SEO
Fluoride	10.77	0.500	10	0.3275	104	80 - 120	9.614	11.4	20	
Nitrogen, Nitrate (As N)	27.1	0.500	10	17.1	100	80 - 120	27.2	0.357	20	

The following samples were analyzed in this batch:

HS20090350-10	HS20090350-11	HS20090350-12	HS20090350-14
HS20090350-15	HS20090350-16	HS20090350-17	HS20090350-18
HS20090350-19			

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R363953 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B**

MBLK Sample ID: **WBLKW3-200625** Units: **mg/L** Analysis Date: **26-Jun-2020 02:47**
Client ID: Run ID: **ManTech01_363953** SeqNo: **5636678** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	U	5.00								
Alkalinity, Carbonate (As CaCO3)	U	5.00								
Alkalinity, Hydroxide (As CaCO3)	U	5.00								
Alkalinity, Total (As CaCO3)	U	5.00								

LCS Sample ID: **LCS3-200625** Units: **mg/L** Analysis Date: **26-Jun-2020 02:55**
Client ID: Run ID: **ManTech01_363953** SeqNo: **5636679** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1080	5.00	1000	0	108	85 - 115				
Alkalinity, Total (As CaCO3)	1084	5.00	1000	0	108	85 - 115				

LCSD Sample ID: **LCSD3-200625** Units: **mg/L** Analysis Date: **26-Jun-2020 03:05**
Client ID: Run ID: **ManTech01_363953** SeqNo: **5636680** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1084	5.00	1000	0	108	85 - 115	1080	0.356	20	
Alkalinity, Total (As CaCO3)	1085	5.00	1000	0	109	85 - 115	1084	0.163	20	

DUP Sample ID: **HS20061141-06DUP** Units: **mg/L** Analysis Date: **26-Jun-2020 03:18**
Client ID: Run ID: **ManTech01_363953** SeqNo: **5636682** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	377.6	5.00					377.6	0.0053	20	
Alkalinity, Carbonate (As CaCO3)	U	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	U	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	377.6	5.00					377.6	0.0053	20	

The following samples were analyzed in this batch: HS20090350-12 HS20090350-19

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R364046 (0) **Instrument: WetChem_HS** **Method: PH BY SM4500H+ B**

DUP Sample ID: **HS20060843-05DUP** Units: **pH Units** Analysis Date: **27-Jun-2020 11:36**
Client ID: Run ID: **WetChem_HS_364046** SeqNo: **5639311** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.28	0.100					6.24	0.639	10	
Temp Deg C @pH	24.2	0					24.1	0.414	10	

The following samples were analyzed in this batch: HS20090350-18 HS20090350-22

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R364111 (0) **Instrument: WetChem_HS** **Method: PH BY SM4500H+ B**

DUP Sample ID: **HS20060899-01DUP** Units: **pH Units** Analysis Date: **29-Jun-2020 12:10**
Client ID: Run ID: **WetChem_HS_364111** SeqNo: **5641053** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.93	0.100					6.9	0.434	10	
Temp Deg C @pH	21.7	0					21.8	0.46	10	

The following samples were analyzed in this batch:

HS20090350-10	HS20090350-11	HS20090350-12	HS20090350-14
HS20090350-15	HS20090350-16	HS20090350-17	HS20090350-19

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R364222 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK-062920** Units: **mg/L** Analysis Date: **29-Jun-2020 13:28**
Client ID: Run ID: **ICS-Integrion_364222** SeqNo: **5644056** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	0.2205	0.500								J

LCS Sample ID: **LCS-062920** Units: **mg/L** Analysis Date: **29-Jun-2020 13:10**
Client ID: Run ID: **ICS-Integrion_364222** SeqNo: **5644055** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	19.34	0.500	20	0	96.7	90 - 110				

MS Sample ID: **HS20060948-01MS** Units: **mg/L** Analysis Date: **29-Jun-2020 21:25**
Client ID: Run ID: **ICS-Integrion_364222** SeqNo: **5644062** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	490.8	5.00	100	408.1	82.8	80 - 120				O

MSD Sample ID: **HS20060948-01MSD** Units: **mg/L** Analysis Date: **29-Jun-2020 21:43**
Client ID: Run ID: **ICS-Integrion_364222** SeqNo: **5644063** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	486.8	5.00	100	408.1	78.7	80 - 120	490.8	0.832	20	SO

The following samples were analyzed in this batch:

HS20090350-10	HS20090350-11	HS20090350-14	HS20090350-15
HS20090350-16	HS20090350-17	HS20090350-18	

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R364568 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK-070620** Units: **mg/L** Analysis Date: **06-Jul-2020 10:40**
Client ID: Run ID: **ICS-Integrion_364568** SeqNo: **5651647** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	0.500								

LCS Sample ID: **LCS-070620** Units: **mg/L** Analysis Date: **06-Jul-2020 10:58**
Client ID: Run ID: **ICS-Integrion_364568** SeqNo: **5651648** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	19.77	0.500	20	0	98.9	90 - 110				

MS Sample ID: **HS20061133-15MS** Units: **mg/L** Analysis Date: **06-Jul-2020 13:49**
Client ID: Run ID: **ICS-Integrion_364568** SeqNo: **5651655** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	1176	50.0	1000	175.9	100	80 - 120				

MS Sample ID: **HS20061004-01MS** Units: **mg/L** Analysis Date: **06-Jul-2020 17:04**
Client ID: Run ID: **ICS-Integrion_364568** SeqNo: **5652507** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	2656	50.0	1000	1682	97.4	80 - 120				

MSD Sample ID: **HS20061133-15MSD** Units: **mg/L** Analysis Date: **06-Jul-2020 14:07**
Client ID: Run ID: **ICS-Integrion_364568** SeqNo: **5651656** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	1179	50.0	1000	175.9	100	80 - 120	1176	0.196	20	

MSD Sample ID: **HS20061004-01MSD** Units: **mg/L** Analysis Date: **06-Jul-2020 17:23**
Client ID: Run ID: **ICS-Integrion_364568** SeqNo: **5652508** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	2602	50.0	1000	1682	92.1	80 - 120	2656	2.02	20	

The following samples were analyzed in this batch: HS20090350-12 HS20090350-19

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R365669 (0) **Instrument: UV-2450** **Method: FERROUS IRON BY SM3500 FE B**

MBLK Sample ID: **MBLK-R365669** Units: **mg/L** Analysis Date: **25-Jul-2020 13:30**
Client ID: Run ID: **UV-2450_365669** SeqNo: **5674481** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	U	0.0500				80 - 120				

LCS Sample ID: **LCS-R365669** Units: **mg/L** Analysis Date: **25-Jul-2020 13:30**
Client ID: Run ID: **UV-2450_365669** SeqNo: **5674480** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.261	0.0500	0.25	0	104	80 - 120				

MS Sample ID: **HS20071175-10MS** Units: **mg/L** Analysis Date: **25-Jul-2020 13:30**
Client ID: Run ID: **UV-2450_365669** SeqNo: **5674483** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.405	0.0500	0.25	0.146	104	75 - 125				

MSD Sample ID: **HS20071175-10MSD** Units: **mg/L** Analysis Date: **25-Jul-2020 13:30**
Client ID: Run ID: **UV-2450_365669** SeqNo: **5674482** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.403	0.0500	0.25	0.146	103	75 - 125	0.405	0.495	20	

The following samples were analyzed in this batch:

HS20090350-01	HS20090350-02	HS20090350-03	HS20090350-06
HS20090350-07	HS20090350-08	HS20090350-09	HS20090350-13
HS20090350-20	HS20090350-21		

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R365759 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK-072720** Units: **mg/L** Analysis Date: **27-Jul-2020 16:24**
Client ID: Run ID: **ICS-Integrion_365759** SeqNo: **5676452** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Fluoride	U	0.100								

LCS Sample ID: **LCS-072720** Units: **mg/L** Analysis Date: **27-Jul-2020 16:42**
Client ID: Run ID: **ICS-Integrion_365759** SeqNo: **5676453** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.1	0.500	20	0	100	90 - 110				
Fluoride	4.108	0.100	4	0	103	90 - 110				

MS Sample ID: **HS20071189-01MS** Units: **mg/L** Analysis Date: **27-Jul-2020 18:31**
Client ID: Run ID: **ICS-Integrion_365759** SeqNo: **5676457** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	405.6	0.500	10	400.3	53.2	80 - 120				SEO
Fluoride	2.565	0.100	2	0.652	95.6	80 - 120				

MS Sample ID: **HS20071175-05MS** Units: **mg/L** Analysis Date: **28-Jul-2020 07:48**
Client ID: Run ID: **ICS-Integrion_365759** SeqNo: **5676580** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	13.95	0.500	10	3.786	102	80 - 120				
Fluoride	2.761	0.100	2	0.558	110	80 - 120				

MS Sample ID: **HS20071146-01MS** Units: **mg/L** Analysis Date: **28-Jul-2020 04:47**
Client ID: Run ID: **ICS-Integrion_365759** SeqNo: **5676474** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	14.7	0.500	10	4.367	103	80 - 120				
Fluoride	2.358	0.100	2	0.1954	108	80 - 120				

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R365759 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MSD Sample ID: **HS20071189-01MSD** Units: **mg/L** Analysis Date: **27-Jul-2020 18:49**
Client ID: Run ID: **ICS-Integrion_365759** SeqNo: **5676458** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	404.8	0.500	10	400.3	45.0	80 - 120	405.6	0.2	20	SEO
Fluoride	2.639	0.100	2	0.652	99.4	80 - 120	2.565	2.85	20	

MSD Sample ID: **HS20071175-05MSD** Units: **mg/L** Analysis Date: **28-Jul-2020 08:06**
Client ID: Run ID: **ICS-Integrion_365759** SeqNo: **5676581** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	13.96	0.500	10	3.786	102	80 - 120	13.95	0.043	20	
Fluoride	2.768	0.100	2	0.558	110	80 - 120	2.761	0.26	20	

MSD Sample ID: **HS20071146-01MSD** Units: **mg/L** Analysis Date: **28-Jul-2020 05:05**
Client ID: Run ID: **ICS-Integrion_365759** SeqNo: **5676475** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	14.63	0.500	10	4.367	103	80 - 120	14.7	0.436	20	
Fluoride	2.16	0.100	2	0.1954	98.2	80 - 120	2.358	8.79	20	

The following samples were analyzed in this batch:

HS20090350-01	HS20090350-03	HS20090350-06	HS20090350-07
HS20090350-08	HS20090350-09	HS20090350-21	

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R365834 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK-072820** Units: **mg/L** Analysis Date: **28-Jul-2020 14:00**
Client ID: Run ID: **ICS-Integrion_365834** SeqNo: **5678244** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Fluoride	U	0.100								
Sulfate	0.2175	0.500								J

LCS Sample ID: **LCS-072820** Units: **mg/L** Analysis Date: **28-Jul-2020 14:18**
Client ID: Run ID: **ICS-Integrion_365834** SeqNo: **5678245** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.1	0.500	20	0	101	90 - 110				
Fluoride	4.176	0.100	4	0	104	90 - 110				
Sulfate	20.24	0.500	20	0	101	90 - 110				

MS Sample ID: **HS20071175-02MS** Units: **mg/L** Analysis Date: **29-Jul-2020 01:35**
Client ID: Run ID: **ICS-Integrion_365834** SeqNo: **5678253** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	575	25.0	500	58	103	80 - 120				
Fluoride	107	5.00	100	1.595	105	80 - 120				
Sulfate	1741	25.0	500	1282	91.8	80 - 120				

MSD Sample ID: **HS20071175-02MSD** Units: **mg/L** Analysis Date: **29-Jul-2020 01:53**
Client ID: Run ID: **ICS-Integrion_365834** SeqNo: **5678254** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	574.1	25.0	500	58	103	80 - 120	575	0.148	20	
Fluoride	106.7	5.00	100	1.595	105	80 - 120	107	0.281	20	
Sulfate	1734	25.0	500	1282	90.4	80 - 120	1741	0.389	20	

The following samples were analyzed in this batch:

HS20090350-01	HS20090350-02	HS20090350-06	HS20090350-07
HS20090350-08	HS20090350-09	HS20090350-13	HS20090350-20

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R365873 (0) **Instrument: WetChem_HS** **Method: SULFIDE BY SM4500 S2-F**

MBLK Sample ID: **MBLK-R365873** Units: **mg/L** Analysis Date: **28-Jul-2020 17:00**
Client ID: Run ID: **WetChem_HS_365873** SeqNo: **5678954** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	U	1.00								

LCS Sample ID: **LCS-R365873** Units: **mg/L** Analysis Date: **28-Jul-2020 17:00**
Client ID: Run ID: **WetChem_HS_365873** SeqNo: **5678953** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	25.4	1.00	25	0	102	85 - 115				

LCSD Sample ID: **LCSD-R365873** Units: **mg/L** Analysis Date: **28-Jul-2020 17:00**
Client ID: Run ID: **WetChem_HS_365873** SeqNo: **5678952** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	25.2	1.00	25	0	101	85 - 115	25.4	0.791	20	

MS Sample ID: **HS20071199-01MS** Units: **mg/L** Analysis Date: **28-Jul-2020 17:00**
Client ID: Run ID: **WetChem_HS_365873** SeqNo: **5678955** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	27.6	1.00	25	-0.2	111	80 - 120				

The following samples were analyzed in this batch:

HS20090350-01	HS20090350-02	HS20090350-03	HS20090350-06
HS20090350-07	HS20090350-08	HS20090350-09	HS20090350-13
HS20090350-20	HS20090350-21		

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R365937 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK-072920** Units: **mg/L** Analysis Date: **29-Jul-2020 10:19**
Client ID: Run ID: **ICS-Integrion_365937** SeqNo: **5680146** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	0.2143	0.500								J

LCS Sample ID: **LCS-072920** Units: **mg/L** Analysis Date: **29-Jul-2020 10:37**
Client ID: Run ID: **ICS-Integrion_365937** SeqNo: **5680147** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	20.28	0.500	20	0	101	90 - 110				

MS Sample ID: **HS20071305-04MS** Units: **mg/L** Analysis Date: **29-Jul-2020 18:55**
Client ID: Run ID: **ICS-Integrion_365937** SeqNo: **5680289** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	16430	5.00	100	16580	-157	80 - 120				SEO

MS Sample ID: **HS20071296-05MS** Units: **mg/L** Analysis Date: **29-Jul-2020 21:57**
Client ID: Run ID: **ICS-Integrion_365937** SeqNo: **5680170** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	43.42	0.500	10	34.48	89.4	80 - 120				

MSD Sample ID: **HS20071305-04MSD** Units: **mg/L** Analysis Date: **29-Jul-2020 19:14**
Client ID: Run ID: **ICS-Integrion_365937** SeqNo: **5680290** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	16180	5.00	100	16580	-404	80 - 120	16430	1.52	20	SEO

MSD Sample ID: **HS20071296-05MSD** Units: **mg/L** Analysis Date: **29-Jul-2020 22:15**
Client ID: Run ID: **ICS-Integrion_365937** SeqNo: **5680171** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	43.81	0.500	10	34.48	93.3	80 - 120	43.42	0.903	20	

The following samples were analyzed in this batch: HS20090350-03 HS20090350-20 HS20090350-21

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R365961 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B**

MBLK Sample ID: **WBLKW3-200730** Units: **mg/L** Analysis Date: **31-Jul-2020 00:33**
Client ID: Run ID: **ManTech01_365961** SeqNo: **5680801** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	U	5.00								
Alkalinity, Carbonate (As CaCO3)	U	5.00								
Alkalinity, Hydroxide (As CaCO3)	U	5.00								
Alkalinity, Total (As CaCO3)	U	5.00								

LCS Sample ID: **LCS3-200730** Units: **mg/L** Analysis Date: **31-Jul-2020 00:42**
Client ID: Run ID: **ManTech01_365961** SeqNo: **5680802** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1009	5.00	1000	0	101	85 - 115				
Alkalinity, Total (As CaCO3)	1029	5.00	1000	0	103	85 - 115				

LCSD Sample ID: **LCSD3-200730** Units: **mg/L** Analysis Date: **31-Jul-2020 00:51**
Client ID: Run ID: **ManTech01_365961** SeqNo: **5680803** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1019	5.00	1000	0	102	85 - 115	1009	1	20	
Alkalinity, Total (As CaCO3)	1033	5.00	1000	0	103	85 - 115	1029	0.33	20	

DUP Sample ID: **HS20071228-01DUP** Units: **mg/L** Analysis Date: **31-Jul-2020 01:03**
Client ID: Run ID: **ManTech01_365961** SeqNo: **5680805** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	26.9	5.00					26.96	0.223	20	
Alkalinity, Carbonate (As CaCO3)	U	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	U	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	26.9	5.00					26.96	0.223	20	

The following samples were analyzed in this batch:

HS20090350-01	HS20090350-02	HS20090350-03	HS20090350-06
HS20090350-07	HS20090350-08	HS20090350-09	HS20090350-13
HS20090350-20	HS20090350-21		

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: **R366063 (0)** **Instrument:** **WetChem_HS** **Method:** **PH BY SM4500H+ B**

DUP Sample ID: **HS20071146-01DUP** Units: **pH Units** Analysis Date: **03-Aug-2020 14:49**
Client ID: Run ID: **WetChem_HS_366063** SeqNo: **5682955** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.71	0.100					6.75	0.594	10	
Temp Deg C @pH	24.7	0					24.6	0.406	10	

The following samples were analyzed in this batch:

HS20090350-01	HS20090350-02	HS20090350-03	HS20090350-06
HS20090350-07	HS20090350-08	HS20090350-09	HS20090350-13
HS20090350-20	HS20090350-21		

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R367311 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK-082120** Units: **mg/L** Analysis Date: **22-Aug-2020 20:08**
Client ID: Run ID: **ICS-Integrion_367311** SeqNo: **5712004** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	U	0.500								
Fluoride	U	0.100								
Nitrogen, Nitrate (As N)	U	0.100								
Sulfate	U	0.500								

LCS Sample ID: **LCS-082120** Units: **mg/L** Analysis Date: **24-Aug-2020 10:47**
Client ID: Run ID: **ICS-Integrion_367311** SeqNo: **5712034** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.38	0.500	20	0	96.9	90 - 110				
Fluoride	3.96	0.100	4	0	99.0	90 - 110				
Nitrogen, Nitrate (As N)	3.896	0.100	4	0	97.4	90 - 110				
Sulfate	18.96	0.500	20	0	94.8	90 - 110				

MS Sample ID: **HS20080723-07MS** Units: **mg/L** Analysis Date: **22-Aug-2020 23:27**
Client ID: Run ID: **ICS-Integrion_367311** SeqNo: **5712014** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	41.53	0.500	10	31.17	104	80 - 120				
Fluoride	8.69	0.100	2	6.696	99.7	80 - 120				
Nitrogen, Nitrate (As N)	1.985	0.100	2	0.0229	98.1	80 - 120				
Sulfate	12.29	0.500	10	1.951	103	80 - 120				

MS Sample ID: **HS20080614-02MS** Units: **mg/L** Analysis Date: **23-Aug-2020 09:21**
Client ID: Run ID: **ICS-Integrion_367311** SeqNo: **5712027** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	227.2	5.00	100	127.8	99.4	80 - 120				
Fluoride	23.49	1.00	20	1.771	109	80 - 120				
Nitrogen, Nitrate (As N)	22.26	1.00	20	2.053	101	80 - 120				
Sulfate	310.9	5.00	100	216.9	94.0	80 - 120				

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R367311 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MSD Sample ID: **HS20080723-07MSD** Units: **mg/L** Analysis Date: **22-Aug-2020 23:45**
Client ID: Run ID: **ICS-Integrion_367311** SeqNo: **5712015** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	40.59	0.500	10	31.17	94.3	80 - 120	41.53	2.27	20	
Fluoride	8.522	0.100	2	6.696	91.3	80 - 120	8.69	1.95	20	
Nitrogen, Nitrate (As N)	1.939	0.100	2	0.0229	95.8	80 - 120	1.985	2.3	20	
Sulfate	12.04	0.500	10	1.951	101	80 - 120	12.29	2.06	20	

MSD Sample ID: **HS20080614-02MSD** Units: **mg/L** Analysis Date: **23-Aug-2020 09:39**
Client ID: Run ID: **ICS-Integrion_367311** SeqNo: **5712028** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	222.7	5.00	100	127.8	94.9	80 - 120	227.2	2.01	20	
Fluoride	22.81	1.00	20	1.771	105	80 - 120	23.49	2.93	20	
Nitrogen, Nitrate (As N)	21.84	1.00	20	2.053	99.0	80 - 120	22.26	1.89	20	
Sulfate	306.8	5.00	100	216.9	89.9	80 - 120	310.9	1.33	20	

The following samples were analyzed in this batch: HS20090350-04 HS20090350-05

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R367467 (0) **Instrument: WetChem_HS** **Method: PH BY SM4500H+ B**

DUP Sample ID: **HS20080857-01DUP** Units: **pH Units** Analysis Date: **26-Aug-2020 12:27**
Client ID: Run ID: **WetChem_HS_367467** SeqNo: **5715744** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.4	0.100					6.36	0.627	10	
Temp Deg C @pH	22.9	0					23	0.436	10	

The following samples were analyzed in this batch: HS20090350-04 HS20090350-05

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R367542 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0**

MBLK Sample ID: **MBLK-082620** Units: **mg/L** Analysis Date: **26-Aug-2020 12:05**
Client ID: Run ID: **ICS-Integrion_367542** SeqNo: **5717095** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	0.500								

LCS Sample ID: **LCS-082620** Units: **mg/L** Analysis Date: **26-Aug-2020 14:48**
Client ID: Run ID: **ICS-Integrion_367542** SeqNo: **5717104** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	19.3	0.500	20	0	96.5	90 - 110				

MS Sample ID: **HS20081136-06MS** Units: **mg/L** Analysis Date: **26-Aug-2020 16:18**
Client ID: Run ID: **ICS-Integrion_367542** SeqNo: **5717107** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	316.1	0.500	10	314.4	17.1	80 - 120				SEO

MS Sample ID: **HS20080795-09MS** Units: **mg/L** Analysis Date: **26-Aug-2020 21:25**
Client ID: Run ID: **ICS-Integrion_367542** SeqNo: **5717119** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	220.1	5.00	100	128.8	91.3	80 - 120				

MSD Sample ID: **HS20081136-06MSD** Units: **mg/L** Analysis Date: **26-Aug-2020 16:36**
Client ID: Run ID: **ICS-Integrion_367542** SeqNo: **5717108** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	319.2	0.500	10	314.4	48.1	80 - 120	316.1	0.975	20	SEO

MSD Sample ID: **HS20080795-09MSD** Units: **mg/L** Analysis Date: **26-Aug-2020 21:43**
Client ID: Run ID: **ICS-Integrion_367542** SeqNo: **5717120** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	220.2	5.00	100	128.8	91.3	80 - 120	220.1	0.00727	20	

The following samples were analyzed in this batch: HS20090350-05

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R368972 (0) **Instrument: Balance1** **Method: TOTAL DISSOLVED SOLIDS BY SM2540C**

MBLK Sample ID: **WBLK-062420** Units: **mg/L** Analysis Date: **24-Jun-2020 15:40**
Client ID: Run ID: **Balance1_368972** SeqNo: **5747315** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-062420** Units: **mg/L** Analysis Date: **24-Jun-2020 15:40**
Client ID: Run ID: **Balance1_368972** SeqNo: **5747316** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	994	10.0	1000	0	99.4	85 - 115				

DUP Sample ID: **HS20090348-01DUP** Units: **mg/L** Analysis Date: **24-Jun-2020 15:40**
Client ID: Run ID: **Balance1_368972** SeqNo: **5747294** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	2156	10.0					2154	0.0928	5	

The following samples were analyzed in this batch:

HS20090350-10	HS20090350-11	HS20090350-12	HS20090350-14
HS20090350-16	HS20090350-17	HS20090350-18	

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R368976 (0) **Instrument: Balance1** **Method: TOTAL DISSOLVED SOLIDS BY SM2540C**

MBLK Sample ID: **WBLK-073120** Units: **mg/L** Analysis Date: **31-Jul-2020 16:17**
Client ID: Run ID: **Balance1_368976** SeqNo: **5747372** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-073120** Units: **mg/L** Analysis Date: **31-Jul-2020 16:17**
Client ID: Run ID: **Balance1_368976** SeqNo: **5747373** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1006	10.0	1000	0	101	85 - 115				

DUP Sample ID: **HS20090350-20DUP** Units: **mg/L** Analysis Date: **31-Jul-2020 16:17**
Client ID: **MW-22B** Run ID: **Balance1_368976** SeqNo: **5747371** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	3008	10.0					2996	0.4	5	

The following samples were analyzed in this batch:

HS20090350-01	HS20090350-02	HS20090350-03	HS20090350-06
HS20090350-07	HS20090350-08	HS20090350-09	HS20090350-13
HS20090350-20			

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R369035 (0) **Instrument: Balance1** **Method: TOTAL DISSOLVED SOLIDS BY SM2540C**

MBLK Sample ID: **WBLK-062420** Units: **mg/L** Analysis Date: **24-Jun-2020 13:00**
Client ID: Run ID: **Balance1_369035** SeqNo: **5748431** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-062420** Units: **mg/L** Analysis Date: **24-Jun-2020 13:00**
Client ID: Run ID: **Balance1_369035** SeqNo: **5748432** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	994	10.0	1000	0	99.4	85 - 115				

DUP Sample ID: **HS20090353-02DUP** Units: **mg/L** Analysis Date: **24-Jun-2020 13:00**
Client ID: Run ID: **Balance1_369035** SeqNo: **5748425** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	3340	10.0					3352	0.359	5	

The following samples were analyzed in this batch: HS20090350-15 HS20090350-19

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R369100 (0) **Instrument: Balance1** **Method: TOTAL DISSOLVED SOLIDS BY SM2540C**

MBLK Sample ID: **WBLK-082820** Units: **mg/L** Analysis Date: **28-Aug-2020 15:50**
Client ID: Run ID: **Balance1_369100** SeqNo: **5749591** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-082820** Units: **mg/L** Analysis Date: **28-Aug-2020 15:50**
Client ID: Run ID: **Balance1_369100** SeqNo: **5749592** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	1022	10.0	1000	0	102	85 - 115				

The following samples were analyzed in this batch: HS20090350-04 HS20090350-05

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: HS20090350

QC BATCH REPORT

Batch ID: R370295 (0) **Instrument: Balance1** **Method: TOTAL DISSOLVED SOLIDS BY SM2540C**

MBLK Sample ID: **WBLK-101220** Units: **mg/L** Analysis Date: **12-Oct-2020 14:00**
Client ID: Run ID: **Balance1_370295** SeqNo: **5776576** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	U	10.0								

LCS Sample ID: **WLCS-101220** Units: **mg/L** Analysis Date: **12-Oct-2020 14:00**
Client ID: Run ID: **Balance1_370295** SeqNo: **5776577** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	998	10.0	1000	0	99.8	85 - 115				

The following samples were analyzed in this batch: HS20090350-21 HS20090350-22

Client: Altamira
Project: Corrective Action Assessment (MNA)
WorkOrder: **HS20090350**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2020-2021	30-Apr-2021
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20090350 **Date/Time Received:** **04-Sep-2020 09:20**

Client Name: Enviro Clean Services-Tulsa **Received by:** **Paresh M. Giga**

Completed By:	/S/ Corey Grandits	08-Sep-2020 15:39	**Reviewed by:**		
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **W** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☐	No ☑	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.2C /1.2C , 1.8C/1.8C UC/C	IR31
Cooler(s)/Kit(s):	Blue	
Date/Time sample(s) sent to storage:	07/25/2020 11:35am	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Limited Sample volume Sx's CM 1B, CM 4A, CM 4B, CM 5A, CM 5B

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Sample Receipt Checklist

Work Order ID: HS20090350 **Date/Time Received:** **04-Sep-2020 09:20**

Client Name: Enviro Clean Services-Tulsa **Received by:** **Paresh M. Giga**

Completed By:	/S/ Corey Grandits	08-Sep-2020 15:40	**Reviewed by:**		
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **W** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☑	Not Present ☐
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☐	No ☑	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.7°C/1.7°C UC/C	IR31
Cooler(s)/Kit(s):	45926	
Date/Time sample(s) sent to storage:	08/22/2020 10:14	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Insufficient volume received to run Ferrous Fe, Sulfide & Alkalinity. Received approximately 30ml of neat volume for CM-3A & 100ml for CM-3B. Samples logged in for Anions, TDS & pH analyses only.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Sample Receipt Checklist

Work Order ID: HS20090350 **Date/Time Received:** **04-Sep-2020 09:20**

Client Name: Enviro Clean Services-Tulsa **Received by:** **Paresh M. Giga**

Completed By:	/S/ Corey Grandits	08-Sep-2020 15:41	**Reviewed by:**		
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **W** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes	☑	No	☐	Not Present	☐
Custody seals intact on shipping container/cooler?	Yes	☑	No	☐	Not Present	☐
Custody seals intact on sample bottles?	Yes	☐	No	☑	Not Present	☐
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes	☐	No	☐	Not Present	☑
Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Samplers name present on COC?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☐	No	☑		
Samples in proper container/bottle?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		
All samples received within holding time?	Yes	☑	No	☐		
Container/Temp Blank temperature in compliance?	Yes	☑	No	☐		

Temperature(s)/Thermometer(s):	0.9C; 1.2C U/C				IR25	
Cooler(s)/Kit(s):	44917/44331					
Date/Time sample(s) sent to storage:	6/19/2020 12:25					
Water - VOA vials have zero headspace?	Yes	☐	No	☐	No VOA vials submitted	☑
Water - pH acceptable upon receipt?	Yes	☑	No	☐	N/A	☐
pH adjusted?	Yes	☐	No	☑	N/A	☐
pH adjusted by:						

Login Notes: Times Differ :
MW-7S COC - 16:00 Labels - 16:05
MW-18 COC - 17:30 Labels - 17:58

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Sample Receipt Checklist

Work Order ID: HS20090350 **Date/Time Received:** **04-Sep-2020 09:20**

Client Name: Enviro Clean Services-Tulsa **Received by:** **Paresh M. Giga**

Completed By:	/S/ Corey Grandits	08-Sep-2020 15:42	**Reviewed by:**		
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **W** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☑	Not Present ☐
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.2C U/c	IR25
Cooler(s)/Kit(s):	2811	
Date/Time sample(s) sent to storage:	6/20/2020 11:45	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Extra Sample received not on COC "DUP 3".

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

HS20090350

Altamira

Corrective Action Assessment (MNA)

HS20060948

Altamira

WFC / CCR Program, Landfill Wells

CHAIN OF CUSTODY RECORD

ALTAMIRA
formerly known as Enviro Clean Cardinal

PROJECT NUMBER: WFEE160020	PROJECT NAME: WFEC / CCR Pro
CLIENT CONTACT: Heather Tiffany, Bert Smith	CLIENT EMAIL: Heather.N.Tiffany@, LabData@Alta
CLIENT ADDRESS: 3700 West Robinson Street, Suite 200, Norman, OK 73072	TAT: STANDARD
LABORATORY / LAB PM: ALS / RJ Modashia	
LAB ADDRESS: 10450 Stancliff Road, Suite 210, Houston, TX 77099	SPECIAL INSTRUCTIONS: Also on MNA Program: MW-5S, MW-7S, MW-14A, MW-15A, MW-16, MW-17, MW-18, MW-19S on separate COC
SHIPMENT METHOD: FEDEX	TRACKING: 1891 8877 4948 / 1891 8877 4959

NO.	SAMPLE DESCRIPTION	DATE	TIME	MATRIX	PRES.	NUMBER OF CONTAINERS	FIELD FILTERED (YES / NO)	Appendix III	Appendix IV	Nitrate as N	Mo, Total	Mo, Dissolved	K, Mg	Sulfide	Fe, Total	Fe, Dissolved	Fe, Ferrous	HCO3, CO3, Hydr Alkalinity		HOLD
1	~~MW-3~~			~~Water~~	~~2, 9~~			X	X	X										
2	MW-5S	6/18/2020	1110	Water	1, 2, 4, 9			X	X	X	X	X	X	X	X	X	X	X		
3	MW-7S	6/17/2020	1600	Water	1, 2, 4, 9			X	X	X	X	X	X	X	X	X	X	X		
4	~~MW-13~~			~~Water~~	~~2, 9~~			X	X	X										
5	~~MW-14A~~			~~Water~~	~~1, 2, 4, 9~~			X	X	X	X	X	X	X	X	X	X	X		
6	~~MW-15A~~			~~Water~~	~~1, 2, 4, 9~~			X	X	X	X	X	X	X	X	X	X	X		
7	MW-16	6/18/2020	~~935~~ 1022	Water	1, 2, 4, 9			X	X	X	X	X	X	X	X	X	X	X		
8	MW-17	6/18/2020	1116	Water	1, 2, 4, 9			X	X	X	X	X	X	X	X	X	X	X		
9	MW-18	6/17/2020	1730	Water	1, 2, 4, 9			X	X	X	X	X	X	X	X	X	X	X		
10	MW-19S	6/17/2020	1656	Water	1, 2, 4, 9			X	X	X	X	X	X	X	X	X	X	X		
11	MW-20	6/17/2020	1508	Water	2, 9			X	X	X										
12	MW-21	6/17/2020	1403	Water	2, 9			X	X	X										
13	Dup 2	6/17/2020	—	Water	2, 9, 4			X	X	X	X	X	X	X	X	X	X	X		
14	Trip Blank		—	Water																
15	Temp Blank		—	Water																

SAMPLER(S) NAME: Bradley Van Cleave — SAMPLER(S) SIGNATURE: Bradley Van Cleave

Total # of Containers:

RELINQUISHED BY: Bradley Van Cleave	DATE: 6/18/2020 TIME: 1400	RECEIVED BY:	DATE: 6/19/2020 TIME: 09:20
LOGGED BY:	DATE: TIME:	COOLER TEMP:	

PRESERVATION KEY: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7- 4 Degrees C 8-9035 9-Other : Non-Preserve

POINT OF ORIGIN: ☒ Norman ☐ Oklahoma City ☐ Tulsa ☐ Yukon ☐ Midland ☐ Other :

ALTAMIRA-US, LLC

44917 89°
44331 1.2° + 2% CF

CHAIN OF CUSTODY RECORD

ALTAMIRA
formerly known as Enviro Clean Cardinal

PROJECT NUMBER: WFEE160020

PROJECT NAME: WFEC / CCR Program, Landfill Wells

COC: 1 of 3

CLIENT CONTACT: Heather Tiffany, Bert Smith

CLIENT EMAIL: Heather.N.Tiffany, LabData@Alt

TAT: STANDARD

LABORATORY / LAB PM: ALS / RJ Modashia

CLIENT ADDRESS: 3700 West Robinson Street, Suite 200, Norman, OK 73072

LAB ADDRESS: 10450 Stancliff Road, Suite 210, Houston, TX 77099

SPECIAL INSTRUCTIONS: Also on MNA Program: MW-5S, MW-7S, MW-14A, MW-15A, MW-16, MW-17, MW-18, MW-19S on separate COC

SHIPMENT METHOD: FEDEX

TRACKING: 1891 8877 0817

NO.	SAMPLE DESCRIPTION	DATE	TIME	MATRIX	PRES.	NUMBER OF CONTAINERS	FIELD FILTERED (YES / NO)	Appendix III	Appendix IV	Nitrate as N	Mo, Total	Mo, Dissolved	K, Mg	Sulfide	Fe, Total	Fe, Dissolved	Fe, Ferrous	HCO3, CO3, Hydroxi Alkalinity		HOLD
1	~~MW-3~~			Water	~~2, 9~~			X	X	X										
2	~~MW-5S~~			Water	~~1, 2, 4, 9~~			X	X	X	X	X	X	X	X	X	X	X		
3	~~MW-7S~~			Water	1, 2, 4, 9			X	X	X	X	X	X	X	X	X	X	X		
4	~~MW-13~~			Water	~~2, 9~~			X	X	X										
5	~~MW-14A~~			Water	1, 2, 4, 9			X	X	X	X	X	X	X	X	X	X	X		
6	MW-15A	6/18/2020	1223	Water	1, 2, 4, 9	7	NO	X	X	X	X	X	X	X	X	X	X	X		
7	~~MW-16~~			Water	~~1, 2, 4, 9~~			X	X	X	X	X	X	X	X	X	X	X		
8	~~MW-17~~			Water	~~1, 2, 4, 9~~			X	X	X	X	X	X	X	X	X	X	X		
9	~~MW-18~~			Water	1, 2, 4, 9			X	X	X	X	X	X	X	X	X	X	X		
10	~~MW-19S~~			Water	~~1, 2, 4, 9~~			X	X	X	X	X	X	X	X	X	X	X		
11	~~MW-20~~			Water	~~2, 9~~			X	X	X										
12	~~MW-21~~			Water	2, 9			X	X	X										
13	Trip Blank	two		water		2														
14	Temp Blank			water		1														
15																			9	

SAMPLER(S) NAME: Bradley Caudle

SAMPLER(S) SIGNATURE: Bradley Caudle

DATE: 6/19/2020 TIME: 1400

Total # of Containers:

RELINQUISHED BY: DATE: 6/19/2020 TIME: 1400

RECEIVED BY: DATE: 6/20/20 TIME: 0943 LOGGED BY:

DATE: 6/18/2020 TIME: 1445

PRESERVATION KEY: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-4 Degrees C 8-9035 9-0

POINT OF ORIGIN: ☑ Norman ☐ Oklahoma City ☐ Tulsa ☐ Yukon ☐ Midland

ALTAMIRA-US, LLC

2811 1.20 431 <1F 0C

HS20061004
Altamira
WFC / CCR Program. Landfill Wells

HS20090350
Altamira
Corrective Action Assessment (MNA)

CHAIN OF CUSTODY RECORD

ALTAMIRA
formerly known as Environ Chem Cardinal

PROJECT NUMBER:	WFEE160020
PROJECT NAME:	WFEC / ODEQ Water Division Program
COC:	2 of 3
CLIENT CONTACT:	Heather Tiffany Bert Smith
CLIENT EMAIL:	Heather.N.Tiffany@Al LabData@Altamir
LABORATORY / LAB PM:	ALS / RJ Modashia
CLIENT ADDRESS:	3700 West Robinson Street Suite 200 Norman, OK 73072
TAT:	STANDARD
LAB ADDRESS:	10450 Stancliff Road Suite 210 Houston, TX 77099
SPECIAL INSTRUCTIONS:	Plus MW: MW-8, MW-9, MW-10, MW-11, MW-23A, MW-25R on separate COC
SHIPMENT METHOD:	Fed Ex
TRACKING:	1891 8877 0817

HS20061004
Altamira
WFC / CCR Program, Landfill Wells

NO.	SAMPLE DESCRIPTION	DATE	TIME	MATRIX	PRES.	NUMBER OF CONTAINERS	FIELD FILTERED (YES / NO)	Appendix III	N. Frank	HOLD
1	MW-FO1-1	6/18/2020	1516	Water	2	2		X		
2	MW-FO2-1	6/19/2020	1009	Water	2	2		X		
3	MW-FO2-2	6/19/2020	914	Water	2	2		X		
4	MW-FO3-1	6/19/2020	1746	Water	2	2		X		
5	MW-FO6-1	6/19/2020	1641	Water	2	2		X		
6	MW-FO6-2	6/19/2020	1558	Water	2	2		X		
7	MW-10	6/19/2020	1053	Water	None	1			X	
8										
9										
10										
11										
12										
13										
14										
15										

SAMPLER(S) NAME: Bradley VanCleve
DATE: 6/19/2020
TIME: 1400
Total # of Containers:
SAMPLER(S) SIGNATURE:
DATE: 6/19/2020

RELINQUISHED BY: Bradley VanCleve
DATE: 6/19/2020
TIME: 1400
RECEIVED BY:
DATE: 6/20/2020
TIME: 09:47
LOGGED BY:

PRESERVATION KEY: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-4 Degrees C 8-9035 9-Othe

POINT OF ORIGIN: ☑ Norman ☐ Oklahoma City ☐ Tulsa ☐ Yukon ☐ Midland ☐

ALTAMIRA-US, LLC

HS20090350
Altamira
Corrective Action Assessment (MNA)

CHAIN OF CUSTODY RECORD

ALTAMIRA
formerly known as Env. to Clean Cardinal

PROJECT NUMBER: WFEE160020	PROJECT NAME: WFEC / CCR Program, Impoundment Wells
CLIENT CONTACT: Heather Tiffany, Bert Smith	CLIENT EMAIL: Heather.N.Tiffany(, LabData@Alt
CLIENT ADDRESS: 3700 West Robinson Street, Suite 200, Norman, OK 73072	TAT: STANDARD
LABORATORY / LAB PM: ALS / RJ Modashia	
LAB ADDRESS: 10450 Stancliff Road, Suite 210, Houston, TX 77099	SPECIAL INSTRUCTIONS: Also on MNA Program: MW-22A on separate COC
SHIPMENT METHOD: FedEx	TRACKING: 1891 8877 0817

COC: 3 of 3

HS20061004
Altamira
WFC / CCR Program. Landfill Wells

NO.	SAMPLE DESCRIPTION	DATE	TIME	MATRIX	PRES.	NUMBER OF CONTAINERS	FIELD FILTERED (YES / NO)	Appendix III	Appendix IV	Nitrate as N	Mo, Total	Mo, Dissolved	K, Mg	Sulfide	Fe, Total	Fe, Dissolved	Fe, Ferrous	HCO3, CO3, Hydroxi Alkalinity		HOLD
1	~~MW-8~~			Water	2, 9			X	X	X										
2	~~MW-9~~			Water	2, 9			X	X	X										
3	~~MW-10~~			Water	2, 9			X	X	X										
4	~~MW-11~~			Water	2, 9			X	X	X										
5	MW-22A	6/18/2020	1402	Water	1, 2, 4, 9	7		X	X	X	X	X	X	X	X	X	X	X		
6	~~MW-23A~~			Water	2, 9			X	X	X										
7	~~MW-24~~			Water	2, 9			X	X	X										
8	~~MW-25R~~			Water	2, 9			X	X	X										
9																				
10																				
11																				
12																				
13																				
14																				
15																				

SAMPLER(S) NAME: Bradley VanClave
SAMPLER(S) SIGNATURE: Brad VanClave
DATE: 6/19/2020

RELINQUISHED BY: Bradley VanClave
DATE: 6/19/2020
TIME: 1400

RECEIVED BY:
DATE: 6/19/2020
TIME: 1400

Total # of Containers:

DATE: 6/20/20
TIME: 09:45
LOGGED BY:

PRESERVATION KEY: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7- 4 Degrees C 8-9035 9-Other

POINT OF ORIGIN: ☑ Norman ☐ Oklahoma City ☐ Tulsa ☐ Yukon ☐ Midland ☐

ALTAMIRA-US, LLC

HS20090350
Altamira
Corrective Action Assessment (MNA)

ENVIRO CLEAN SERVICES, LLC
(918) 794-7828

CHAIN OF CUSTODY RECORD No. 02395

PROJECT NUMBER: WFEC160020	PROJECT NAME: WFEC, MNA	COC 1 of 1
SHIPPED TO: ALS Houston	PROJECT MANAGER: Bert Smith	TAT: Standard

SAMPLER'S PRINTED NAME: Brad Van Cleave

SAMPLER'S SIGNATURE: Bradley Van Cleave

ASOW:

Short Hold

Date	Time	Sample ID	Sample Matrix	# of Sample Containers	App. A Metals	Ferrous Iron	Dissolved Metals	Sulfide	pH, TDS, Alk	Cl, F, SO4	REMARKS
7/24/20	1126	MW-22B	W	5	X	X	X	X	X	X	obtained as much water as wells would allow
7/24/20	1111	MW-15B	W	5	X	X	X	X	X	X	
7/24/20	1020	CM-1A	W	5	X	X	X	X	X	X	
7/24/20	1300	CM-1B	W	5	X	X	X	X	X	X	
7/24/20	1056	CM-2	W	5	X	X	X	X	X	X	
7/24/20	1237	CM-4A	W	5	X	X	X	X	X	X	
7/24/20	1241	CM-4B	W	5	X	X	X	X	X	X	
7/24/20	1250	CM-5A	W	5	X	X	X	X	X	X	
7/24/20	1256	CM-5B	W	5	X	X	X	X	X	X	
7/24/2020	1056	Dup 1	W	5	X	X	X	X	X	X	
		Temp Blank	W	1							
		Trip Blank	W	2							Appendix A metals: (B & Ca) Mg, K, Fe, Mo

HS20071175
Altamira
WFEC, MNA

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY: Brad Van Cleave	DATE 7/24/2020 TIME 1900	RECEIVED BY: [signature]	DATE TIME
RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME
METHOD OF SHIPMENT: FEDEX		AIRBILL NUMBER:	
RECEIVED IN LABORATORY BY:	DATE TIME	Send PDF, EDD, and INVOICE (if applicable) to: ~~JULIE CZECH at jczech@...~~	
LABORATORY CONTACT:		LABORATORY ADDRESS: Blue - ulc 1.2 Blue ulc 1.8	

HS20090350
Altamira
Corrective Action Assessment (MNA)

POINT OF ORIGIN: ☐ OKLAHOMA CITY ☐ TULSA ☐ NORMAN ☐ WOODWARD ☐ ARLINGTON ☐ MIDLAND ☐ OTHER:

PAGE #1 - RECEIVING LAB PAGE #2 - ENVIRO CLEAN PROJECT FILE PAGE #3 - ENVIRO CLEAN QA/QC DEPT

CHAIN OF CUSTODY RECORD

ALTAMIRA
formerly known as Environ Clean Caribbean

PROJECT NUMBER: WFEE160028

PROJECT NAME: WFEC

COC: 1 of 1

CLIENT CONTACT: HEATHER TIFFANY
BERT SMITH

CLIENT EMAIL: HEATHER.TIFFANY@ALTAMIRAUS.COM
LABDATA

CLIENT PHONE: 405.678.2021

LABORATORY / LAB PM: RJ MODAGHIA

CLIENT ADDRESS: 3700 W ROBINSON STE 200
NORMAN, OK 73072

TAT:

LAB ADDRESS: 10450 STANCLIFF RD
STE 210
HOUSTON, TX 77099

SPECIAL INSTRUCTIONS: 48 HOUR HOLD =
NITRATE & FERR. IRON

SHIPMENT METHOD: FEDEX

TRACKING: 1891 8879 3976

NO.	SAMPLE DESCRIPTION	DATE	TIME	MATRIX	PRES.	NUMBER OF CONTAINERS	FIELD FILTERED (YES / NO)	APP A METALS (B,Ca, Mg, K, Fe, Mn)	FERR. vs IRON	SULFIDE	PH, TDS, Alk, Cl, F, SO4, NO3	DISS Fe & Mn FIELD FILTERED	CARB, BICARB, HYDROXIDE ALK								HOLD
PARAMETERS																					
1	CM-3A	8/21/20	1425	WATER	1,2,4,9	4[2]	N	X	X	X	X		X								
2	CM-3A	8/21/20	1425	↓	↓	1	Y					X									
3	CM-3B	8/21/20	1430	↓	↓	4[2]	N	X	X	X	X		X								
4	CM-3B	8/21/20	1430	↓	↓	1	Y					X									
5	Temp Blank	→	→	↓	—	1	N														
6																					
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					
15																					

BV

SAMPLER(S) NAME: BRAD VANDEAVE

DATE: 8/21/20

TIME: 1430

Total # of Containers:

SAMPLER(S) SIGNATURE: Brad VanDeave

DATE: 8/21/20

RELINQUISHED BY: Brad VanDeave

DATE: 8/21/20

TIME: 1700

RECEIVED BY: J. Duncan

DATE: 8/22/20

TIME: 09:25

LOGGED BY:

PRESERVATION KEY: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-4 Degrees C 8-9035 9-Oth

POINT OF ORIGIN: [X] Norman [ ] Oklahoma City [ ] Tulsa [ ] Yukon [ ] Midland

ALTAMIRA-US, LLC

Cooler - 45926
Temp 1.7°C

HS20080996
Altamira
WFEC

HS20090350
Altamira
Corrective Action Assessment (MNA)

ff Rd., Suite 210
as 77099
)0 5656
30 5887

CUSTODY SEAL

Date: 1/24/2020 Time: 1350

Name:

Company:

Seal Broken By:

Date:

CUSTODY SEAL

Date: 1/24/2020 Time: 1350

Name:

Company:

Seal Broken By:

Date:

ALS

10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

4 5926

(281) 530-5656

REF: WFEC – MNA WELLS – BO 73314 — RJ

RMA:

FedEx Express

FedEx

TRK# 0221 1891 8879 3976

SATURDAY 12:00P
PRIORITY OVERNIGHT

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: Time:
Name:
Company:

Seal Broken By:
Date:

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: Time:
Name:
Company:

Seal Broken By:
Date:

FedEx
TRK# 0221 1251 0295 8572

SATURDAY 12:00P
PRIORITY OVERNIGHT

77099

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: Time:
Name:
Company:

Seal Broken By:
Date:

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY
Date: Time:
Name:
Company:

Seal Broken By:
Date:

FedEx
TRK# 0221 1891 8877 7362

SATURDAY 12:00P
PRIORITY OVERNIGHT

77099

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 6/19/2020 Time: 1400
Name: Brittany Vig
Company: ALS

Seal Broken By:
Date: 6/19/2020

(281) 630-5656
REF: AZR MW-2 INJECTION W (MNTL-BO 71973-RJ

RMA:

FedEx Express

TRK# 1891 8877 0817

RETURNS MON
SATURDAY 12:00P
PRIORITY OVERNIGHT

77099
TX-US

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 6/19/2020 Time: 1400
Name: Brittany Vig
Company: ALS

Seal Broken By:
Date: 6/19/2020

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44917

CUSTODY SEAL

Date: 6/18/20 Time: 14:00
Name:
Company:

Seal Broken By:
Date: 6/19/20

44917 JUN 19 2020

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44917

CUSTODY SEAL

Date: 6/18/20 Time: 1400
Name:
Company:

Seal Broken By:
Date: 06/19/20

Must Deliver Next Business Day
Time and Tempature Sensitive!

44917

ORIGIN ID:SGRA (918) 794-7828
BRADLEY VANCLEAVE
ENVIRO CLEAN
525 CENTRAL PARK DRIVE
SUITE 500
OKLAHOMA CITY, OK 73105
UNITED STATES US

SHIP DATE: 18JUN20
ACTWGT: 1.00 LB MAN
CAD: 3001130/CAFE3211
DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: WFEC-B072225-RJ
RMA:

FedEx Express

FedEx
TRK# 0221 1891 8877 4948

FRI - 19 JUN 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

FID 747906 18JUN20 SWIA S6BC1/C700/05A2

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44331

CUSTODY SEAL

Date: 6/18/20 Time: 1400
Name:
Company:

Seal Broken By:
Date: 06/19/20

44331 JUN 19 2020

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44331

CUSTODY SEAL

Date: 6/18/20 Time: 1400
Name:
Company:

Seal Broken By:
Date: 06/19/20

Must Deliver Next Business Day
Time and Tempature Sensitive!

44331

ORIGIN ID:SGRA (918) 794-7828
BRADLEY VANCLEAVE
ENVIRO CLEAN
525 CENTRAL PARK DRIVE
SUITE 500
OKLAHOMA CITY, OK 73105
UNITED STATES US

SHIP DATE: 10JUN20
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: WFEC-B072225-RJ

RMA:

FedEx Express

FedEx.
TRK# 0221 1891 8877 4959

FRI - 19 JUN 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

FID 747906 18JUN20 SWIA 56BC1/C700/05A2

Altamira-US. LLC Deliverable

Analyzed by: ALS Houston, US
Reported by: ALS Houston, US

Client: Western Farmers Electric Cooperative
Hugo Power Station
Towson, Oklahoma
MNA Program Analytical Data
Sodium

ALTAMIRA
Date Reported: 07-Oct-20
Matrix: Water

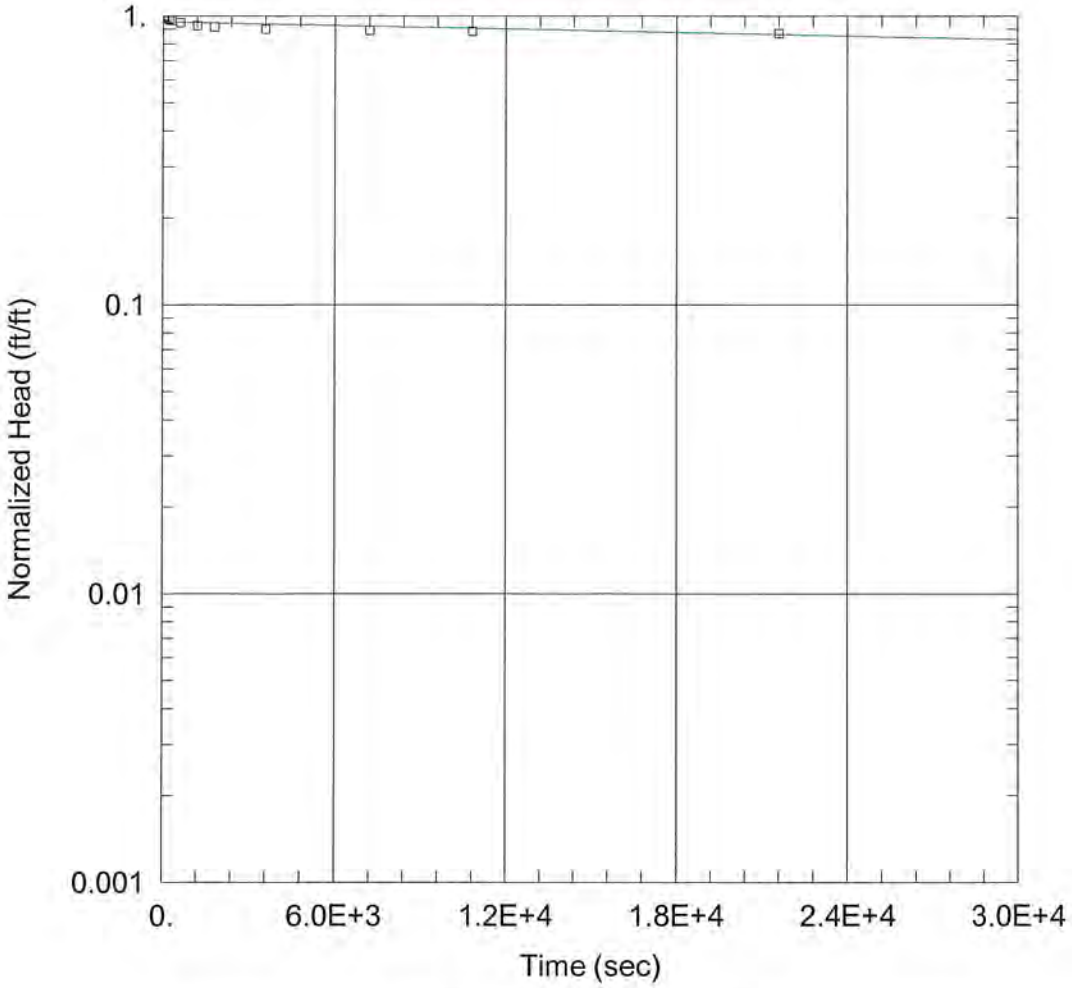
Method : 6020		Collection	Sodium					Date
Sample ID	Lab ID	Date	Units	Result	Qualifier	MDL	Report Limit	Analyzed
MW-5S	HS20060948-01	18-Jun-20	mg/L	277	E	0.0140	0.200	30-Jun-20
MW-7S	HS20060948-02	17-Jun-20	mg/L	313		0.0280	0.400	30-Jun-20
MW-14A	HS20060899-03	17-Jun-20	mg/L	382	B	0.0700	1.00	30-Jun-20
MW-15A	HS20061004-01	18-Jun-20	mg/L	1,040	E	0.0700	1.00	30-Jun-20
MW-15B	HS20071175-02	24-Jul-20	mg/L	713		0.140	2.00	29-Jul-20
MW-16	HS20060948-03	18-Jun-20	mg/L	309		0.0280	0.400	29-Jun-20
MW-17	HS20060948-04	18-Jun-20	mg/L	35.6		0.0140	0.200	29-Jun-20
MW-18	HS20060948-05	17-Jun-20	mg/L	376		0.140	2.00	30-Jun-20
MW-19S	HS20060948-06	17-Jun-20	mg/L	644		0.140	2.00	30-Jun-20
DUP 2	HS20060948-09	17-Jun-20	mg/L	598		0.140	2.00	30-Jun-20
MW-22A	HS20061004-09	18-Jun-20	mg/L	202		0.0700	1.00	30-Jun-20
MW-22B	HS20071175-01	24-Jul-20	mg/L	838		0.140	2.00	29-Jul-20
CM-1A	HS20071175-03	24-Jul-20	mg/L	178		0.140	2.00	29-Jul-20
CM-1B	HS20071175-04	24-Jul-20	mg/L	877		0.140	2.00	29-Jul-20
CM-2	HS20071175-05	24-Jul-20	mg/L	111		0.140	2.00	29-Jul-20
DUP	HS20071175-10	24-Jul-20	mg/L	116		0.140	2.00	29-Jul-20
CM-3A	HS20080996-01	21-Aug-20	mg/L	429		0.140	2.00	28-Aug-20
CM-3B	HS20080996-03	21-Aug-20	mg/L	573		0.140	2.00	28-Aug-20
CM-4A	HS20071175-06	24-Jul-20	mg/L	443		0.140	2.00	29-Jul-20
CM-4B	HS20071175-07	24-Jul-20	mg/L	529		0.140	2.00	29-Jul-20
CM-5A	HS20071175-08	24-Jul-20	mg/L	448		0.140	2.00	29-Jul-20
CM-5B	HS20071175-09	24-Jul-20	mg/L	587		0.140	2.00	29-Jul-20

Qualifiers

---	Not reported.
B:	Analyte detected in the associated Method Blank above the Reporting Limit.
E:	Value above quanititation range.

APPENDIX H

HYDRAULIC CONDUCTIVITY TESTING



WELL TEST ANALYSIS

Data Set:
Date: 03/12/20 Time: 14:10:24

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Project: WFEC
Location: Hugo
Test Well: MW12R
Test Date: March 2020

AQUIFER DATA

Saturated Thickness: 6.85 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-12R)

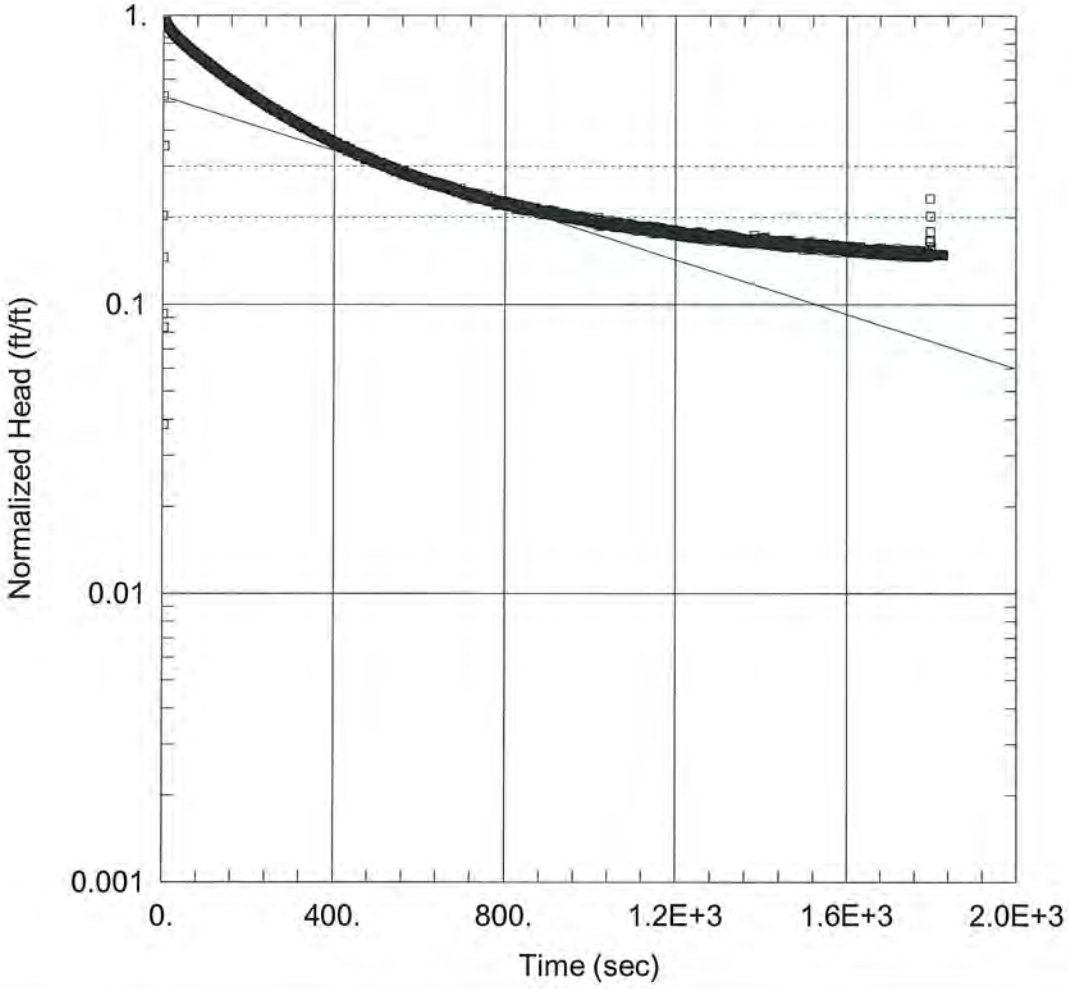
Initial Displacement: 6.48 ft
Total Well Penetration Depth: 6.14 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 6.85 ft
Screen Length: 5. ft
Well Radius: 0.276 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 6.728E-9 ft/sec y0 = 6.18 ft

K= 2.05 x 10⁻⁷ cm/sec



MW-15A RISING

Data Set: C:\Users\Bert.Smith\Documents\WFEC MW-15A Rising.aqt
Date: 09/16/20 Time: 09:51:39

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: MW-15A
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 17.1 ft Anisotropy Ratio (Kz/Kr): 1.

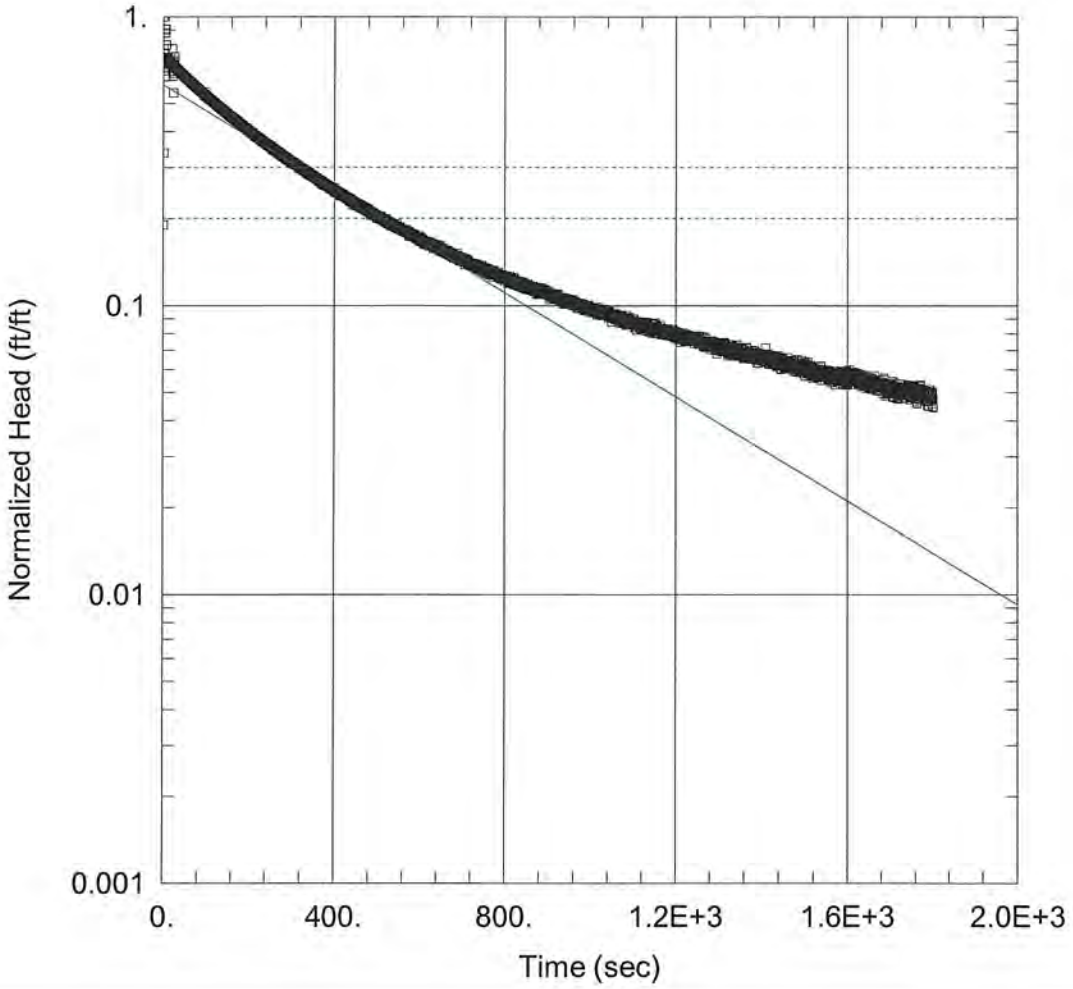
WELL DATA (MW-15A Rising)

Initial Displacement: 1.55 ft
Total Well Penetration Depth: 16.71 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 17.1 ft
Screen Length: 10. ft
Well Radius: 0.276 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.023E-6 ft/sec y0 = 0.8118 ft



MW-15A FALLING

Data Set: C:\Users\Bert.Smith\Documents\WFEC MW-15A Falling.aqt
Date: 09/16/20 Time: 10:02:39

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: MW-15A
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 17.1 ft Anisotropy Ratio (Kz/Kr): 1.

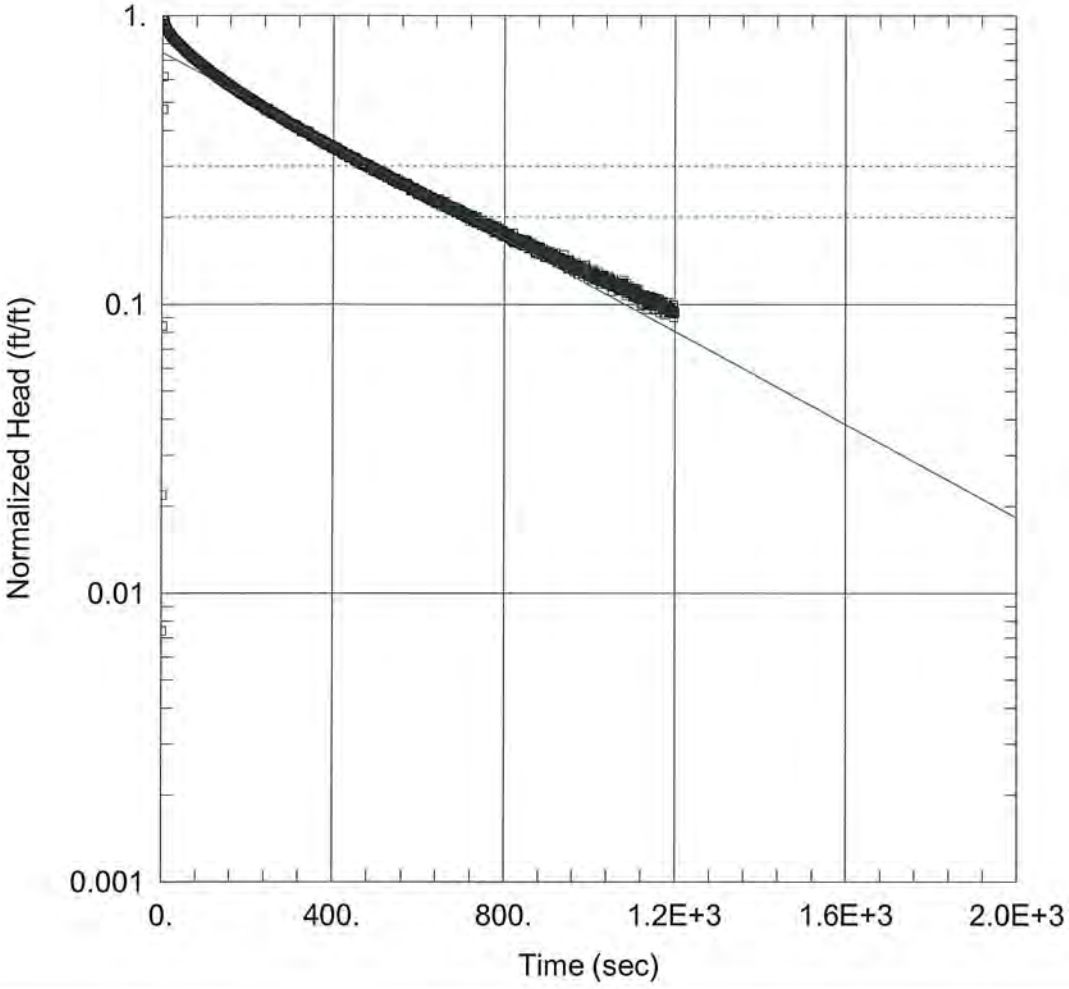
WELL DATA (MW-15A Falling)

Initial Displacement: 1.943 ft
Total Well Penetration Depth: 16.71 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 17.1 ft
Screen Length: 10. ft
Well Radius: 0.276 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.956E-6 ft/sec y0 = 1.128 ft



MW-16 RISING

Data Set: C:\Users\Bert.Smith\Documents\WFEC MW-16S.aqt
Date: 09/16/20 Time: 08:40:16

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: MW-16
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 16.36 ft Anisotropy Ratio (Kz/Kr): 1.

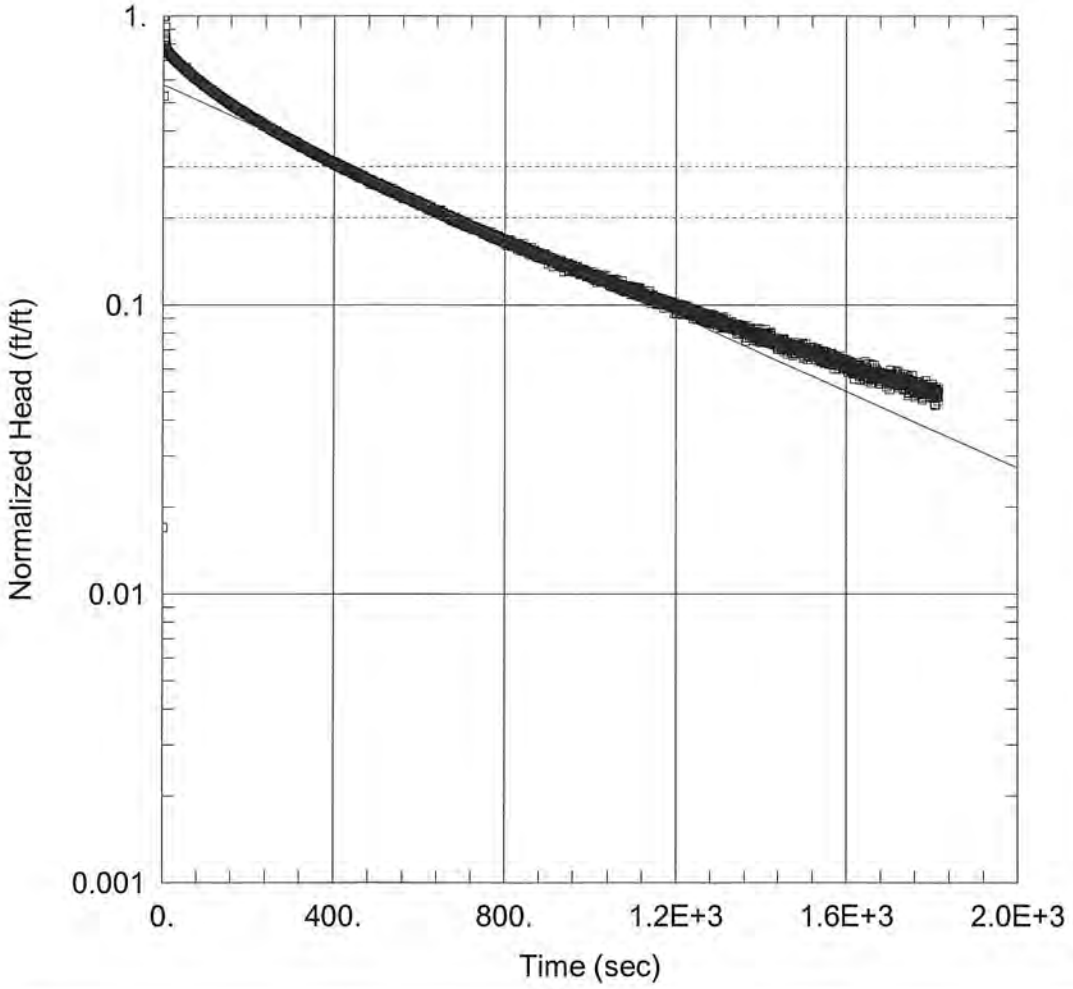
WELL DATA (MW-16 Rising)

Initial Displacement: 1.075 ft
Total Well Penetration Depth: 15.85 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 16.36 ft
Screen Length: 10. ft
Well Radius: 0.276 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.717E-6 ft/sec y0 = 0.8 ft



MW-16 FALLING

Data Set: C:\Users\Bert.Smith\Documents\WFEC MW-16 Falling.aqt
Date: 09/16/20 Time: 10:55:29

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: MW-16
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 16.36 ft Anisotropy Ratio (Kz/Kr): 1.

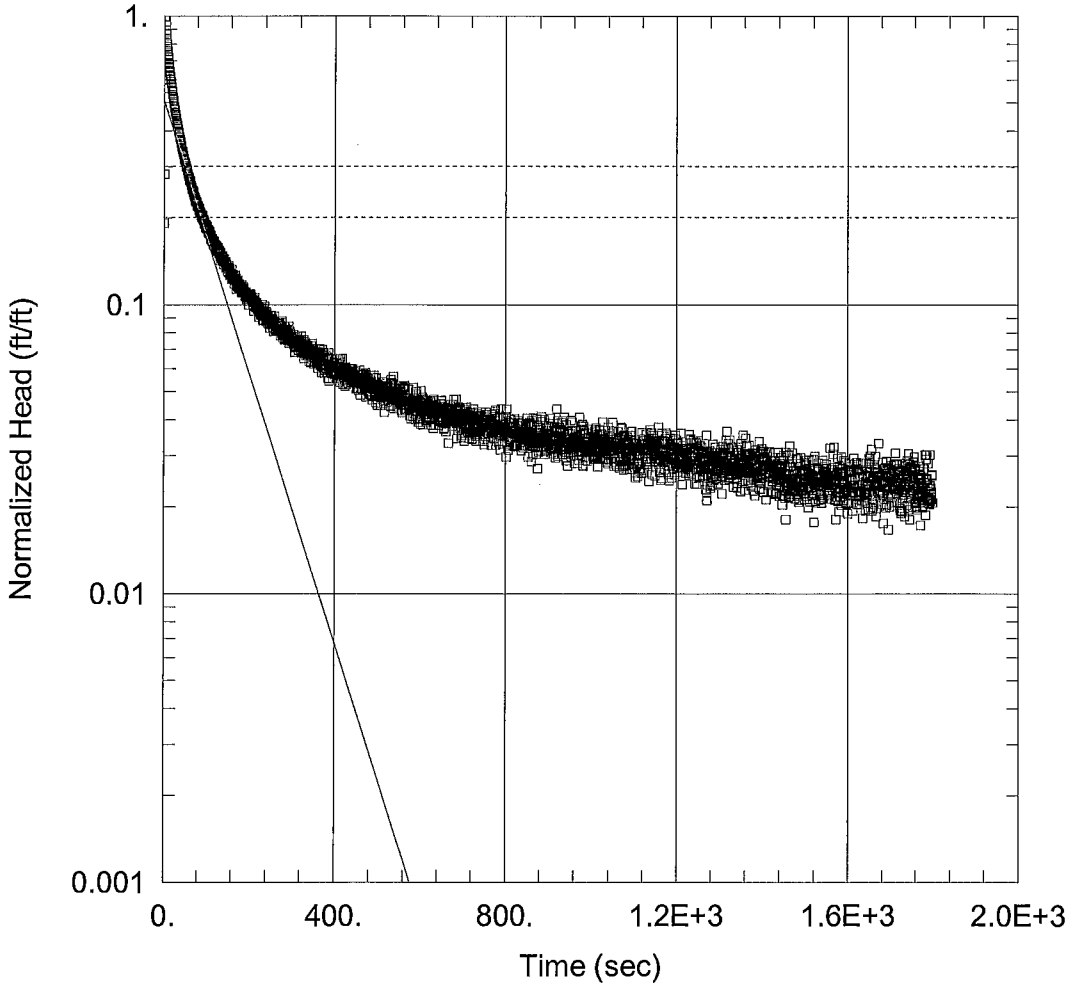
WELL DATA (MW-16 Falling)

Initial Displacement: 1.522 ft
Total Well Penetration Depth: 15.85 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 16.36 ft
Screen Length: 10. ft
Well Radius: 0.276 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.413E-6 ft/sec y0 = 0.8787 ft



MW-18 RISING

Data Set: C:\Users\Bert.Smith\Documents\MW-18 Rising.aqt
Date: 09/16/20 Time: 08:58:23

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: MW-18
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 12.84 ft Anisotropy Ratio (Kz/Kr): 1.

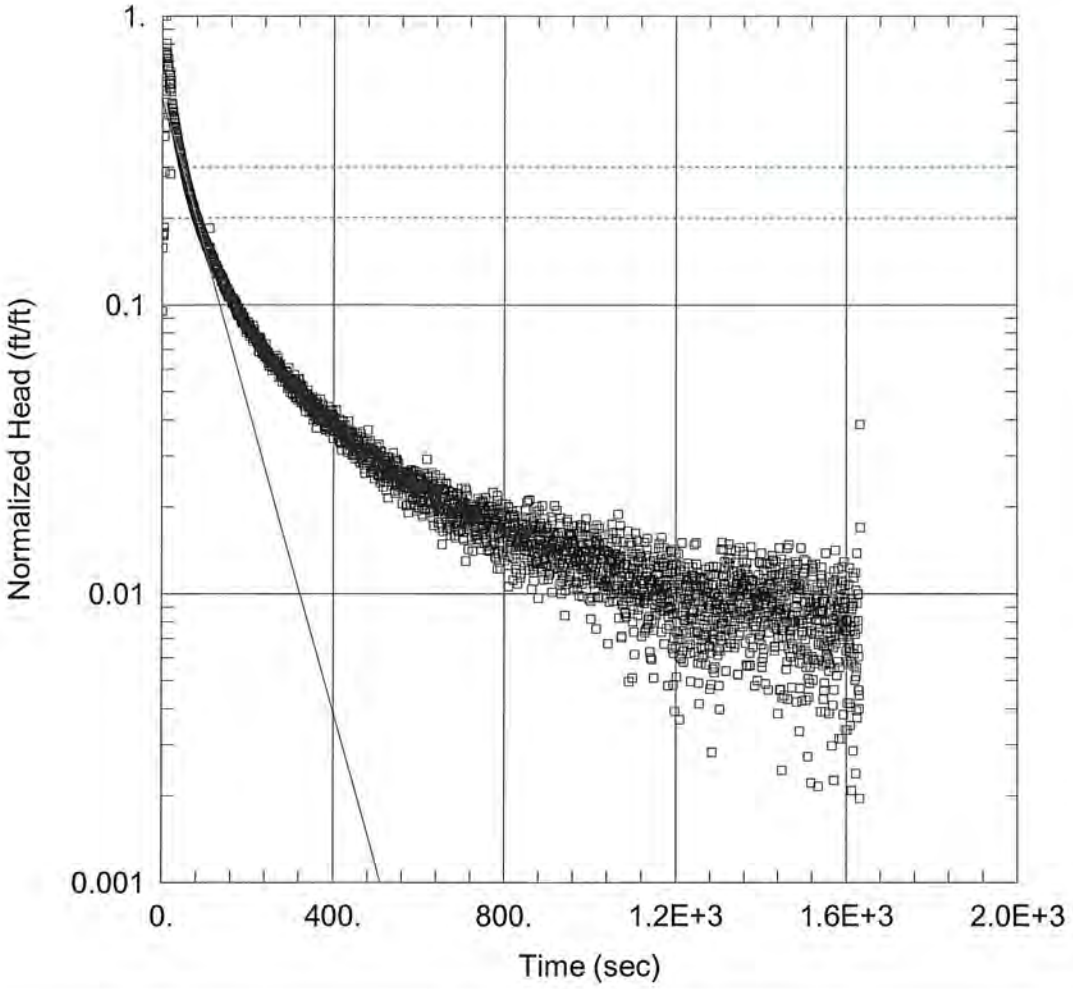
WELL DATA (MW-18 Rising)

Initial Displacement: 1.294 ft
Total Well Penetration Depth: 12.66 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 12.84 ft
Screen Length: 10. ft
Well Radius: 0.276 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 9.901E-6 ft/sec y0 = 0.6642 ft



MW-18 FALLING

Data Set: C:\Users\Bert.Smith\Documents\WFEC MW-18 Falling.aqt
Date: 09/16/20 Time: 10:34:52

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: MW-18
Test Date: 8/2020

AQUIFER DATA

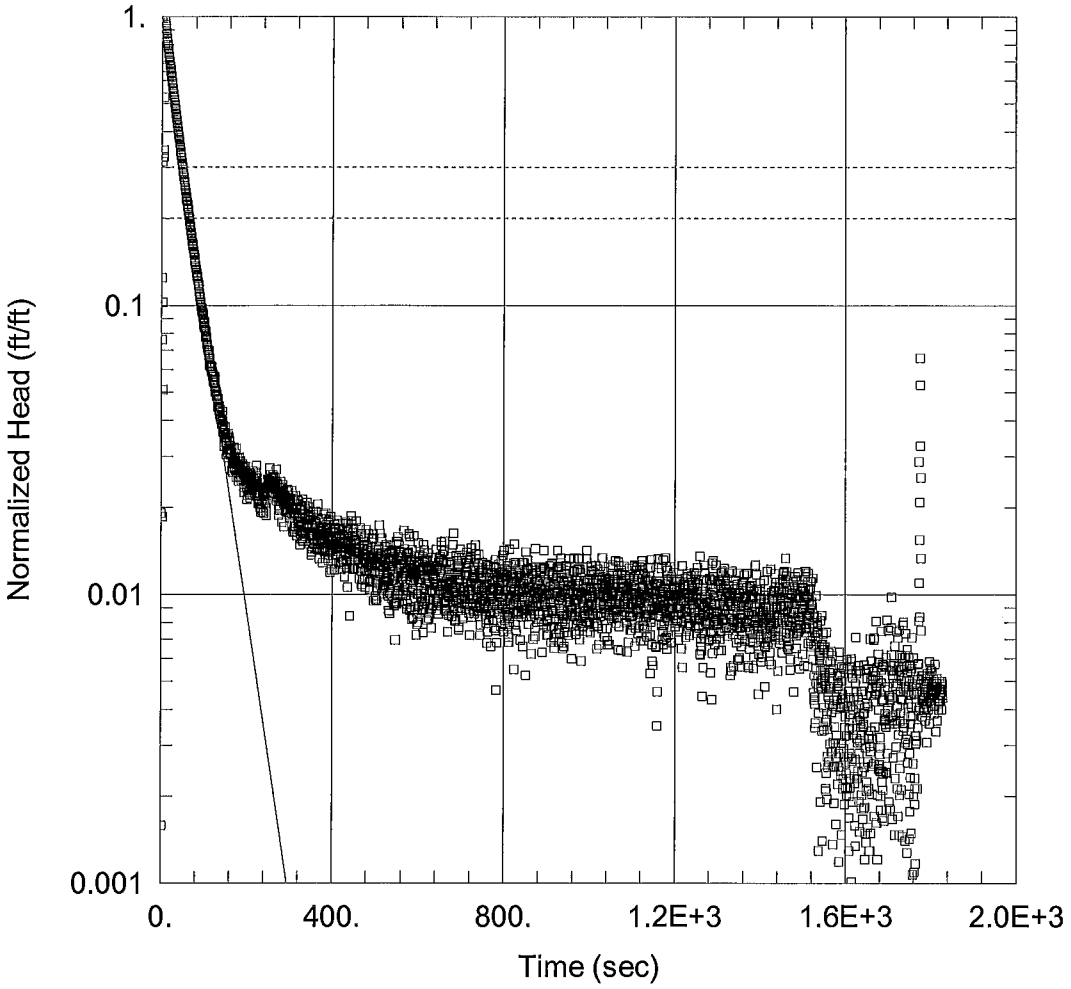
Saturated Thickness: 12.84 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-18 Falling)

Initial Displacement: 1.356 ft
Total Well Penetration Depth: 12.66 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 12.84 ft
Screen Length: 10. ft
Well Radius: 0.276 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.122E-5 ft/sec
y0 = 0.7091 ft



MW-19S RISING

Data Set: C:\Users\Bert.Smith\Documents\WFEC MW-19S Rising.aqt
Date: 09/16/20 Time: 09:25:11

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: MW-19S
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 13.7 ft Anisotropy Ratio (Kz/Kr): 1.

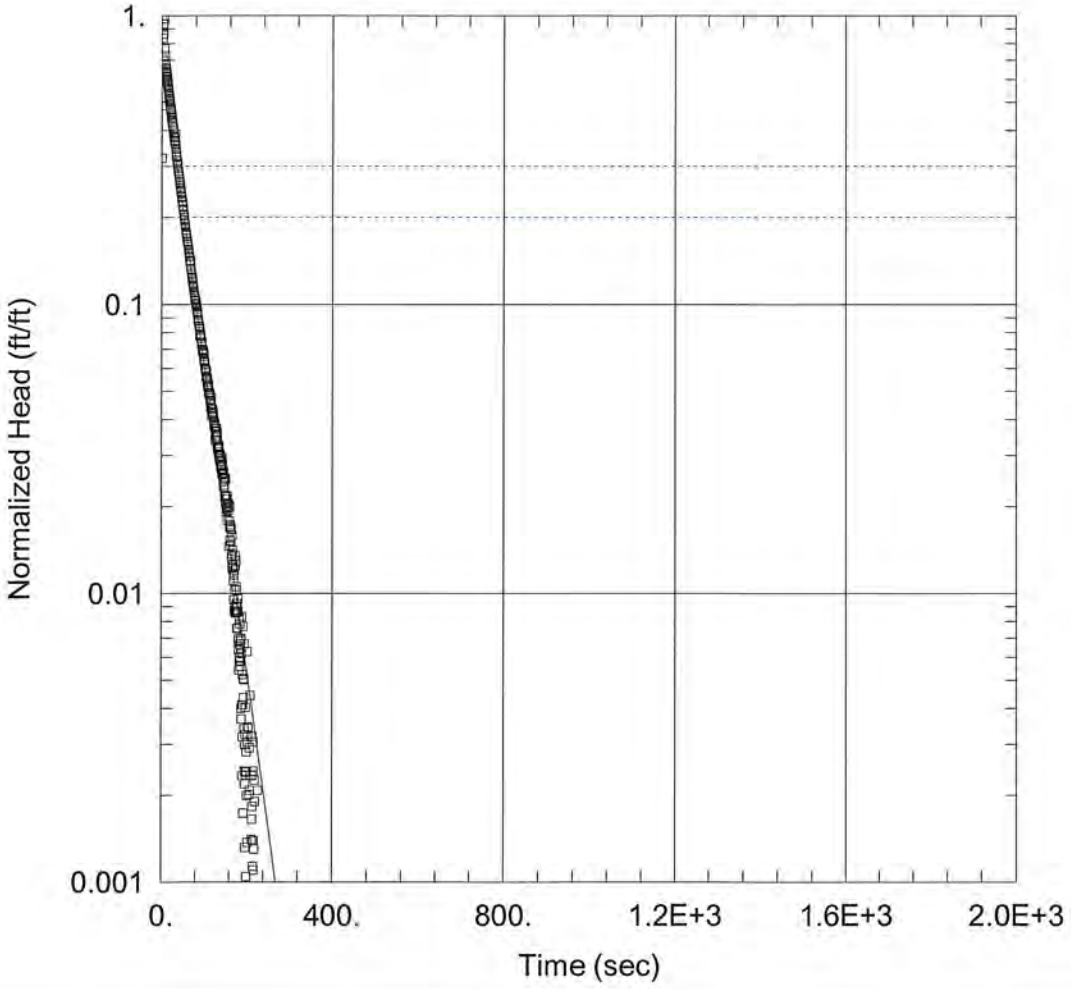
WELL DATA (MW-19S Rising)

Initial Displacement: 1.529 ft
Total Well Penetration Depth: 13.26 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 13.7 ft
Screen Length: 10. ft
Well Radius: 0.276 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.05E-5 ft/sec y0 = 1.273 ft



MW-19S FALLING

Data Set: C:\Users\Bert.Smith\Documents\WFEC MW-19S Falling.aqt
Date: 09/16/20 Time: 10:43:04

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: MW-19S
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 13.7 ft Anisotropy Ratio (Kz/Kr): 1.

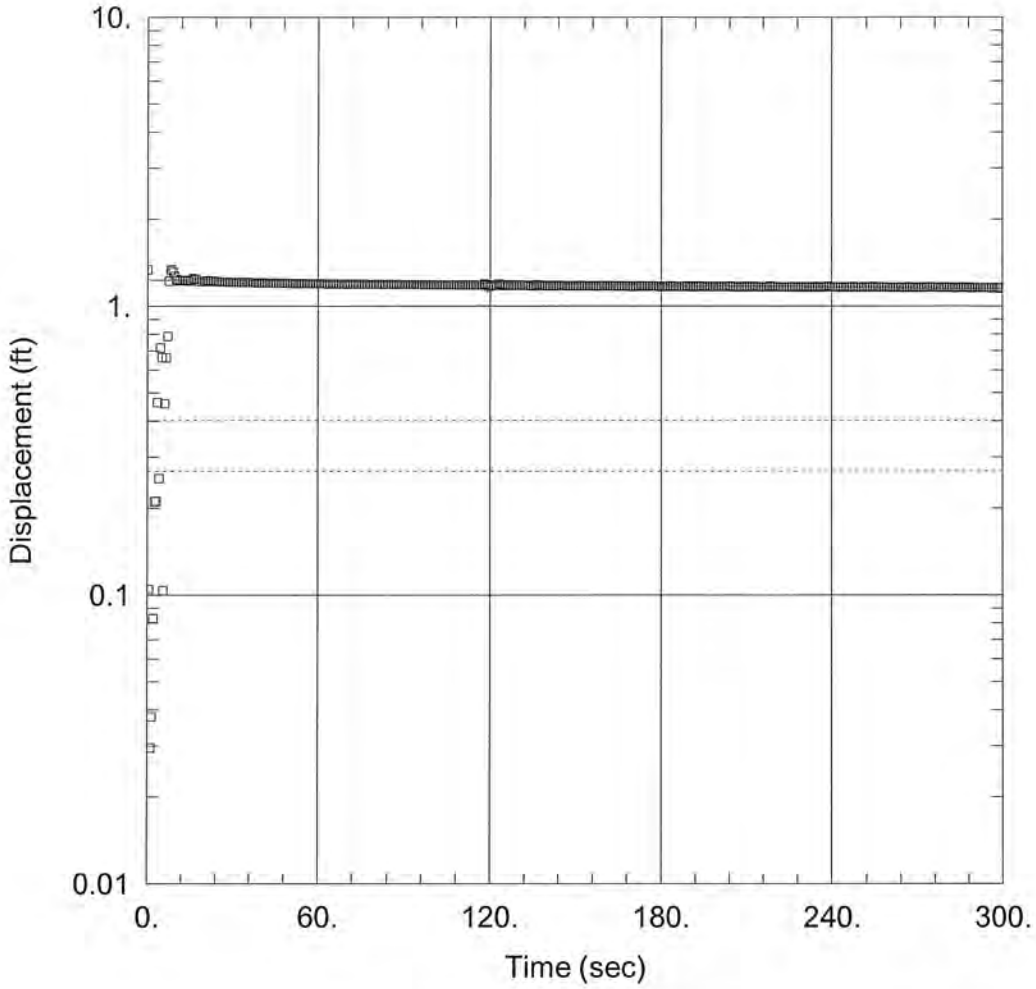
WELL DATA (MW-19S Falling)

Initial Displacement: 1.82 ft
Total Well Penetration Depth: 13.26 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 13.7 ft
Screen Length: 10. ft
Well Radius: 0.276 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.172E-5 ft/sec y0 = 1.254 ft



WELL TEST ANALYSIS

Data Set: C:\Users\Bert.Smith\Documents\MW26R.aqt
Date: 03/12/20 Time: 13:27:37

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Project: WFEC
Location: Hugo
Test Well: MW26-R
Test Date: March 2020

AQUIFER DATA

Saturated Thickness: 7.76 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-26R)

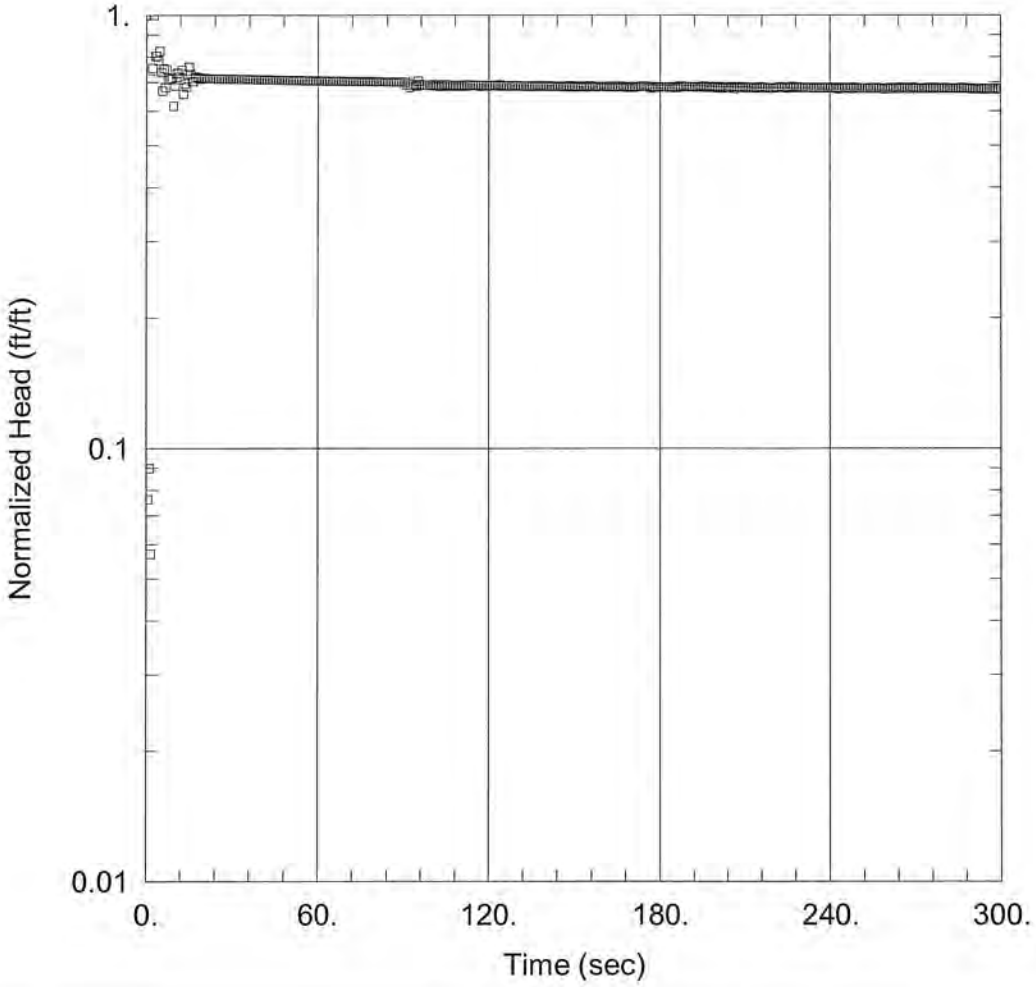
Initial Displacement: 1.336 ft
Total Well Penetration Depth: 10.79 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 7.76 ft
Screen Length: 10. ft
Well Radius: 0.276 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 2.943E-7 ft/sec
y0 = 1.228 ft

K = 8.96 x 10-6 cm/sec



WELL TEST ANALYSIS

Data Set:
Date: 03/11/20 Time: 13:04:33

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Project: WFEC
Location: Hugo
Test Well: MW26-F
Test Date: March 2020

AQUIFER DATA

Saturated Thickness: 7.76 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-26F)

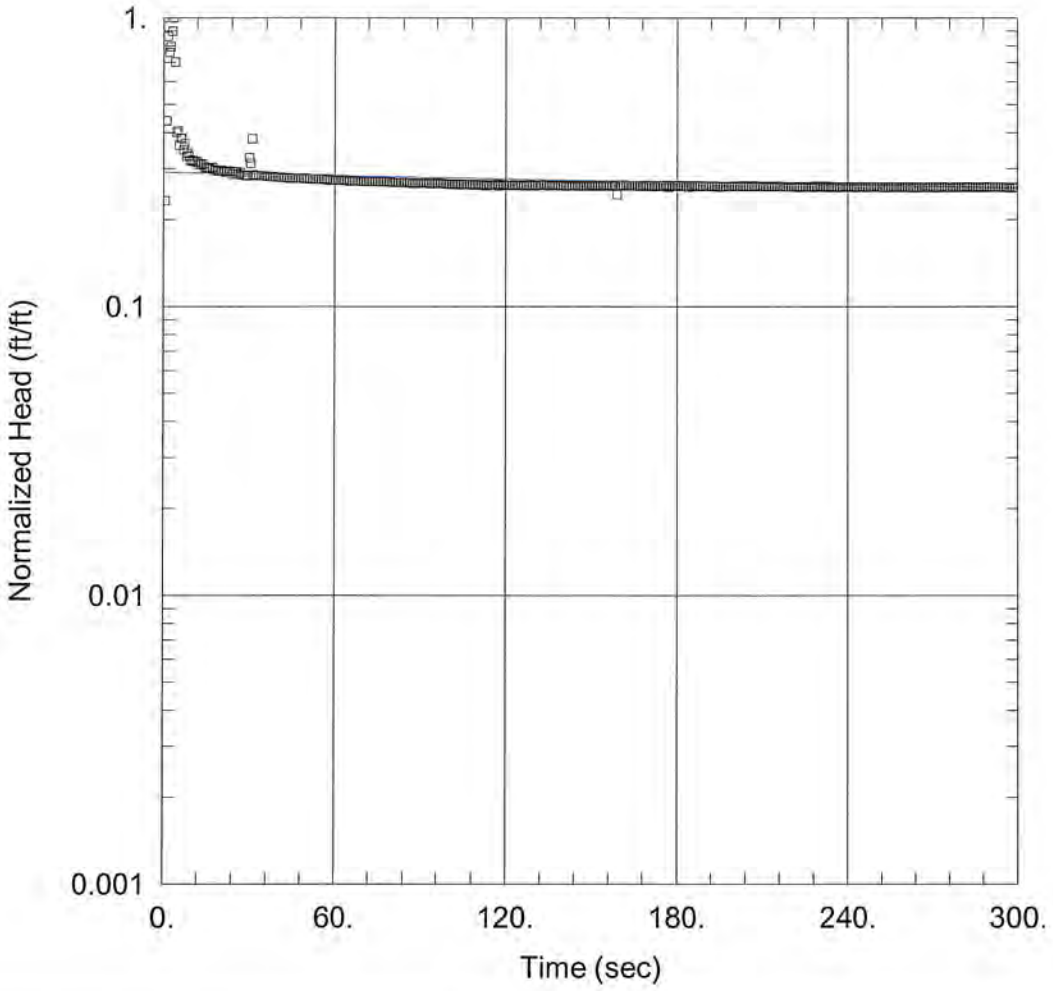
Initial Displacement: 1.65 ft
Total Well Penetration Depth: 10.79 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 7.76 ft
Screen Length: 10. ft
Well Radius: 0.276 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.988E-7 ft/sec
= 1.21 x10^{-5} cm/sec

y0 = 1.202 ft



WELL TEST ANALYSIS

Data Set:
Date: 03/11/20 Time: 11:44:35

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Project: WFEC
Location: Hugo
Test Well: FO1R
Test Date: March 2020

AQUIFER DATA

Saturated Thickness: 37.82 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (FO1R)

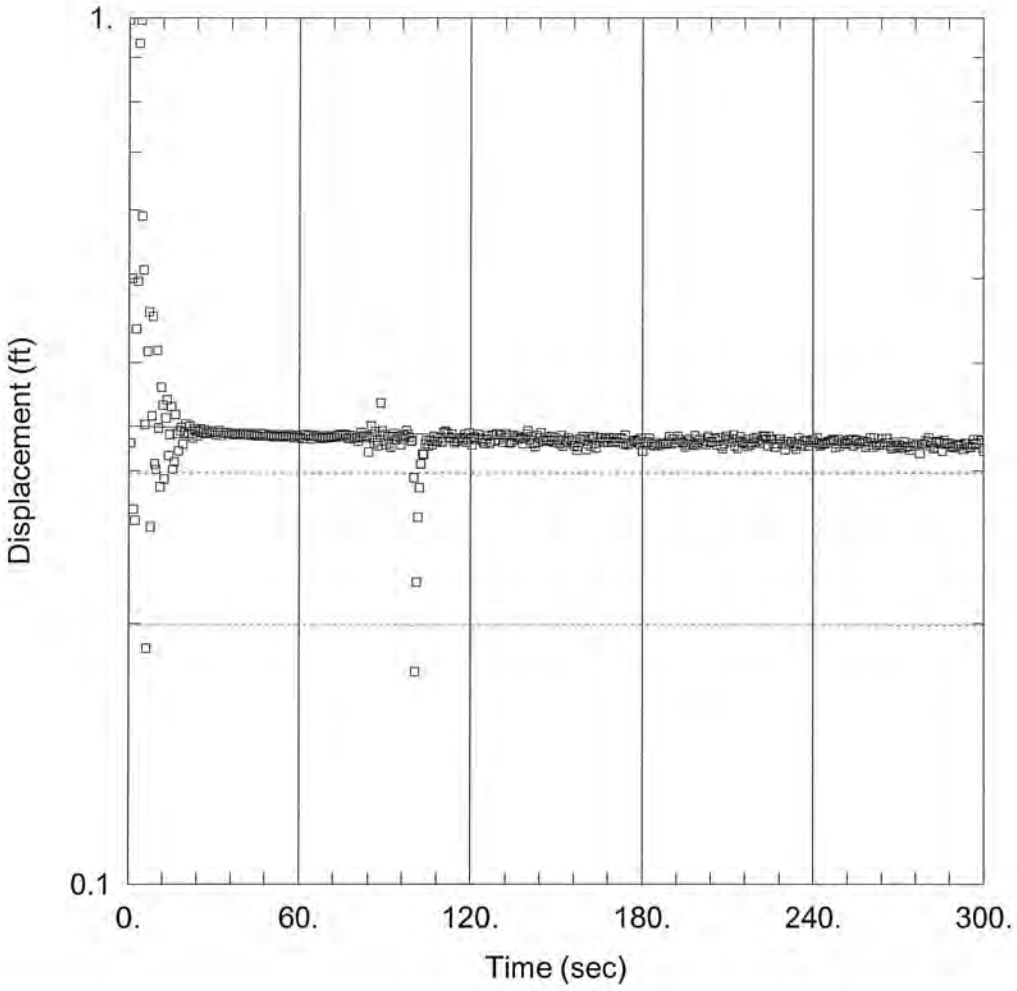
Initial Displacement: 1.124 ft
Total Well Penetration Depth: 45. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 37.82 ft
Screen Length: 45. ft
Well Radius: 0.276 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.462E-7 ft/sec
4.45E-6 cm/sec

y0 = 0.3264 ft



WELL TEST ANALYSIS

Data Set:
Date: 03/11/20 Time: 12:15:08

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Project: WFEC
Location: Hugo
Test Well: FO1-F
Test Date: March 2020

AQUIFER DATA

Saturated Thickness: 37.82 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (FO1F)

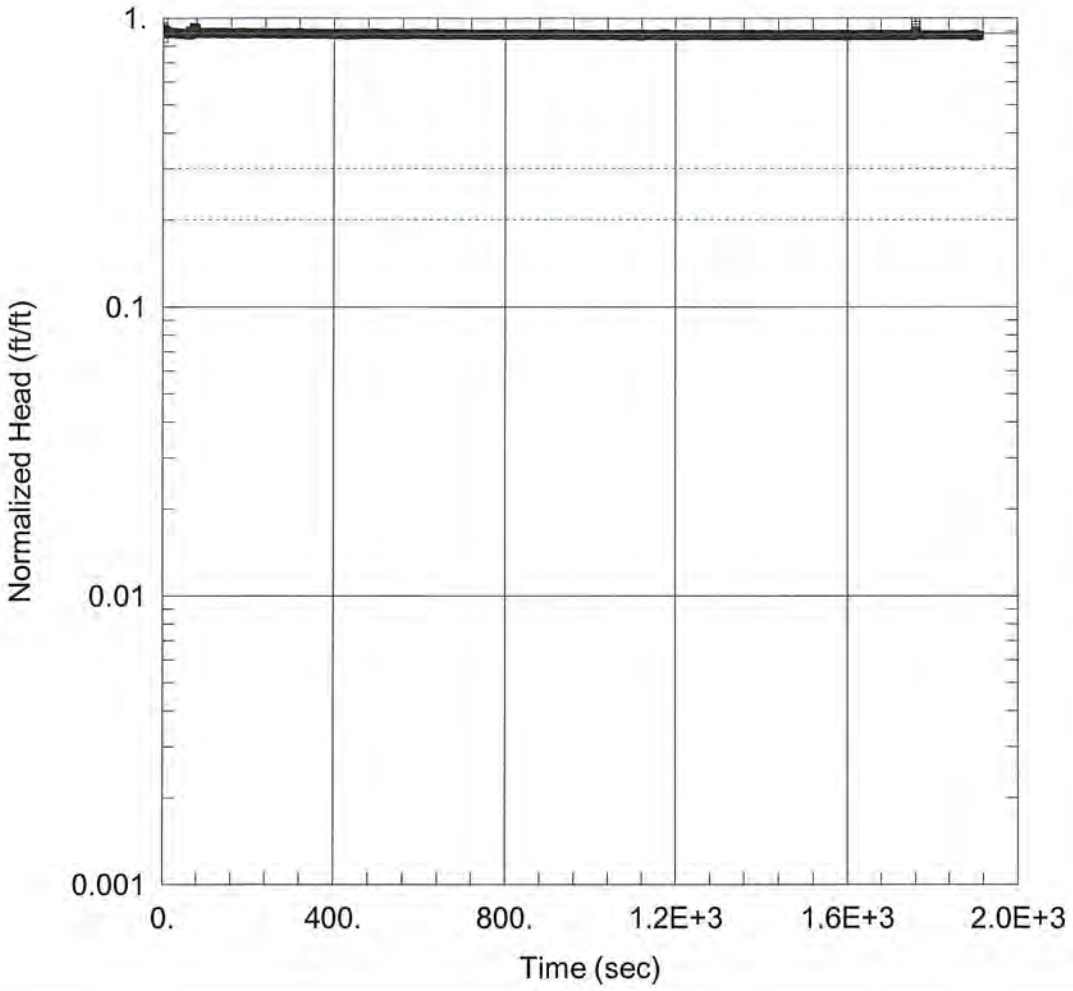
Initial Displacement: 0.9936 ft
Total Well Penetration Depth: 45. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 37.82 ft
Screen Length: 45. ft
Well Radius: 0.276 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 6.992E-8 ft/sec y0 = 0.3374 ft

2.10×10^{-6} cm/sec



CM-1A RISING

Data Set: C:\Users\Bert.Smith\Documents\CM-1A Rising.aqt
Date: 09/16/20 Time: 09:33:25

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: CM-1A
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 14.73 ft Anisotropy Ratio (Kz/Kr): 1.

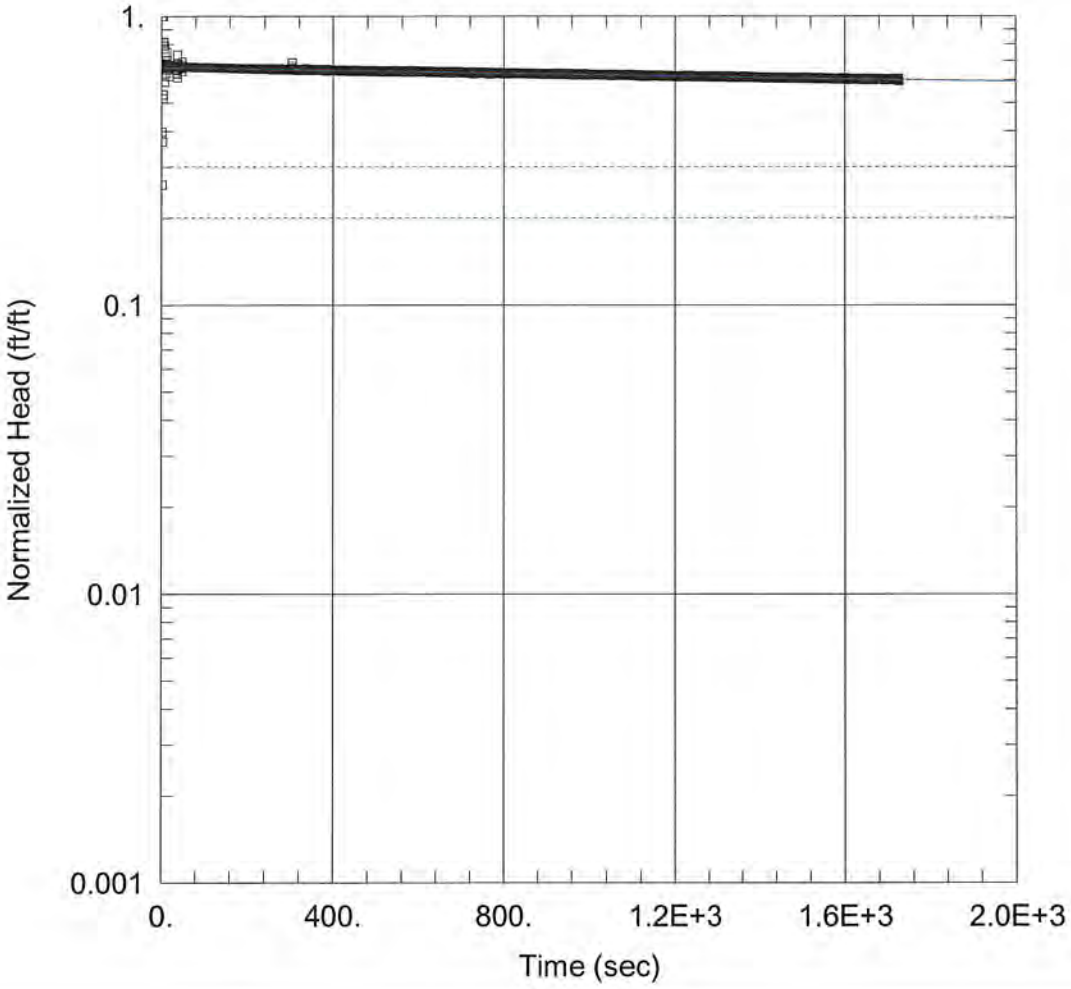
WELL DATA (CM-1A Rising)

Initial Displacement: 1.279 ft
Total Well Penetration Depth: 14.68 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 14.73 ft
Screen Length: 10. ft
Well Radius: 0.26 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.895E-9 ft/sec y0 = 1.132 ft



CM-1A FALLING

Data Set: C:\Users\Bert.Smith\Documents\WFEC CM-1A Falling.aqt
Date: 09/16/20 Time: 10:47:24

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: CM-1A
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 14.73 ft Anisotropy Ratio (Kz/Kr): 1.

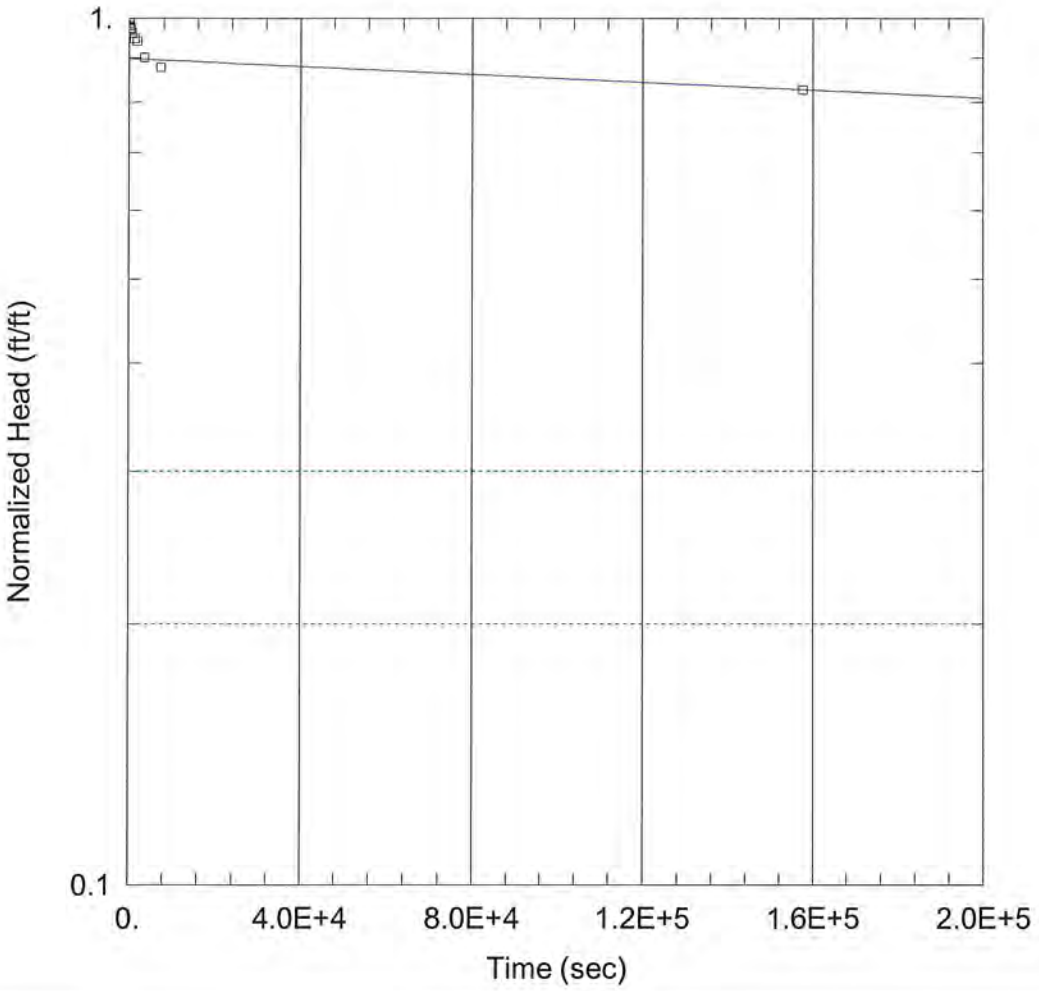
WELL DATA (CM-1A Falling)

Initial Displacement: 1.675 ft
Total Well Penetration Depth: 14.68 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 14.73 ft
Screen Length: 10. ft
Well Radius: 0.26 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 5.774E-8 ft/sec y0 = 1.113 ft



CM-1B RISING (B)

Data Set: C:\Users\Bert.Smith\Documents\CM-1B Rising (B).aqt
Date: 09/16/20 Time: 11:30:38

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: CM-1B (B)
Test Date: 8/2020

AQUIFER DATA

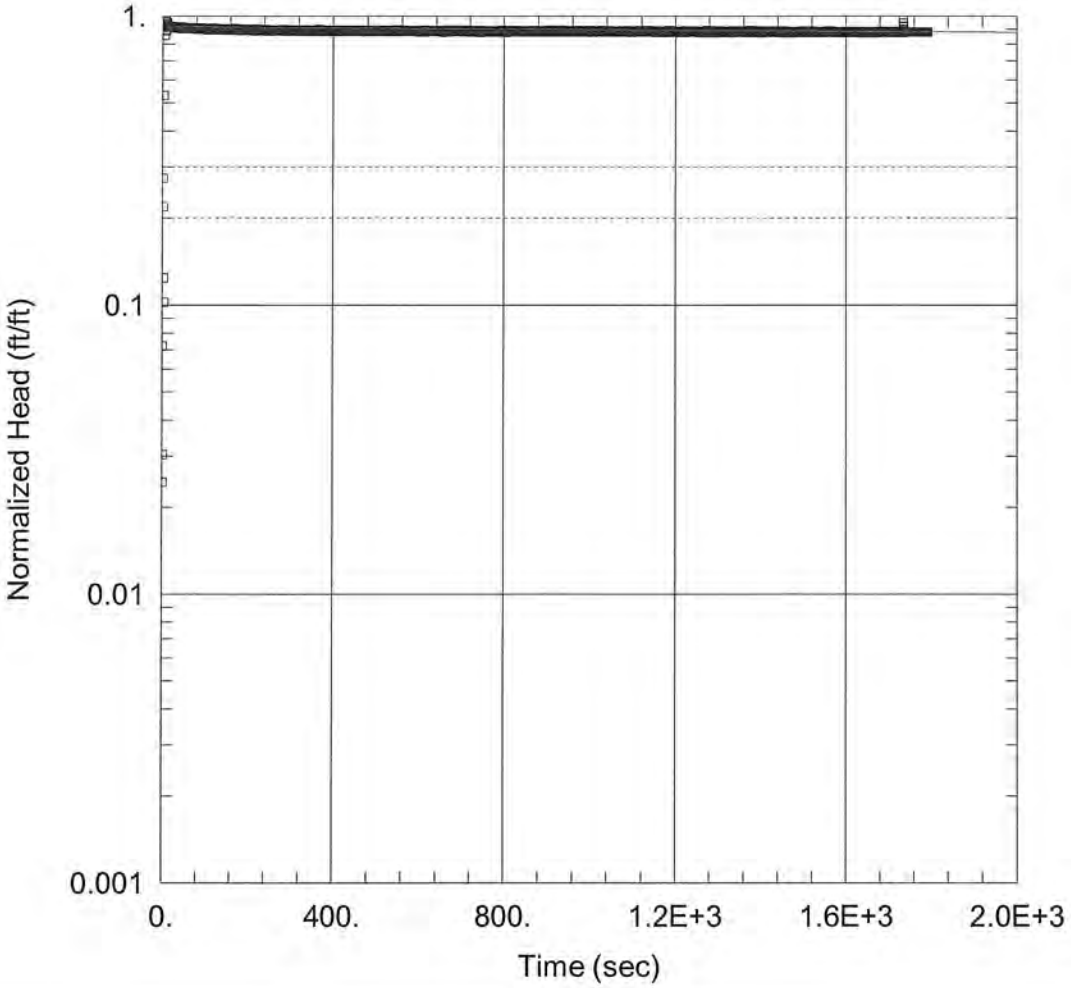
Saturated Thickness: 6.66 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (CM-1B (B))

Initial Displacement: 6.45 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 6.66 ft
Screen Length: 10. ft
Well Radius: 0.26 ft
Gravel Pack Porosity: 0.25

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.333E-9 ft/sec
y0 = 5.791 ft



CM-2 RISING

Data Set: C:\Users\Bert.Smith\Documents\WFEC CM-2 Rising.aqt
Date: 09/16/20 Time: 09:44:56

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: CM-2
Test Date: 8/2020

AQUIFER DATA

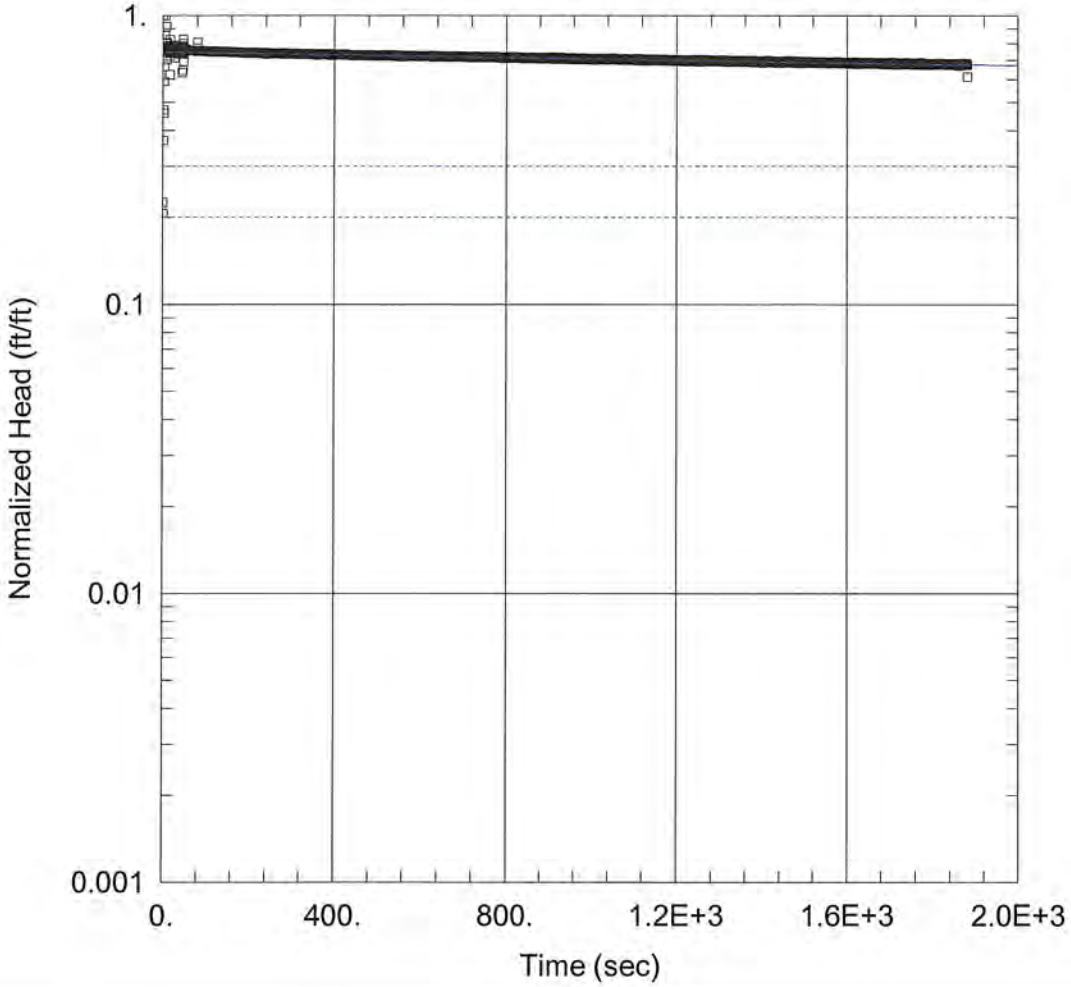
Saturated Thickness: 14. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (CM-2 Rising)

Initial Displacement: 1.244 ft
Total Well Penetration Depth: 13.9 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 14. ft
Screen Length: 10. ft
Well Radius: 0.26 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.293E-8 ft/sec
y0 = 1.144 ft



CM-2 FALLING

Data Set: C:\Users\Bert.Smith\Documents\WFEC CM-2 Falling.aqt
Date: 09/16/20 Time: 10:50:43

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: CM-2
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 14. ft Anisotropy Ratio (Kz/Kr): 1.

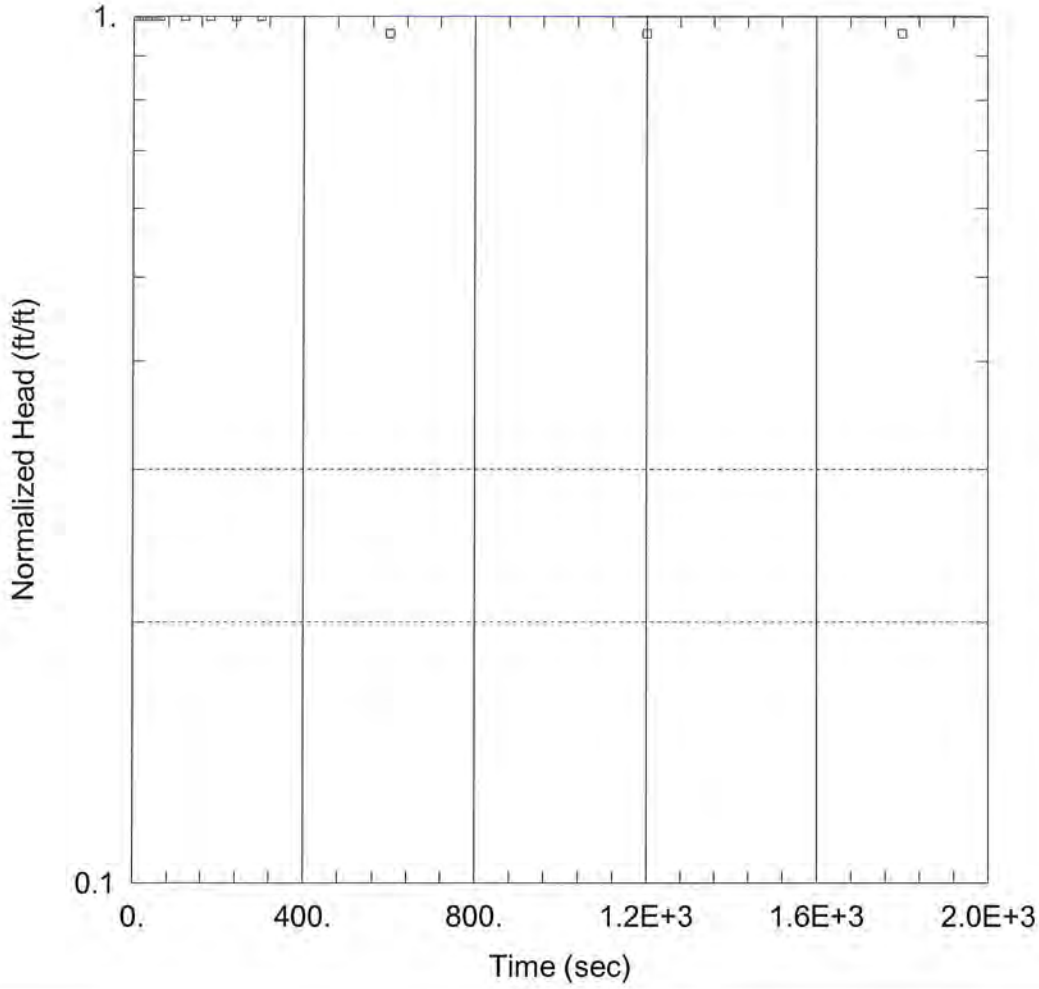
WELL DATA (CM-2 Falling)

Initial Displacement: 1.438 ft
Total Well Penetration Depth: 13.9 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 14. ft
Screen Length: 10. ft
Well Radius: 0.26 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 5.271E-8 ft/sec y0 = 1.074 ft



CM-3A RISING (B)

Data Set: C:\Users\Bert.Smith\Documents\WFEC CM-3A Rising (B).aqt
Date: 09/16/20 Time: 12:02:10

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: CM-3A(B)
Test Date: 8/2020

AQUIFER DATA

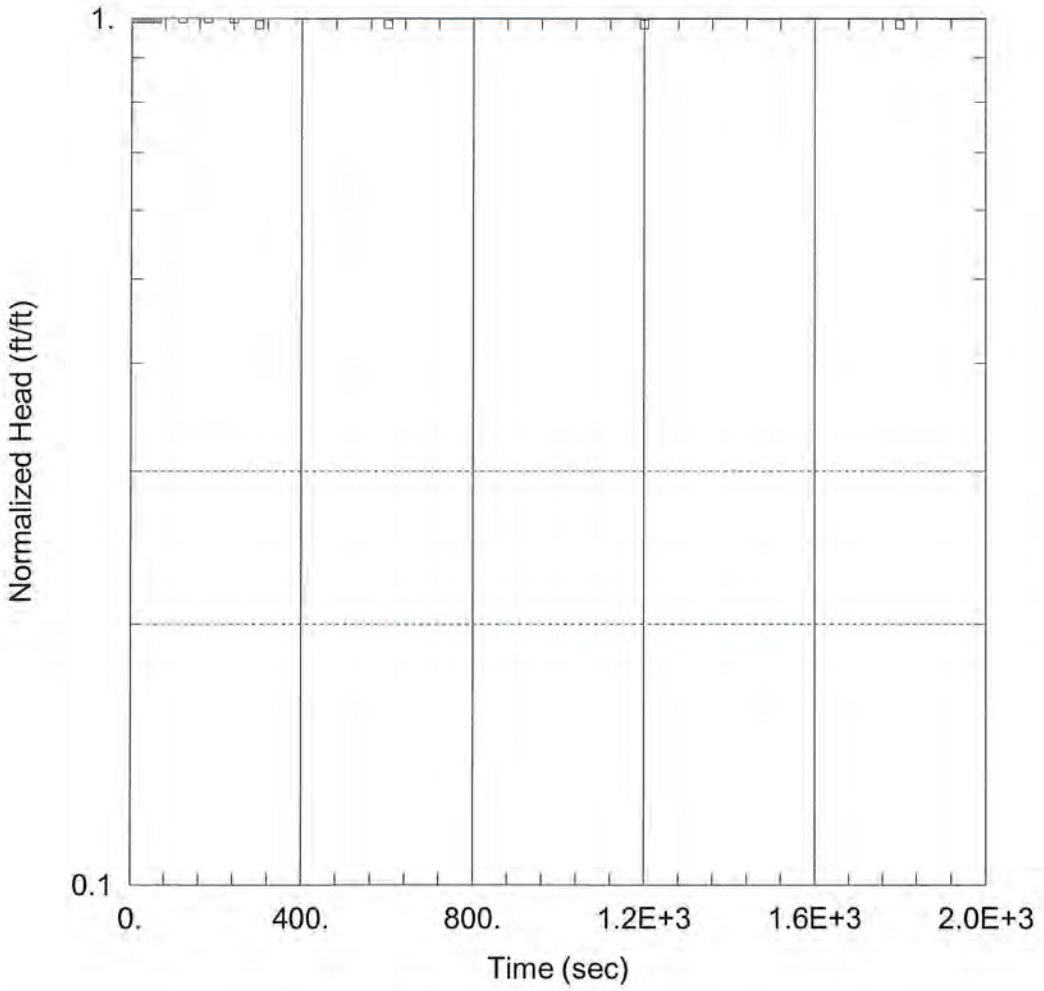
Saturated Thickness: 0.22 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (CM-3A Rising (B))

Initial Displacement: 0.22 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 0.22 ft
Screen Length: 10. ft
Well Radius: 0.26 ft
Gravel Pack Porosity: 0.25

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.006E-7 ft/sec
y0 = 0.2202 ft



CM-3B RISING (B)

Data Set: C:\Users\Bert.Smith\Documents\CM-3B Rising (B).aqt
Date: 09/16/20 Time: 12:02:34

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: CM-3B(B)
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 0.62 ft Anisotropy Ratio (Kz/Kr): 1.

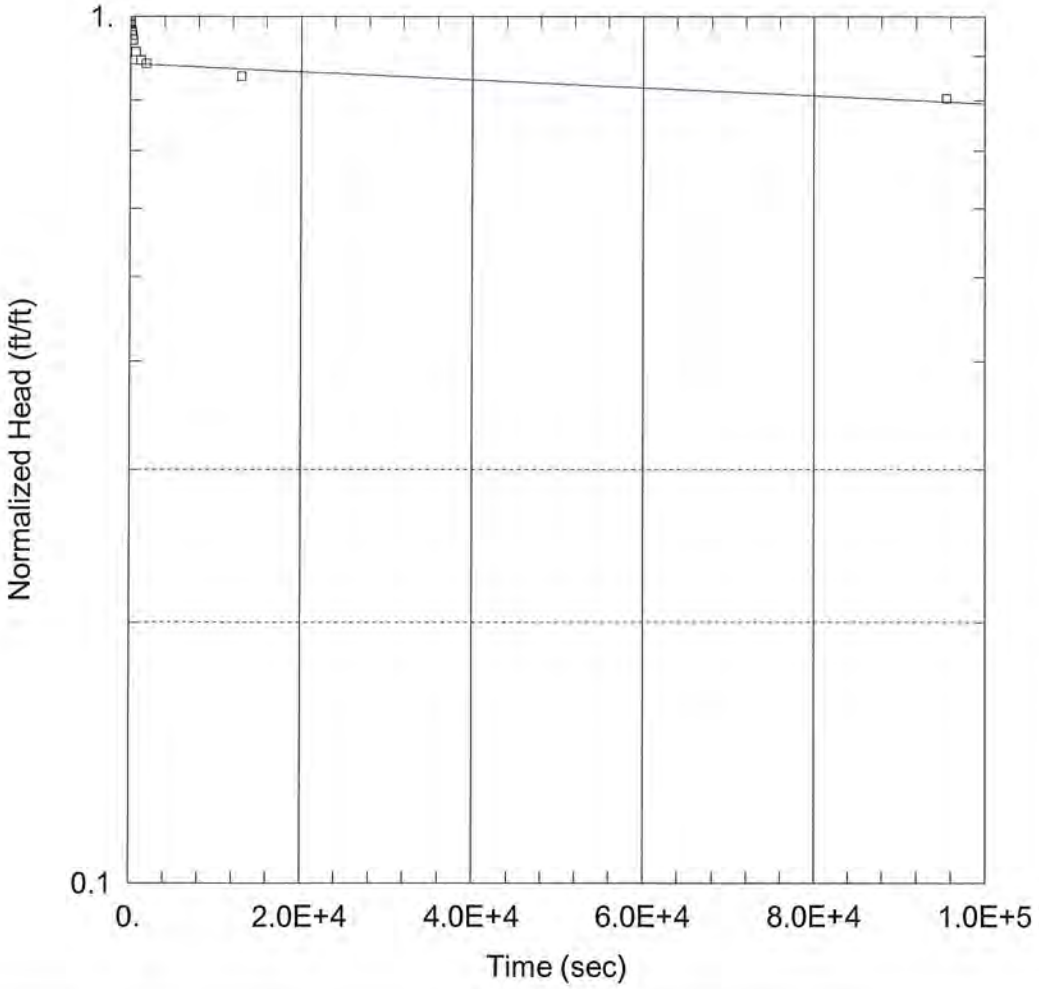
WELL DATA (CM-3B Rising (B))

Initial Displacement: 0.62 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 0.62 ft
Screen Length: 10. ft
Well Radius: 0.26 ft
Gravel Pack Porosity: 0.25

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.589E-8 ft/sec y0 = 0.6197 ft



CM-4A RISING (B)

Data Set: C:\Users\Bert.Smith\Documents\WFEC CM-4A Rising (B).aqt
Date: 09/16/20 Time: 12:01:27

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: CM-4A (B)
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 2.58 ft Anisotropy Ratio (Kz/Kr): 1.

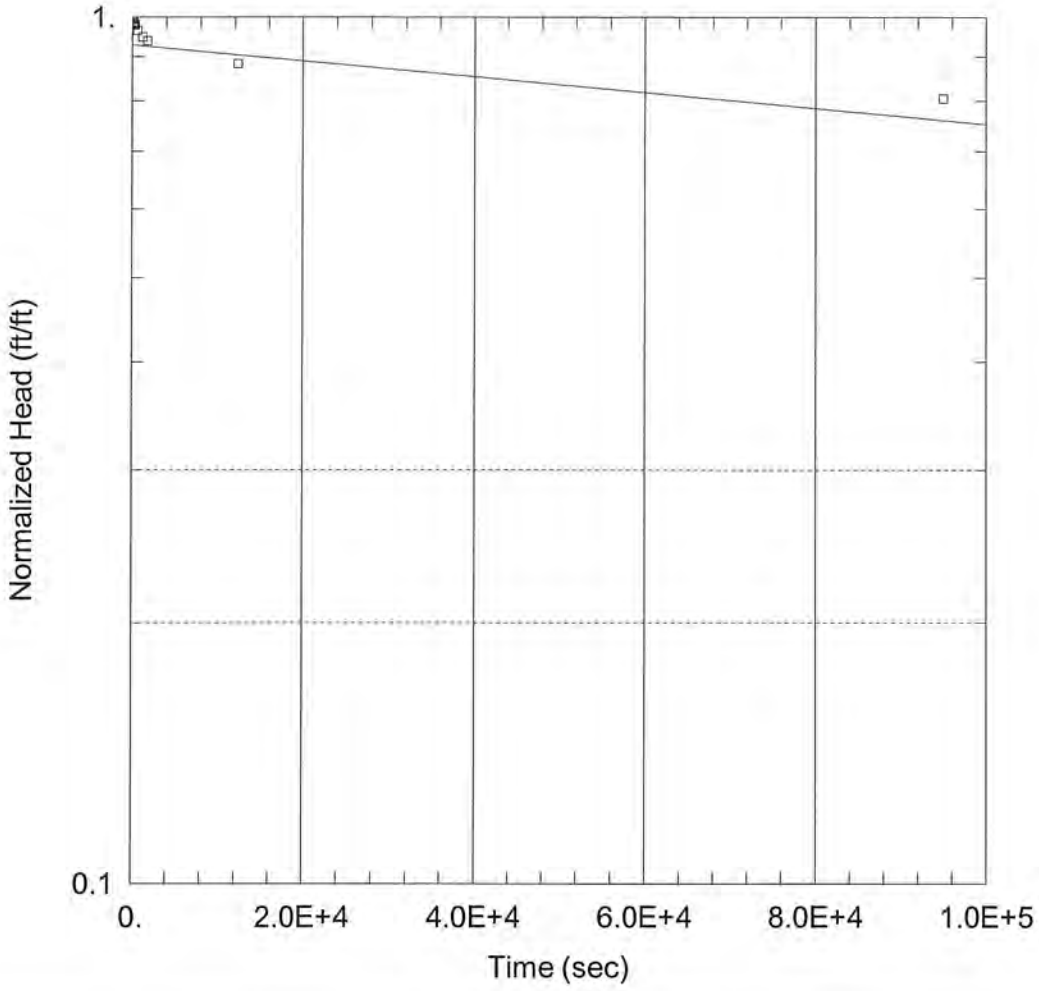
WELL DATA (CM-4A Rising (B))

Initial Displacement: 2.45 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 2.58 ft
Screen Length: 10. ft
Well Radius: 0.26 ft
Gravel Pack Porosity: 0.25

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.029E-8 ft/sec y0 = 2.159 ft



CM-4B RISING (B)

Data Set: C:\Users\Bert.Smith\Documents\WFEC CM-4B Rising (B).aqt
Date: 09/16/20 Time: 12:01:08

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: CM-4B (B)
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 4.59 ft Anisotropy Ratio (Kz/Kr): 1.

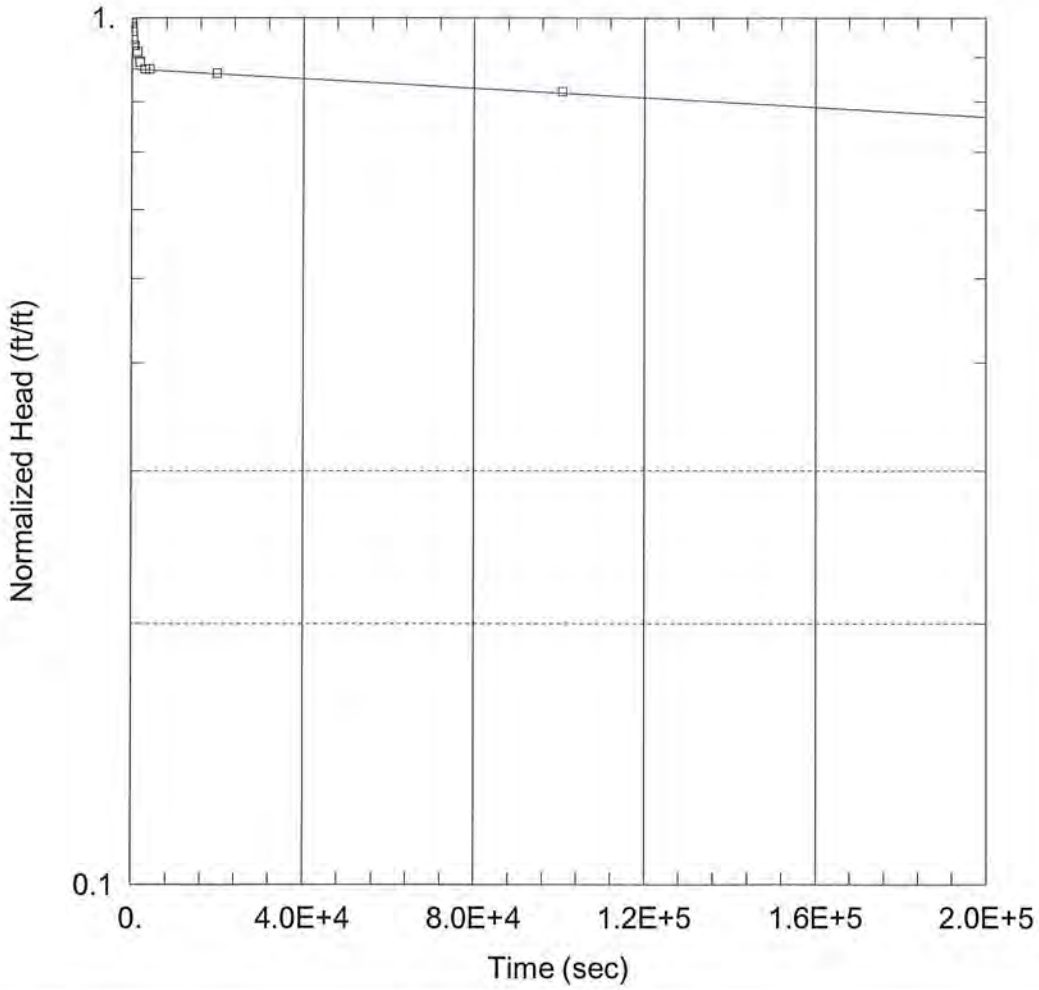
WELL DATA (CM-4B Rising (B))

Initial Displacement: 4.21 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 4.59 ft
Screen Length: 10. ft
Well Radius: 0.26 ft
Gravel Pack Porosity: 0.25

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.297E-8 ft/sec y0 = 3.907 ft



CM-5A RISING (B)

Data Set: C:\Users\Bert.Smith\Documents\WFEC CM-5A Rising (B).aqt
Date: 09/16/20 Time: 11:15:41

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: CM-5A (B)
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 2.11 ft Anisotropy Ratio (Kz/Kr): 1.

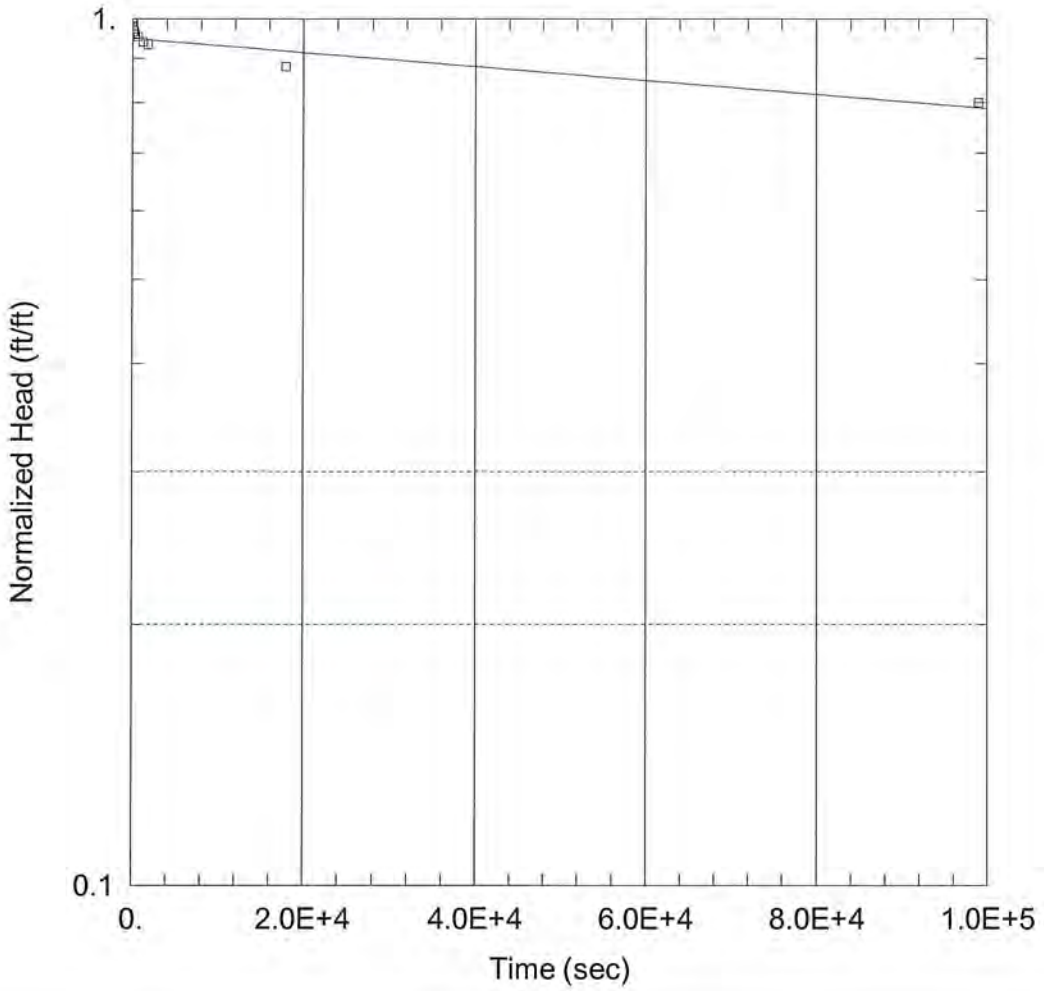
WELL DATA (CM-5A (B))

Initial Displacement: 1.97 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 2.11 ft
Screen Length: 10. ft
Well Radius: 0.26 ft
Gravel Pack Porosity: 0.25

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 7.494E-9 ft/sec y0 = 1.719 ft



CM-5B RISING (B)

Data Set: C:\Users\Bert.Smith\Documents\WFEC CM-5B Rising (B).aqt
Date: 09/16/20 Time: 11:21:44

PROJECT INFORMATION

Company: Altamira
Client: WFEC
Location: Hugo, OK
Test Well: CM-5B (B)
Test Date: 8/2020

AQUIFER DATA

Saturated Thickness: 1.76 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (CM-5B Rising (B))

Initial Displacement: 1.5 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.76 ft
Screen Length: 10. ft
Well Radius: 0.26 ft
Gravel Pack Porosity: 0.25

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.5E-8 ft/sec
y0 = 1.422 ft

APPENDIX I

CONCEPTUAL SITE MODEL

CONCEPTUAL SITE MODEL

This Conceptual Site Model (CSM) is developed for the HPS using data available from site characterization activities completed to date associated with groundwater monitoring and permitting requirements of Oklahoma Administrative Code Chapter 517, Disposal of Coal Combustion Residuals from Electric Utilities (OAC 252:517). The CSM is used to identify exposure pathways which are reasonably expected to be complete at the present time and into the foreseeable future. This CSM is updated as additional data and site information become available. This version of the CSM was most recently updated in September 2020.

LOCATION

The HPS is located between Sawyer, Oklahoma (approximately 2.5 miles to the west) and Fort Towson, Oklahoma (approximately 3 miles to the east) on US Highway 70 which forms the northern property boundary. The Red River is located approximately 7.5 miles south of the HSP.

LAND USE

The HPS is an industrial facility used for coal-fired electrical power generation and storage of coal, coal ash and other related materials. Approximately 1,200 acres of the property has been developed for electric generation use. The remainder of the property is undeveloped as is most of the area surrounding the facility. The area immediately surrounding the HPS is generally unoccupied rangeland. The nearest downgradient residents are located to the east on Oklahoma Highway 109, approximately 1.9 miles from the facility. The HPS is located within US Census Tract 9669 which covers the eastern one-third of Choctaw County. The Tract has a 2017 population estimate of 14,668 persons with approximately 1,369 housing units.

GEOLOGIC AND HYDROGEOLOGIC SETTING

A subsurface geologic investigation was previously completed at the HPS and included extensive literature review and installation of several soil borings/monitoring wells. Findings of this investigation were reported in the Groundwater Monitoring Program for the Hugo Power Station CCR Units (Burns & McDonnell, March 2016 and Revised January 2018). From this investigation, "surface" geology at the HPS includes sedimentary rocks of the Caddo and Kiamichi Formations. Where present, the Caddo Formation of the Washita Group is comprised of white to cream, fossiliferous silty limestones alternating with gray shales. The Caddo Formation is identified by a 7-foot bed at top (Fort Worth Limestone member), blue-gray silty shales, and limestones below with bivalve fossils present (Duck Creek Limestone member). The Caddo Formation is underlain by the Kiamichi Formation of the Fredericksburg Group. The Kiamichi Formation is composed of dark gray to black shale, with some brown fossiliferous limestones containing closely packed bivalves with discontinuous beds and lenses of fossiliferous limestone. The thickness of the Kiamichi formation is 28 to 36 feet, and up to 80 feet in the subsurface of southern McCurtain County. The Caddo and Kiamichi Formations are underlain by the Goodland Limestone Formation, which ranges in thickness from approximately 25 to 55 feet, and then the Antlers Formation. In general, topography at the HPS slopes to the east and the near surface rocks of the Caddo Formation appear to thin eastward, apparently eliminated due to erosion.

Monitoring wells at the HPS are generally screened in the Caddo and/or Kiamichi Formations. All of the monitoring wells sampled as part of the monitoring program for the Landfill CCR Unit are completed within the Caddo Formation. Groundwater in the Caddo and Kiamichi Formations is of very limited quantity and is often found perched in these formations.

The HPS lies in a potential recharge area for the Antlers formation, which is a bedrock aquifer (Antlers Sandstone). From the Groundwater Monitoring Program for the Hugo Power Station CCR Units (Burns & McDonnell, March 2016 and Revised January 2018), "because the materials that compose the Antlers aquifer are generally fine grained, clayey, and locally cemented, the transmissivity and hydraulic conductivity values are relatively low. Withdrawals from the aquifer in southeastern Oklahoma are relatively small because of an abundance of available surface water. Wells screened within the Antlers aquifer commonly yield 10 to 50 gpm, but can yield as much as 400 gpm." From review of the Hydrologic Atlas 9, Reconnaissance of the Water Resources of the McAlester and Texarkana Quadrangles, Southeastern Oklahoma (Marcher, Melvin V. and Bergman, DeRoy L, U.S. Geological Survey, 1983), at the location of the HPS, the Antlers Sandstone is "overlain by a thick confining unit comprised of the low permeability rock of the Caddo and Kiamichi Formations" and that "with the exception of the Antlers Formation and Hollow Creek Formation, rocks in the area of Cretaceous age are generally fine grained and contain much silt and clay: consequently, they are unproductive of water in quantities greater than what is needed for household use." At the HPS, the Antlers Formation is encountered at an approximate depth of 186 feet below ground surface; or approximate elevation of 333 feet, above mean sea level (AMSL).

Shallow groundwater at the HPS generally flows in an easterly to southeasterly direction towards Bird Creek on the eastern boundary of the HPS. Bird Creek flows into the Kiamichi River which joins with the Red River approximately 5.5 miles south of the HSP. The area is part of the ODEQ-identified Watershed HU12.

GROUNDWATER MONITORING NETWORK (LANDFILL CCR UNIT)

The HPS is currently conducting Assessment Monitoring for its Landfill CCR Unit pursuant to Oklahoma Administrative Code (OAC) Chapter 517, Disposal of Coal Combustion Residuals from Electric Utilities (OAC 252:517). The groundwater monitoring system for the Landfill CCR Unit is comprised of two upgradient (background) monitoring wells (MW-13 and MW-14A) and ten downgradient compliance monitoring wells (MW-3, MW-5S, MW-7S, MW-15A, MW-16, MW-17, MW-18, MW-19S, MW-20 and MW-21). Nine additional monitoring wells were installed as part of corrective measures to further characterize molybdenum in groundwater at the Landfill CCR unit. These wells are designated as Corrective Measures (CM) Wells CM-1A, CM-1B, CM-2, CM-3A, CM-3B, CM-4A, CM-4B, CM-5A and CM-5B. All wells sampled to monitor the Landfill CCR Unit are completed in the Caddo Formation.

OTHER MONITORING WELLS

Other groundwater monitoring wells at the HPS that are not a part of the monitoring network for the Landfill CCR Unit, or otherwise associated with the Landfill CCR Unit, include monitoring wells associated with the Surface Impoundment CCR Unit which is in closure (MW-8, MW-9, MW-10, MW-11, MW-22A, MW-23A, MW-24 and MW-25R); and monitoring wells utilized for depth-to-groundwater measurement purposes and/or for monitoring prior to the CCR Monitoring Program or associated with Impoundments regulated by the Oklahoma Department of Environmental Quality Water Quality Division (MW-1, MW-4,

MW-5, MW-6, MW-7. MW-12, MW-14B, MW-15B, MW-19, MW-22B, MW-23B, MW-26, PZ-1, PZ-2, PZ-3, PZ-4, PZ-5, PZ-6, PZ-7, MW-FO1-1, MW-FO2-1, MW-FO2-2, MW-FO3-1, MW-FO6-1 and MW-FO6-2).

MOBLYBDENUM IN GROUNDWATER AT LANDFILL CCR UNIT

To characterize molybdenum at the Site, groundwater sampling was conducted between June and August 2020 at wells MW-3, MW-5S, MW-7S, MW-13, MW-14A, MW-15A, MW-15B, MW-16, MW-17, MW-18, MW-19S, MW-20, MW-21, MW-22A, MW-22B, CM-1A, CM-1B, CM-2, CM-3A, CM-3B, CM-4A, CM-4B, CM-5A and CM-5B. Of these, wells comprising the monitoring network for the Landfill CCR Unit were sampled as part of semi-annual Assessment Monitoring. At each of these monitoring wells, groundwater samples collected were submitted for laboratory analysis of both total and dissolved molybdenum.

From June and July 2020 sampling, total and dissolved molybdenum concentrations were above both the Site specific GWPS and the EPA risk-based GWPS in samples collected from four of the 10 compliance wells (MW-15A, MW-16, MW-18 and MW-19S). Total and dissolved molybdenum concentrations slightly above the Site specific GWPS, but well below the EPA risk-based GWPS were identified in samples collected from MW-15A, CM-3A, CM-3B, CM-4B and CM-5B. At CM-4A and CM-5A, the reported total molybdenum concentrations were below the Site specific GWPS but the reported dissolved molybdenum concentrations were slightly above the Site specific GWPS. In all other wells, total and dissolved molybdenum concentrations were below the Site specific GWPS.

From the June and July 2020 sampling of the Landfill CCR monitoring wells, total molybdenum was detected at an SSL above the Site-specific GWPS (0.029 mg/L) in samples collected from MW-15A, MW-16, MW-18 and MW-19S. Reported molybdenum concentrations at these monitoring wells also exceeded the EPA risk-based GWPS for molybdenum (0.0100 mg/L). Dissolved molybdenum was reported at similar concentrations in groundwater at these wells and was detected as an SSL above both the Site-Specific GWPS and the EPA alternative risk-based GWPS. At some of the newly-installed further downgradient corrective measure wells (CM-3A, CM-3B, CM-4B and CM-5B) and at monitoring well MW-15A (a downgradient monitoring well not typically sampled as part of the CCR Program) total and dissolved molybdenum were detected at concentrations only slightly above the Site-specific GWPS. The reported molybdenum concentrations in groundwater at these wells were below the EPA alternative risk-based GWPS. At two of the newly-installed further downgradient corrective measure wells (CM-4A and CM-5A), only dissolved molybdenum was detected at concentrations above the Site-specific GWPS. The reported concentration for dissolved molybdenum at these wells was only slightly above the Site-specific GWPS and below the EPA alternative risk-based GWPS for molybdenum. Total molybdenum concentrations in groundwater reported for these wells was below the Site-specific GWPS. Reported molybdenum concentrations in groundwater at CM-1A, CM-1B and CM-2 did not exceed the Site-specific GWPS.

The highest molybdenum in groundwater remains limited to the periphery along the northeast and southeast corners of the Landfill CCR Unit (MW-15A, MW-16, MW-18 and MW-19S). It is evident that molybdenum in groundwater attenuates significantly away from the Landfill CCR Unit; with reported concentrations being nearly an order of magnitude lower at CM-3A, CM-3B, CM-4A, CM-4B, CM-5A and CM-5B, which are located between 500 to 1,200 feet downgradient from the Landfill CCR Unit. Molybdenum concentrations reported in groundwater at CM-3A, CM-3B, CM-4A, CM-4B, CM-5A and CM-5B are only slightly above the Site-specific GWPS and are well below the EPA alternative risk-based GWPS. The reported molybdenum concentrations in these wells coupled with no observed elevated molybdenum in wells further to the east (associated with the Surface Impoundment CCR Unit) are believed sufficient to characterize the lateral extent of molybdenum in groundwater.

Molybdenum concentrations reported at MW-15A, MW-16, MW-18 and MW-19S are consistent with individual well history and the concentrations do not represent an increase over those observed during the original sampling to develop background. Molybdenum concentrations from sampling prior to June/July 2020 were evaluated for trends using a Sen's Slope test combined with a Mann-Kendall test. To date, no statistically significant increasing trends are apparent for molybdenum at monitoring wells MW-15A, MW-16, MW-18 or MW-19S at a 95% confidence interval. To the contrary, significant decreasing trends are apparent for molybdenum at monitoring wells MW-15A and MW-18.

MOLYBDENUM FATE AND TRANSPORT (GENERAL)

Molybdenum is a redox sensitive metal that is naturally occurring in groundwater systems. Under oxic conditions and pH above 6 Standard Units (S.U.), dissolved molybdenum is typically present in the +VI oxidation state as the molybdate oxyanion (MoO_4^{2-}). Molybdate is the predominant dissolved species above pH 6 S.U. under both oxidizing and reducing conditions. Bimolybdate ($HMoO_4^-$) is the dominant dissolved species under oxic conditions and pH between 2 and 6 S.U. The most prevalent solid phases for molybdenum are the +VI oxidation state of molybdite (MoO_3) and the +IV oxidation state of molybdenite (MoS_2).

Inorganic compounds in groundwater, such as molybdenum, do not undergo degradation. Instead, they are often attenuated by mechanisms which are dependent on site-specific geochemical and formation matrix characteristics. Primary attenuation mechanisms include chemical precipitation/dissolution of bulk solid phases, chemical substitution within a solid phase, physical filtration of colloids, cation and anion exchange, and adsorption. For molybdenum, the primary mechanisms are precipitation/dissolution, adsorption and ion exchange. In natural shallow perched groundwater systems the other mechanisms (chemical substitution within a solid phase, physical filtration of colloids) are not typically involved to a significant extent.

For molybdenum, the chemical precipitation/dissolution mechanism is often the preferred attenuation mechanism due to the stability of the formed precipitate. Molybdenum solids that typically form via precipitation include ilsemannite (Mo_3O_8) and molybdenum dioxide (MoO_2). Ilsemannite is typically formed under oxidizing conditions from pH 4 to 7 S.U. and under reducing conditions from pH 7 to 9 S.U. and is most likely to form in natural water. Formation of molybdenum dioxide requires reducing conditions, but can form under both acidic and alkaline pH. If sulfide is present, the predominant dissolved species remains molybdate, but the molybdenum dioxide is replaced by molybdenite (MoS_2). Molybdenite is a precipitate form of molybdenum that can occur at mildly reducing and oxidizing conditions over a wide pH range and can occur through both biological (biotic) and non-biological (abiotic) processes. Divalent cations common in groundwater (Fe^{2+}, Mn^{2+}, Ca^{2+}, Ni^{2+}) have been shown to contribute to precipitate formation at pH less than 8 S.U. (ferrous molybdate, manganous molybdate, powellite and wulfenite) However, at higher pH, carbonate competes with these cations to preferentially form $CaCO_3$ instead of molybdenum precipitates. In suboxic environments, the +IV oxidation state of molybdenum can be released into solution as a result of reductive dissolution of magnesium or iron.

Adsorption is also a primary attenuation mechanism for dissolved molybdenum. Adsorption occurs as the molybdate anion is attracted to proton sites on precipitates. Adsorption via this mechanism is highly influenced by pH; with highest attenuation occurring at lower pH waters but some adsorption occurring at pH as high as 9 S.U. Adsorption is also influenced by materials in the path of the groundwater flow, with an affinity to be adsorbed to clay minerals and iron oxides.

Several studies have focused on in-situ reduction of dissolved molybdenum under varying conditions. In general, a reducing environment appears to favor the precipitation of molybdenum as molybdenite or molybdenum dioxide and oxidizing conditions appear to favor molybdenum adsorption. Studies indicate slight adsorption of molybdenum to clay minerals at neutral pH values and indicate that sorption onto oxides play a strong role in molybdenum transport. Studies have evaluated zero valent iron and goethite to promote both sorption and precipitation of molybdenum. Also, some research suggests that bioremediation can aid in promoting the sorption and precipitation processes for molybdenum. Both processes create iron compounds that can act to co-precipitate and/or sorb the molybdenum or promote the formation of molybdenum disulfide (if sulfate is present in the groundwater).

MOLYBDENUM FATE AND TRANSPORT (SITE SPECIFIC)

An evaluation was conducted to assess whether molybdenum from groundwater might adsorb to the native rock during subsurface flow. A sample of native Caddo Formation rock material (both a crushed sample and an undisturbed core sample) were provided to Pace Analytical Laboratories along with groundwater obtained from monitoring well MW-19S (a well consistently exhibiting elevated molybdenum); also completed in the Caddo Formation. Both rock samples were collected from CM-5, within the Caddo Formation, at an approximate depth of 12 feet. The crushed rock sample was analyzed to determine general chemical properties and the core was used for leach testing described below. The groundwater sample was analyzed to obtain a baseline for molybdenum and other chemical parameters and then used as the leaching solution for one of the leach tests. All monitoring wells sampled as part of the Landfill CCR monitoring program are completed within the Caddo Formation.

The laboratory conducted leach testing over the core with groundwater collected from MW-19S. The water was leached through the core for a period of 16 to 18 hours, the resulting leachate (Leach 1) was analyzed and then leached through the core a second time for an additional 16 to 18 hours, the resulting leachate from the second leach (Leach 2) was analyzed and then leached through the core a third time for an additional 16 to 18 hours, and the resulting leachate from the third test (Leach 3) was then analyzed. From the leach testing using water from MW-19S, it appears that molybdenum from groundwater does adsorb to the native rock material. The baseline molybdenum in the sample from MW-19S prior to leaching was 0.445 mg/L. This value is consistent with results reported from June 17, 2020 samples submitted to ALS (0.402 mg/L), confirming the reported value. After the initial leach, a marked reduction of molybdenum concentration is apparent (as well as a reduction in aluminum, potassium and sodium). The molybdenum concentration of the Leach 1 Sample was 0.310 mg/L; which is a reduction of 0.135 mg/L or approximately 30.4% from that of the original groundwater sample.

A reduction in molybdenum in groundwater due to adsorption to native rock corresponds to findings from groundwater sampling. From groundwater sampling it is evident that molybdenum in groundwater attenuates significantly away from the Landfill CCR Unit; with reported concentrations being nearly an order of magnitude lower at CM-3A, CM-3B, CM-4A, CM-4B, CM-5A and CM-5B which are located between 500 to 1,200 feet downgradient from the Landfill CCR Unit.

The laboratory also conducted leach testing to evaluate potential of molybdenum to leach from the native rock under various pH conditions. Leach testing was conducted over the core with deionized water adjusted to pH of 7 S.U., and with deionized water adjusted to pH of 12 S.U. For each of these leach tests, the water was leached through the core for a period of 16 to 18 hours, the resulting leachate (Leach 1) was analyzed and then leached through the core a second time for a period of 16 to 18 hours, the resulting leachate from the second leach (Leach 2) was analyzed and then leached through the core a third time for a period of 16 to 18 hours, and then the resulting leachate from the third test (Leach 3) was analyzed. From this leach testing, it does not appear that molybdenum is leached from native rock to groundwater under conditions of either neutral pH of 7 S.U. or elevated pH of 12 S.U.

GROUNDWATER FLOW CHARACTERISTICS

Several rounds of depth-to-groundwater measurements have been completed. The predominant direction of perched groundwater flow from the Landfill CCR Unit is consistently to the southeast, east and northeast. The most recent depth-to-groundwater measurements were obtained on June 15, 2020 and on August 19, 2020. Based on these, groundwater flow direction is to the south, east and northeast and is consistent with that previously and historically determined.

From August 19, 2020 depth-to-water measurements, the average horizonal hydraulic gradient (I) across the Landfill CCR Unit is approximately 0.05 feet per foot (feet/foot) to the northeast and southeast and approximately 0.02 feet/foot to the east. A very slight downward vertical hydraulic gradient is generally present at the HPS based the differences in measured groundwater elevations at the nested wells. Near the Landfill CCR Unit, the measured vertical hydraulic gradient is between -0.05 to +0.25 feet/foot, where a negative value indicates an upward head and a positive value indicates a downward head. The vertical hydraulic gradient at wells located further distance from the Landfill CCR Unit ranged from +0.88 to 1.4 feet/foot. Aquifer field testing has been conducted at the monitoring wells proximate to the Impoundment to estimate in-situ horizontal hydraulic conductivity (K) and well yield to determine if the uppermost water bearing zone is likely to produce a usable yield of groundwater, and for flow evaluation.

Packer testing was conducted at the HPS in an open borehole during construction of a piezometer several hundred feet hydraulically upgradient (West) of the Impoundment (PZ-7). This packer testing was conducted by Burns and McDonnell Engineering Company, Inc. (Burns and McDonnel) to evaluate hydraulic conductivity at several intervals across both the Caddo and Kiamichi Formations, as well as across a section of the underlying Goodland Formation. Results of this testing indicated hydraulic conductivity of 6.94×10^{-6} cm/sec in the Goodland Formation (at an approximate elevation interval between 391 ft AMSL and 401 ft AMSL). Testing indicated hydraulic conductivity ranging from between 3.39×10^{-6} cm/sec to 6.07×10^{-7} cm/sec in the Kiamichi Formation (at approximate elevation intervals of 434 ft to 429 ft AMSL and of 451 ft to 445 ft AMSL, respectively). Testing indicated hydraulic conductivity ranging from between 3.06×10^{-6} cm/sec and 9.04×10^{-7} cm/sec in the Caddo Formation (at approximate elevation intervals ranging from between 500 and 490 ft AMSL and 539 to 529 ft AMSL, respectively).

These values are consistent with the horizontal hydraulic conductivity values determined by the rising and falling head slug tests discussed below.

Slug testing was conducted by Burns and McDonnell at MW-8, MW-9, MW-10, MW-11, MW-23A, MW-23B, MW-24, MW-25, MW-25R, PZ-2, PZ-3, PZ-4, and PZ-5. Bouwer-Rice and Hvorslev methods were employed to evaluate the resulting data and estimate formation horizontal hydraulic conductivity at these well locations. From Burns and McDonnell, wells MW-8, MW-9, MW-10, MW-11 and PZ-3 are representative of the Kiamichi Formation and MW-23A, MW-23B, MW-24, MW-25, MW-25R, PZ-2, PZ-4, and PZ-5 are representative of the Caddo Formation. Slug testing was also conducted by Altamira-US, LLC at several wells in the Caddo Formation (MW-1, F01-1, MW-16, MW-18, MW-19S, CM-1A and CM-2). Both a falling head and a rising head test were conducted at these wells. Changes in water elevation data were measured after placement and after removal of a slug to the water column. Changes in water elevation were recorded at ½ second intervals using a data logger. Bail-down testing was conducted by Altamira-US at MW-26, CM-1B, C-3A, CM-3B, CM-4A, CM-4B, CM-5A and CM-5B (each in the Caddo Formation). Bail-down testing was conducted in lieu of slug testing at these wells due to low water column thickness. The wells were bailed dry and recovery was measured. For both slug test and bail-down test conducted by Altamira-US, the Bouwer-Rice method was employed to evaluate the resulting data and estimate horizontal hydraulic conductivity. The software package AQTESOLV was used for slug test and bail down test analysis, utilizing the Bouwer-Rice method to evaluate the resulting data assuming unconfined conditions.

Overall, Burns and McDonald conducted slug tests on 13 on-site monitoring wells and Altamira conducted slug tests on 16 on-site monitoring wells, or 29 wells total. Of these 29 wells, five were completed in the Kiamichi Formation and 24 in the Caddo Formation. These formations have similar lithology, composed of dark gray/black shale alternating with fossiliferous limestone. In general, horizontal hydraulic conductivities range from 10^{-4} cm/second to 10^{-8} cm/second. The horizontal hydraulic conductivity for the Caddo Formation is estimated (geometric mean) to be 3.892×10^{-6} cm/sec based on the 24 wells completed in this formation. The horizontal conductivity for the Kiamichi Formation is estimated (geometric mean) to be 1.527×10^{-6} cm/sec based on the 5 wells completed in this formation. Using all slug/bail down test data (from both the Caddo and Kiamichi Formations), the geometric mean of the horizontal hydraulic conductivity at the HPS is estimated at 3.43×10^{-6} cm/sec.

Using data obtained from the horizontal hydraulic conductivity (K) test results (as measured by Burns and McDonald and Altamira) and estimating the effective porosity (n) of the formation, the average groundwater flow rate or velocity in the uppermost perched groundwater system can be calculated using Darcy's Law (V_a=KI/n). The effective porosity (n) of shale and massive limestone is conservatively estimated to be 0.1. Assuming the conservative hydraulic gradient of 0.05 feet per foot (as determined based on August 2020 depth-to-groundwater measurements) and using the horizontal hydraulic conductivity geometric mean of 3.43×10^{-6} cm/sec, the average groundwater flow velocity at the HPS is estimated at 1.72×10^{-6} cm/second; or 1.67 feet/year. Assuming the conservative hydraulic gradient of 0.05 feet per foot and using the horizontal hydraulic conductivity geometric mean of 1.527×10^{-6} cm/sec, the groundwater flow velocity through the Kiamichi Formation is estimated at 7.64×10^{-7} cm/second; or 0.79 feet/year. Assuming the conservative hydraulic gradient of 0.05 feet per foot and using the horizontal hydraulic conductivity geometric mean of 3.892×10^{-6} cm/sec, the groundwater flow velocity

through the Caddo Formation is estimated at $1.94x10^{-6}$ cm/second; or 2.01 feet/year. As expected, the Caddo and Kiamichi Formations have nearly identical flow properties.

To the southeast, the nearest property boundary is more than 1,000 feet from identified molybdenum in groundwater over the GWPS. To the east and northeast, the nearest property boundaries are at least 7,500 feet from identified molybdenum in groundwater over the GWPS. The nearest residential well is approximately 1.9 miles east from identified molybdenum over the GWPS. Using the highest calculated groundwater velocity of 2.01 feet/year, it would take approximately 498 years to reach the nearest property boundary to the southeast and it would take approximately 3,730 years to reach the property boundaries to the northeast and east.

Migration of molybdenum through groundwater is controlled by the geologic setting at the HPS. Soils/rock are predominantly tight clays and hard shale exhibiting very low horizontal hydraulic conductivities (averaging $3.43x10^{-6}$ cm/second) and well yields of less than 0.01 gallons per minute. Based on estimated well yields and hydraulic conductivities (both as obtained by Burns and McDonnell and by Altamira), it appears that near-surface groundwater at the HPS are perched non-contiguous groundwater zones. This is evidenced by the fact that most of the wells bail dry easily and that when bailed dry they take several days, if not weeks, to recover. Based on well yield and hydraulic conductivity data obtained at the HPS, it appears that near-surface groundwater at the HPS are perched non-contiguous groundwater zones. Well yield is such that they would not generally be considered a water bearing unit, but represent a perched groundwater system, and they are not considered a major groundwater aquifer under Oklahoma Standards.

GROUNDWATER QUALITY

Natural groundwater in the region of the HPS is of poor quality. From Hydrologic Atlas Number 9, Reconnaissance of the Water Resources of the McAlester and Texarkana Quadrangles, Southeastern Oklahoma (Marcher, V. Melvin Bergman, L. DeRoy, U.S. Geological Survey, 1983), results from chemical analysis of water from undifferentiated rocks of Cretaceous age in southeastern Oklahoma indicate that sulfate occurs naturally up to concentrations as high as 778 mg/L and that total dissolved solids (TDS) occur naturally up to concentrations of 1,900 mg/L. These naturally occurring levels for both sulfate and TDS exceed the EPA Secondary Drinking Water Standards for these compounds as established by EPA (250 mg/L for sulfate and 500 mg/L for TDS). WFEC has been monitoring several wells for groundwater quality at its HPS facility as part of its CCR Program. This monitoring consistently yields sulfate at concentrations between 1,300 mg/L and 2,000 mg/L and TDS at concentrations between 2,100 mg/L and 2,700 mg/L in upgradient wells at the HPS. These sulfate and TDS levels are naturally occurring.

GROUNDWATER USE

From review of the Oklahoma Department of Environmental Quality records, there are no public water supply wells downgradient from the HPS. From the Oklahoma Water Resources Board (OWRB) Water Well Record Database (OWRB, 2020), the nearest private downgradient water wells are located approximately 1.9 miles east of the HPS. Two wells were identified for domestic use.

- Well Number 160934 is located approximately 1.9 miles east of the HPS. The depth of this well is reported to be 148 feet.

- Well Number 110697 is located approximately 1.9 miles southeast of the HPS. The depth of this well is reported to be 250 feet.

There were no water wells identified to be completed and obtaining water from the geologic units that shallow monitoring wells at the HPS are completed within the Caddo or Kiamichi Formations.

Based on the estimated hydraulic conductivities, it is anticipated that over 3,000 years would be required for shallow groundwater at the HPS to reach these off-site domestic wells. Due to local geology, groundwater flow and low groundwater yields, it is not believed that shallow groundwater on-site will adversely affect off-site shallow groundwater.

POTENTIAL RECEPTORS OF CONCERN AND COMPLETED EXPOSURE PATHWAYS

On-Site Construction Worker (current and future): Exposure to perched groundwater by construction/utility workers is unlikely due to depth of the water table and cohesive nature of subsurface soils. However, groundwater could be encountered during deeper construction work such as utility construction/repair or other construction related activities that could be of sufficient depth to encounter the shallow groundwater. Any exposure would be expected to be of short duration, as construction is typically three months or less. The on-site construction worker is considered a completed pathway for shallow perched groundwater.

On-Site Industrial Worker (current and future): It is unlikely that HPS employees would come in contact with shallow perched groundwater since shallow groundwater does not surface within the property boundary. The on-site Industrial Worker is not considered a completed pathway for shallow groundwater.

Off-Site Resident (current and future): Potential exposure to water for residents (both child and adults) could include ingestion or direct contact through domestic use of groundwater. However the Landfill CCR Unit is located at least 2,000 feet from the nearest property boundary and the nearest downgradient residential properties are approximately 1.9 miles east of the HPS. Also, the residential wells (approximately 1.9 miles from the HPS) are screened at much deeper intervals than the shallow groundwater at the HPS. Based on the large distance to the possible off-site residents and on groundwater flow characteristics (low flow and yield), it is unlikely that off-site residents will have contact with shallow groundwater originating from the HPS. The off-site resident is not considered a complete pathway for shallow groundwater.

Trespasser (current and future): The HPS is fenced and has 24-hour security to prevent trespass. Furthermore, if it is unlikely that trespassers would come in contact with shallow perched groundwater since shallow groundwater does not surface within the property boundary. The Trespasser is not considered a completed pathway for shallow perched groundwater.

Ecological: Shallow perched groundwater at the HPS is below the depth for any burrowing animals to encounter and ecological receptors are not considered to be a risk from shallow perched groundwater.

RISK EVALUATION

A risk evaluation was completed and submitted to the Oklahoma Department of Environmental Quality-Water Quality Division in anticipation of a new surface impoundment at the HPS (FO-08). A copy of this risk evaluation is included in **Appendix F** (Risk Evaluation for Shallow Perched Groundwater; Planned Impoundment FO-08, Nancy Coleman, March 19, 2020).

Exposure pathways reasonably expected to be complete at present time and into the foreseeable future for both human and ecological receptors were evaluated for several wells hydraulically downgradient of the Landfill CCR Unit (MW-8, MW-10, MW-11, MW-22A, MW-23A, MW-24 and MW-25R). Concentrations for CCR detection and assessment monitoring constituents at these wells were screened against conservative human-health risk-based screening values. It was concluded that the constituents present in shallow perched groundwater at the designated wells (which are downgradient of the Landfill CCR Unit) do not pose a hazard to potential on-site or off-site human or ecological receptors.

APPENDIX J

RISK EVALUATION

Risk Evaluation for Shallow Perched Groundwater
Planned Impoundment F0-08
Western Farmers Electric Cooperative
Hugo Power Station
Fort Towson, Oklahoma

March 19, 2020

Prepared For:

Western Farmers Hugo Power Station
Fort Towson, Oklahoma

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1. Introduction

At the request of Western Farmers Electric Cooperative (WFEC), Altamira (formerly EnviroClean Cardinal) has prepared this report which presents a risk evaluation for the analytes identified in shallow groundwater by the groundwater monitoring program for the current CCR Impoundment F0-01, the Bottom Ash Pond, at the Western Farmer Hugo Power Station (Facility) near Fort Towson, Oklahoma. This impoundment is undergoing closure through the Oklahoma Department of Environmental Quality Land Protection Division. Upon completion of closure, WFEC intends to permit the northern cell of the unit through the Oklahoma Department of Environmental Quality Water Quality Division and operate it a Class III Surface Impoundment under an Oklahoma Pollutant Discharge Elimination System Permit (OPDES), and the impoundment would be designated as F0-08.The Facility is a coal-fired electric generating plant which has been in operation since 1982. The Facility is located approximately 3 miles west of Fort Towson, Choctaw County, Oklahoma and occupies approximately 2.560 acres (see **Figure 1**).

The current Impoundment F0-01 is a two-cell impoundment on the Facility property which is used for management of bottom ash (see **Figure 2**) generated during the production of electricity. Impoundment F0-01 has two cells, one which is 26.277 acres and the other which is 29.036 acres and is one of several impoundments at the Facility. The impoundment is regulated as a coal combustion residuals (CCR) management unit. The impoundment has been previously described in various reports and letters (Burns and McDonnell, 2018; EnviroClean, 2018) provided to the Oklahoma Department of Environmental Quality (ODEQ). This Report focuses on this Impoundment (planned F0-08); other impoundments within the property boundaries of the Facility are not included in this Report.

The downgradient shallow groundwater associated with the planned Impoundment F0-08 has been characterized by five groundwater wells in the area **(see Figure 2)**:

- MW-9;
- MW-10;
- MW-11;

- MW-24; and
- MW-25R.

Three additional monitoring wells, MW-8, MW-22A, and MW-23A provide analytical data as upgradient wells to the planned Impoundment F0-08.

These monitoring wells are part of an overall groundwater monitoring network for the Facility which has been previously described in various report and letters (Burns and McDonnell, 2018; EnviroClean, 2018) provided to the ODEQ. Monitoring wells MW-8, MW-9, MW-10, MW-11, MW-22A, MW-23A, MW-24 and MW-25R have been sampled during multiple (14) groundwater sampling events from June 2016 through October 2019 as a part of the Facility's on-going compliance activities for impoundments (Burns and McDonnell, 2018). In addition, monitoring or piezometer wells MW-12, MW-22B, MW-23B, MW-26 PZ-2, PZ-3, PZ-4, PZ-5, and F01-1 have not been sampled for analytical parameters but are used for groundwater level measurements.

The following sections of this report provide the Conceptual Site Model (CSM) for on-site shallow perched groundwater and details development of the risk evaluation for shallow groundwater associated with the planned Impoundment F0-08. This document has been prepared based on the requirements of the ODEQ guidance for risk-based decision making for site cleanup (ODEQ, 2018) and USEPA risk assessment guidance (1989a, 1989b,2001, 2004, 2009, 2014).

2. Conceptual Site Model

The development of the risk evaluation for shallow perched groundwater associated with the planned Impoundment F0-08 is guided by the CSM. The CSM is based on the site characterization activities conducted for shallow perched groundwater by WFEC and their consultants. These data have been previously provided to the ODEQ in various reports and letters. The CSM was used to identify those exposure pathways which are reasonably expected to be completed at the present time and into the foreseeable future. The risk evaluation was developed for those exposure pathways which are found to be complete for the shallow groundwater. **Figure 3** summarizes the CSM for the shallow perched groundwater.

2.1 Shallow Perched Groundwater

The Facility is located between Sawyer, Oklahoma (approximately 2.5 miles to the west) and Fort Towson, Oklahoma (approximately 3 miles to the east) on US Highway 70 which forms the northern boundary of the Facility. Approximately 1,200 acres of the Facility property has been developed for electric generation use. The remainder of the Facility property is currently undeveloped as is most of the area immediately surrounding the Facility. The Red River is located approximately 7.5 miles south of the Facility.

Shallow perched groundwater underlying the planned Impoundment F0-08 generally flows in an easterly to southeasterly direction towards Bird Creek on the eastern boundary of the Facility (EnviroClean, 2019). Bird Creek flows into the Kiamichi River which enters the Red River

approximately 5.5 miles south of the Facility. The area is part of the ODEQ-identified Watershed HU12. The regional and local hydrogeology have previously been described by Burns and McDonnell (2018) and EnviroClean (2018).

Monitoring wells, MW-8, MW-9, MW-10 and MW-11 are screened in the Kiamichi Formation and monitoring wells MW-22A, MW-23A, MW-24 and MW-25R are screened in the Caddo Formation. The Kiamichi and Caddo Formations are composed of shale and interbedded limestones which are low permeability rock with low transmissivity and low hydraulic conductivity (Burns and McDonnell, 2018). Packer testing has shown that the hydraulic conductivity between 21 and 31 feet below ground surface (bgs) is 3.06E-06 cm/sec in the Caddo Formation and 9.04E-07 cm/sec at 60 to 70 feet bgs. Testing in the Kiamichi Formation has demonstrated that hydraulic conductivity ranges from 6.07E-07 cm/sec at 100 to 115 feet bgs to 3.39E-06 cm/sec at 129 to 131 feet bgs (Burns and McDonnell, 2018).

Burns and McDonnell (2018) estimated the horizontal hydraulic conductivities for wells in the Kiamichi Formation was determined to range from 4.42×10^{-5} cm/sec at MW-8 to 1.56×10^{-7} cm/sec at MW-10. The horizontal hydraulic conductivities for wells in the Caddo Formation were determined to range from 7.77×10^{-5} cm/sec at MW-24 to 4.69×10^{-8} at PZ-2. Both Formations have similar horizontal hydraulic conductivities. The estimated yields for the wells range from a low of 0.6 gallons per day at MW-9 (Kiamichi) to 435 gallons per day at MW-24 (Caddo); (Burns and McDonnell, 2018) (see **Table 2**).

There were 18 slug tests results (including 5 conducted by Altamira in March 2020) conducted on 16 monitoring wells near the F0-08 impoundment. Below is a summary of the horizontal hydraulic conductivity test results from both the Burns and McDonnell and Altamira tests:

Count	Minimum, cm/sec	Maximum, cm/sec	Mean, cm/sec	Median, cm/sec	Geometric Mean, cm/sec
18	4.69×10^{-8}	7.77×10^{-5}	1.024×10^{-5}	1.715×10^{-6}	1.652×10^{-6}

The effective porosity (n) of shale and massive limestone is conservatively estimated to be 0.1. Using the geometric mean of 1.652×10^{-6} cm/sec, and the hydraulic gradient of 0.011 feet/foot, the average groundwater flow velocity is estimated at 1.82×10^{-7} cm/sec or 5.102×10^{-4} feet/day. This equates to a yearly groundwater flow rate of approximately 0.2 feet/year using the geometric mean. Using the maximum value, the yearly groundwater flow rate is calculated at approximately 9 feet/year and using the minimum value the yearly groundwater flow rate is calculated at less than 0.1 foot/year. The nearest downgradient or cross gradient property boundaries to the F0-08 impoundment are: 3,000 feet to the southwest, 3,900 feet to the south, 3,600 feet to the southeast, 5,200 feet to the east, 3,600 feet to the northeast, and 6,500 feet to the north. Groundwater flow is to the east-southeast. The nearest property boundary to the impoundment is 3,000 feet to the southwest, which is cross-gradient from the impoundment. Using the geometric mean groundwater velocity of 0.2 feet/year, it would take 15,000 years to

reach the property boundary. Using the maximum horizontal hydraulic conductivity value observed in the slug tests, the average groundwater flow was calculated at approximately 9 feet/year, or it would take 333 years to reach the nearest property boundary.

Based on sampling conducted by EnviroClean (December 12, 2019), the general depth to on-site shallow perched groundwater in the monitoring wells ranges from 4.5 (MW-10) to 18.93 (MW-24) feet below the top of the casing (toc). **Table 2** summarizes the depths as well as the hydraulic conductivity and yield for each of the monitoring wells. The monitoring wells are screening in the uppermost water-bearing zone of each Formation.

On-site shallow perched groundwater is not utilized at the Facility. There are several deeper (180 to 233 feet bgl) groundwater wells completed into the Antlers Formation approximately ½ mile north of the planned F0-08 Impoundment intended for use as Facility water supply or industrial and irrigation purposes. Due to poor water quality, several of the deep wells are not used by the Facility (Burns and McDonnell, 2018).

Information from the Oklahoma Water Resources Board (OWRB) Water Well Record Database (OWRB, 2020) indicates that the nearest downgradient water wells are approximately 1.9 miles east of the Facility. The two wells identified for domestic use are:

- Well No. 160934 (depth: 148 feet) located 1.9 miles to the east of the Facility, and
- Well No. 110697 (depth 250 feet) located 1.9 miles to the southeast of the Facility.

There are no public water supply wells downgradient from the Facility (EnviroClean, 2018).

Based on the hydraulic conductivities estimated for the shallow groundwater underlying the planned Impoundment F0-08, it would take well over 333 years for shallow perched groundwater to reach the off-site domestic wells. Due to the local geology, slow shallow perched groundwater flow velocity and generally low groundwater yields, it is not anticipated that shallow perched groundwater associated with the planned Impoundment F0-08 will adversely impact the off-site shallow perched or deeper groundwater.

2.2 Land Use and Potentially Exposed Populations

The Facility is an industrial facility used for coal-fired electrical power generation and storage of coal, coal ash and other related materials. The Facility is located within US Census Tract 9669 which covers the entire eastern one-third of Choctaw County. The Tract has a 2017 population estimate of 14,668 persons with approximately 1,369 housing units. The area immediately surrounding the Facility is generally unoccupied rangeland. The nearest downgradient residences are located to the east on Oklahoma Highway 109 approximately 1.9 miles from the facility (co-located with the domestic water wells identified in Section 2.1 above).

2.3 *Potential Receptors of Concern*

2.3.1 Human

There is the potential for human receptors to contact the shallow perched groundwater during certain daily activities. **Figure 2** and **Table 1** summarize the exposure pathways considered in the development of the risk evaluation for shallow perched groundwater associated with the planned Impoundment F0-08.

2.3.1.1 On-Site Construction Worker – Current/Future

There is the potential for utility construction and other construction-related activities to occur which could disturb the areas affected by the compounds in shallow perched groundwater associated with the planned Impoundment F0-08. These activities potentially would include excavation for replacement of various utility lines and these excavations could be of sufficient depth to encounter the surficial shallow perched groundwater. It is anticipated that utility construction workers would be in the affected area for approximately three months (90 days). It would be possible for the utility construction worker to have incidental contact via ingestion during work activities and dermal contact with groundwater while in an excavation.

2.3.1.2 On-Site Industrial Worker

The Facility is an active electrical power generation facility and has employees which circulate through the Facility. Since shallow perched groundwater does not surface within the property boundary it is unlikely that there would be contact with shallow perched groundwater by Facility employees. Therefore, this pathway is not a completed pathway for the shallow perched groundwater.

2.3.1.3 Off-Site Resident – Current/Future

There are residential parcels downgradient to the Facility approximately 1.9 miles to the east or southeast. These properties are currently and are anticipated to remain in residential use for the foreseeable future. Residents, both adults and children, have the possibility for domestic use of groundwater from deeper zones (>180 feet). However, the residential wells at these residences are screened at a much deeper level than the shallow perched groundwater at the Facility and with the distance to the wells and low on-site shallow perched groundwater flow and yield, it is unlikely for off-site receptors to have contact with shallow perched groundwater that originated at the planned Impoundment F0-08. Therefore, this pathway is not considered a completed pathway for shallow perched groundwater.

2.3.2 Ecological

The potential for ecological receptors to be impacted by the shallow perched groundwater on-site near the planned Impoundment F0-08 are not anticipated to be significant. The shallow perched groundwater is below the depth for any burrowing animals to encounter. Therefore, ecological receptors are not considered to be at risk from the shallow perched groundwater.

3. Screening of Shallow Perched Groundwater Data for Potential Health Risk

In order to evaluate the data available for the monitoring wells, the analytical results available from both the downgradient (MW-9, MW-10, MW-11, MW-24 and MW-25R) as well as the upgradient wells (MW-8, MW-22A and MW-23A) were screened against conservative human-health risk-based screening values. The values used were the United State Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) (antimony, arsenic, barium, beryllium, cadmium, chromium, lead action level, mercury, selenium, thallium and radium) and Secondary Maximum Contaminant Levels (SMCLs) (chloride, pH, sulfate, total dissolved solids, and nitrate) and Regional Screening Levels for Tap water (RSL) (based on 1 in 1,000,000 cancer risk and 0.1 hazard index) (boron, lithium, molybdenum) (USEPA, 2019). For magnesium, there are no MCLs, SMCLs or RSLs, therefore, the health-based residential drinking water criteria established by the Michigan Department of Environment, Great Lakes and Energy were used (MDEGLE, 2018). The data were also screened against the site-specific background levels (SSBL) previously determined for the Facility (EnviroClean, 2018) as a part of the CCR monitoring program. The purpose of the screening evaluation was to determine the significance of the detected concentrations to pose a potential human health risk. For some of the analytes tested in the shallow perched groundwater (potassium, alkalinity, sodium, specific conductance, and chemical oxygen demand), there are no human health evaluative criteria available and the toxicity information is insufficient on which to base criteria. Therefore, these analytes were not included in the screening.

The screening values selected for use are protective of the most likely exposed receptor, the on-site utility construction worker. The health-based screening values are based on the presumption that the receptor would be using the shallow perched groundwater for domestic purposes, e.g. drinking, bathing, cooking, etc. The exposure scenario for the screening values is calculated using oral consumption of 2 liters per day of water and total body contact during bathing over an 80-year lifetime. For the on-site utility construction workers, the exposure scenario for groundwater would be incidental ingestion, 500 mL, and dermal contact to the hands, forearms and face during a construction project which would typically last 90 days or less. Therefore, the screening values used are very conservative.

The maximum concentrations of analytes for upgradient and downgradient monitoring wells were compared to the human health risk-based screening levels and the background levels to determine if any of the analytes found in the shallow perched groundwater presented a potential human health risk. The results of these comparisons are summarized in **Table 3** for MW-8, **Table 4** for MW-9, **Table 5** for MW-10, **Table 6** for MW-11, **Table 7** for MW-22A, **Table 8** for MW-23A, **Table 9** for MW-24 and **Table 10** for MW-25R. Several of the analytes were removed from further consideration due to infrequent detections (less than 10 percent of samples): antimony, beryllium (except MW-9), cadmium, mercury, molybdenum (except MW-11, MW-22A), selenium (except MW-9, MW-22A, MW-24, MW-25R) and thallium (except MW-11). As can be noted from a review of the **Tables**, none of the analytes with evaluative criteria exceed

the health-based or background criteria value as noted by Below Screening Level (BSL) or Background (BKG) in the Rationale for Selection column. For one analyte, sulfate at MW-23A and MW-24, the 95th percent upper confidence level (95UCL) concentration was utilized for the comparison rather than the maximum concentration. The maximum concentrations for both wells were determined to be a statistical outlier using the Dixon's Outlier Test in the EPA ProUCL statistical software (see **Appendix A** for output). ProUCL was used to calculate the 95UCL concentrations which was determined to be more reflective of the true maximum concentration for MW-24.

A review of the maximum concentrations for the upgradient monitoring wells compared to the downgradient wells revealed that the concentrations for most analytes are within the same range of concentrations. The concentrations for chloride and sodium were found to be enriched in some downgradient wells but were generally within the site-specific background levels for the Facility.

4. Risk Evaluation

4.1 Completed Exposure Pathways

Based on the CSM, the following exposure pathway is considered to be complete for the shallow perched groundwater (see **Figure 2** and **Table 1**):

- Current/Future On-Site Utility Construction Worker (adult).

4.2 Risk Evaluation

Based on the results of the screening analysis of the shallow perched groundwater analytical data with conservative human-health risk-based evaluative criteria and site-specific background levels and evaluation of the complete exposure pathways for the shallow perched groundwater associated with the planned Impoundment F0-08, there appears to be no potential health risk associated with the shallow perched groundwater.

4.3 Uncertainty

Site-specific risk evaluations are associated with varied levels of uncertainty depending on several factors. Assumptions are necessary, each of which serves to introduce degrees of uncertainty into the final results. Therefore, it is important to discuss uncertainties inherent in the process in order to place the estimates of risk in proper perspective. Uncertainties can be associated with the selection of exposure pathways and the screening evaluation criteria used.

The uncertainties associated with the exposure portion of the calculation include selection of completed exposure pathways. The evaluative criteria choses were based on groundwater use for domestic purposes and use the conservative default values recommended the USEPA which are set at the upper end of the normal range for the exposure parameter. Use of these values influences the uncertainty associated with estimates of constituent intake. However, the

intentional conservatism makes it unlikely that exposures are underestimated, and the human health risk-based values used are not highly protective.

The evaluative criteria contain inherent uncertainty due to the toxicity information on which they are based. The toxicity values used in the calculations were developed by the USEPA for regulatory purposes and are intended to represent upper-bound estimates of potential toxicity. Sources of uncertainty for calculating toxicity factors include extrapolation from short-term to long-term exposures, the amount of data supporting the toxicity factors, and extrapolation from animal experiments. To the extent that humans differ from animals, the site-specific estimates based on these data may not reflect actual risk to humans. The lack of specific numerical values for dermal exposure relies on adjustments of the oral toxicity values. Because of the potential differences in the patterns of absorption, distribution and metabolism between dermal and oral exposures, this assumption may overestimate the calculated concentration. It is generally believed that use of USEPA derived toxicity values tend to overestimate risk and, therefore, would lead to lower than necessary concentration values.

In general, the assumptions built into the development of the evaluative criteria concentrations are based on best practice and tend to overestimate rather than underestimate potential risk, and thereby, provide lower than necessary concentration values.

There is also potential uncertainty into the shallow perched groundwater characterization for the planned Impoundment F0-08. The data used in the evaluation is from the wells used in the analysis may not have captured all of the spatial variability in concentrations of the various analytes that may occur. Since data is available for multiple sampling events over a several year period, the uncertainty is considered to be low.

5. Summary

The maximum concentrations in monitoring wells downgradient of the planned Impoundment F0-08, MW-9, MW-10, MW-11, MW-24 and MW-25R, from shallow perched groundwater characterization sampling events (June, 2016 through October, 2019) were compared to the human-health risk-based evaluative criteria and site-specific background levels. There were no detected concentrations which exceeded either the evaluative criteria or background values. Additionally, the maximum concentrations are similar in magnitude for those found in the upgradient monitoring wells, MW 8, MW-22A and MW-23A. Therefore, it is concluded that the constituents present in shallow perched groundwater associated the planned Impoundment F0-08 do not pose a hazard to potential on-site or off-site receptors.

6. References

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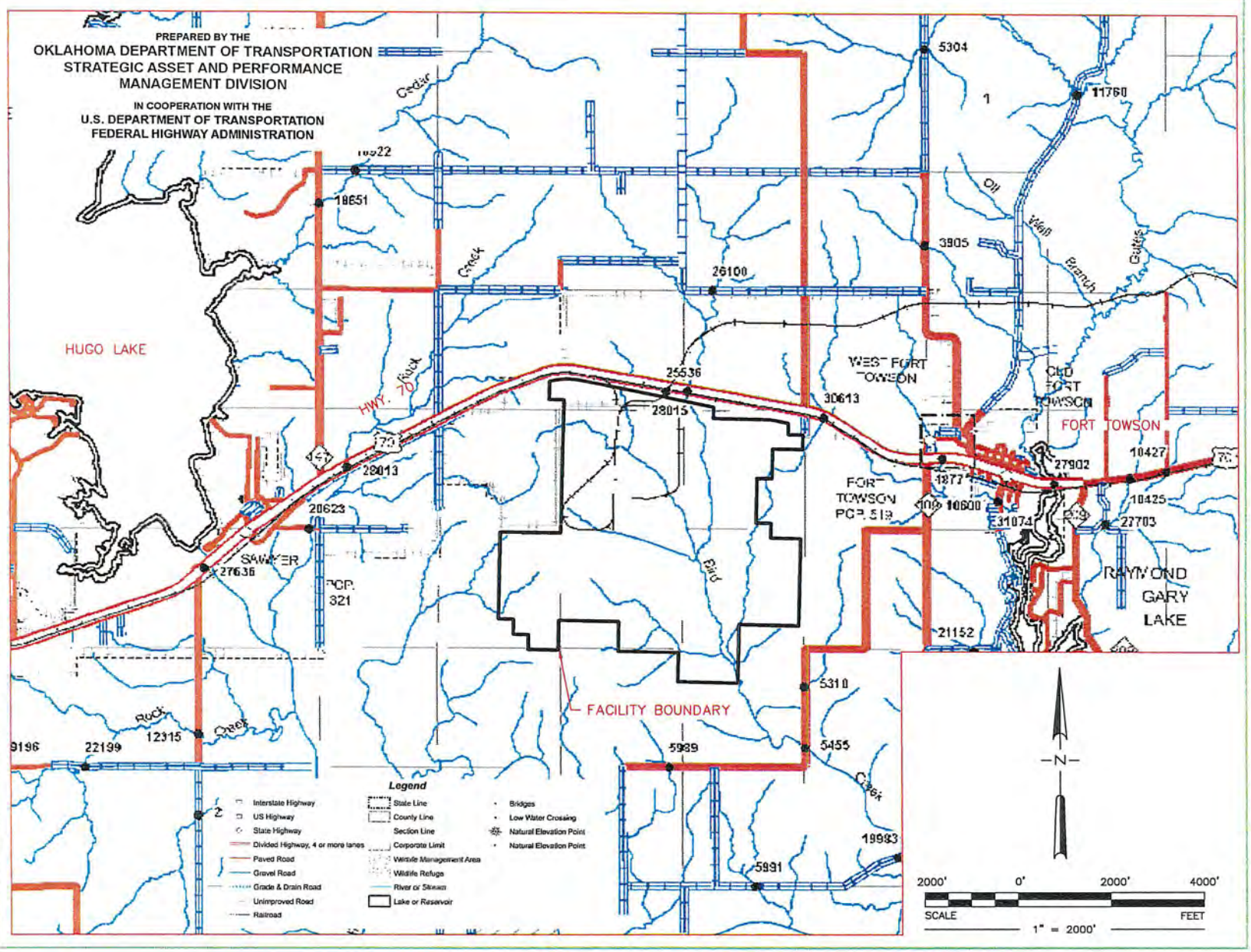
Figures



WESTERN FARMERS ELECTRIC COOPERATIVE

HUGO POWER STATION

WESTERN FARMERS ELECTRIC COOPERATIVE

GENERAL FACILITY LOCATION MAP

	20170331
	RKF
	XX
	5/30/18
	AS NOTED
	REVIEW

FIG. 1

ALTAMIRA

525 Central Park Drive, Suite 402
Oklahoma City, OK 73105
Phone 405.840.1992
Fax 405.843.5991

3700 West Robinson St, Suite 200
Norman, OK 73072
Phone 405.579.6555
Fax 405.701.5092

Western Farmers Electric Cooperative – Hugo Power Station
Choctaw County, Oklahoma

Monitoring Wells Sampled under CCR Program for the Impoundment

MW-8 (Background Well)
MW-22A (Background Well)
MW-23A (Background Well)

MW-9 (Downgradient Well)
MW-10 (Downgradient Well)
MW-11 (Downgradient Well)
MW-24 (Downgradient Well)
MW-25R (Downgradient Well)

Groundwater Level Measured under CCR Program for the Impoundment

MW-8
MW-9
MW-10
MW-11
MW-12
MW-22A
MW-22B
MW-23A
MW-23B
MW-24
MW-25/25R
PZ-2
PZ-3
PZ-4
PZ-5
PZ-7

Groundwater Monitoring Wells Proximate to the Impoundment that are not associated with CCR Program

FO1-1
FO2-1
FO6-1
FO6-2

Base Map: AERIAL PHOTOGRAPH DATED FEBRUARY 2016, GEOREFERENCED SCREEN CAPTURE FROM GOOGLE EARTH PRO

LEGEND

CCR Monitoring Well/Piezometer Locations (Approximate)

Location of Monitoring Wells Installed in 2019 to Evaluate Surface Impoundments Groundwater Elevations (Approximate)

One inch approximately 400 ft

FIGURE 2: LOCATION OF MONITORING WELLS (GOOGLE EARTH)

PROJECT

WESTERN FARMERS ELECTRIC COOPERATIVE

LOCATION

HUGO POWER STATION

PREPARED FOR

WESTERN FARMERS ELECTRIC COOPERATIVE

DRAWING TITLE

FIGURE 2: LOCATION OF PLANNED F0-08 AND MONITORING WELLS

Project No.	WFEE160020
Drawn By	CSS
Checked By	BS
Date:	03/19/2020
Scale	1" – 400' (Approximate)
Issued For.	
Figure No.	FIGURE 2

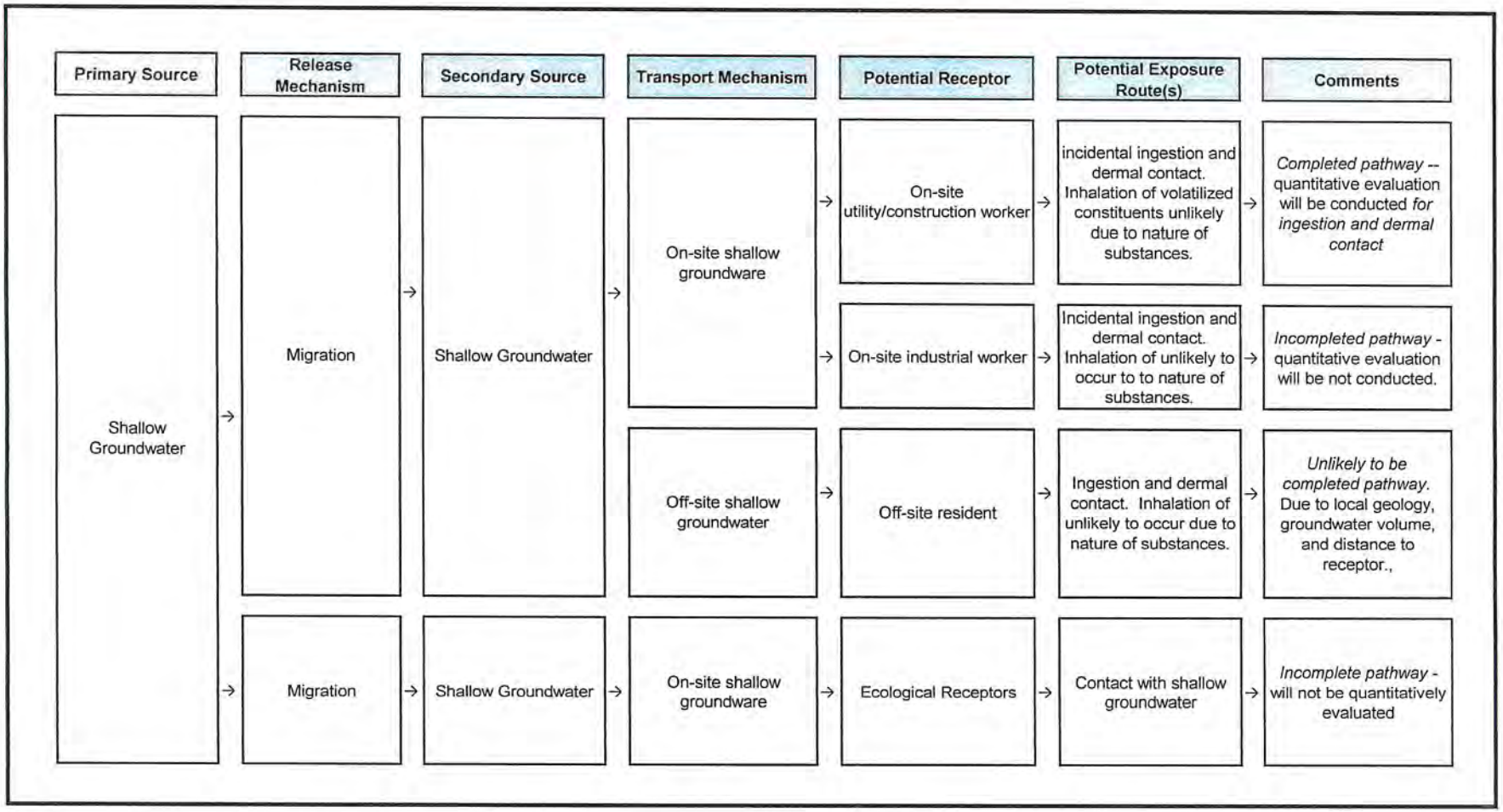
ALTAMIRA

525 Central Park Drive
Suite 500
Oklahoma City, OK 73105
Phone 405.842.1066 Fax 405.843.4687

3700 W. Robinson, Suite 200
Norman, OK 73072
Phone 405.701.5058 Fax 405.701.5208

http://www.EnviroCleanPS.com

Figure 3. Conceptual Site Model for Shallow Groundwater Associated with Planned Impoundment F0-O8
Western Farmers Power Station, Fort Towson, Oklahoma



Tables

Table 1
Selection of Exposure Pathways for Development of Risk Evaluation for Shallow Groundwater associated with Panned Impoundment F0-O8
Western Farmers Power Station, Fort Towson, Oklahoma

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/ Future	On-Site Shallow Groundwater	On-Site Shallow Groundwater	On-Site Shallow Groundwater	On-Site Current/Future Utility/ Construction Worker	Adult	Ingestion	Quant	On-site utility/construction workers are the most likely receptor to have potential contact with the on-site shallow groundwater during a construction project or utility repair activities via incidental ingestion and potential dermal contact. Due to the nature of the substances in the groundwater, inhalation of vapors released from shallow groundwater is not expected to occur. Exposures are expected to have a duration of 3 months or less.
						Dermal Contact	Quant	
						Inhalation	None	
			On-Site Shallow Groundwater	On-Site Current/Future Industrial Worker	Adult	Ingestion	None	On-site industrial workers are not likely to have potential contact with the on-site shallow groundwater during daily work activities. No quantitative evaluation will be conducted.
						Dermal Contact	None	
						Inhalation	None	
			Off-site Shallow Groundwater	Off-Site Current/Future Resident	Adult/ Child	Ingestion	None	Off-site residents could have contact with site shallow groundwater migrating to groundwater resources utilized for domestic purposes via ingestion and dermal contact. Inhalation of vapors released from shallow groundwater is not expected to occur. However, due to distance, slow groundwater movement, and low groundwater yields, on-site groundwater is unlikely to impact off-site groundwater. No quantitative evaluation will be conducted.
					Adult/ Child	Dermal Contact	None	
					Adult/ Child	Inhalation	None	

Teble 2. Monitor Well Depths, Hydraulic Conductivity and Yield for Shallow Groundwater associated with Impoundment F0-O8

Western Farmers Power Station, Fort Towson, Oklahoma

Monitor Well Number	Formation	Well Depth to Top of Casing (feet)	Depth to Groundwater below top of casing (feet)	Hydraulic Conductivity (feet/day)	Yield (gallon/day)
Upgradient Wells					
MW-8	Kiamichi	32.7	9.45 - 13.08	6.99E-02 to 1.43E-01	209 - 295
MW-22A	Caddo	28.43	14.01 - 18.09	--	
MW-23A	Caddo	23.41	14.53 - 16.76	2.89E-02 to 2.17E-02	15 - 20
Downgradient wells					
MW-9	Kiamichi	43.28	3.68 - 19.00	2.64E-03 to 1.83E-03	0.6 - 3.8
MW-10	Kiamichi	33.7	3.09 - 18.05	3.15E-04 to 1.53E-04	1.5 -6.4
MW-11	Kiamichi	32.8	3.76 - 14.50	3.96E-04 to 4.43E-04	0.9 - 3.4
MW-24	Caddo	27.32	14.16 - 20.44	8.78E-02 to 1.36E-01	315 - 435
MW-25R	Caddo	22.86	9.77 - 17.41	3.06E-02	31.9

Table 3. Occurrence, Distribution, and Selection of Chemicals of Potential Concern for Pemit Impoundments Shallow Groundwater - MW-8

Western Farmers Power Station, Fort Towson, Oklahoma

Scenario Timeframe:	Current/Future
Location:	MW-8
Medium:	On-site Shallow Groundwater
Exposure Medium:	On-site Shallow Groundwater

Exposure Point	Chemical	Maximum Concentration	Units	Detection Frequency	Concentration Used for Screening		Site-Specific Background Level (1)	Screening Toxicity Value	Screening Toxicity Value Source (2)	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
On-Site Shallow Groundwater	Boron	1.72	mg/L	19/19 (100%)	1.72	Maximum	1.935	4	RSL	N	BSL
	Calcium	906	mg/L	19/19 (100%)	906	Maximum	961.4	--	--	N	BKG
	Chloirde	4.09	mg/L	19/19 (100%)	4.09	Maximum	11.6	250	SMCL	N	BSL
	Fluoride	2.99	mg/L	19/19 (100%)	2.99	Maximum	2.84	4	MCL	N	BSL
	pH	8	SU	18/18 (100%)	8	Maximum	8	6.5-8.5	SMCL	N	BSL
	Sulfate	1940	mg/L	19/19 (100%)	1940	Maximum	2,156	250	SMCL	N	BKG
	Total Dissolved Solids	2860	mg/L	19/19 (100%)	2860	Maximum	3,333	500	SMCL	N	BKG
	Antimony	<0.008	mg/L	0/15 (0%)	<0.008	Maximum	--	0.006	MCL	N	IFD
	Arsenic	0.00338	mg/L	8/15 (53%)	0.00338	Maximum	--	0.01	MCL	N	BSL
	Barium	0.00962	mg/L	15/15 (100%)	0.00962	Maximum	--	2	MCL	N	BSL
	Beryllium	<0.002	mg/L	0/15 (0%)	<0.002	Maximum	--	0.004	MCL	N	IFD
	Cadmium	0.000647	mg/L	1/15 (7%)	0.000647	Maximum	--	0.005	MCL	N	BSL, IFD
	Chromium	0.00107	mg/L	2/15 (13%)	0.00107	Maximum	--	0.4	MCL	N	BSL
	Cobalt	0.00322	mg/L	15/15 (100%)	0.00322	Maximum	--	0.006	RSL	N	BSL
	Lead	0.000942	mg/L	2/15 (13%)	0.000942	Maximum	--	0.015	MCL	N	BSL
	Lithium	0.481	mg/L	17/17 (100%)	0.481	Maximum	0.4282	0.04	RSL	N	BKG
	Mercury	0.000056	mg/L	2/15 (13%)	0.000056	Maximum	--	0.002	MCL	N	BSL
	Molybdenum	<0.005	mg/L	0/17 (0%)	<0.005	Maximum	--	0.1	RSL	N	IFD
	Selenium	0.00472	mg/L	1/15 (7%)	0.00472	Maximum	--	0.05	MCL	N	BSL, IFD
	Thallium	<0.004	mg/L	0/15 (0%)	<0.004	Maximum	--	0.002	MCL	N	IFD
	Radium-226 + Radium-228	0.952 +/- 0.441	piC/L	7/15 (47%)	0.952 +/- 0.441	Maximum	--	5	MCL	N	BSL
	Carbonate Alkalinity	<5.00	mg/L	0/2 (0%)	<5.00	Maximum	--	--	--	--	--
	Bicarbonate Alkalinity	301	mg/L	2/2 (100%)	301	Maximum	--	--	--	--	--
	Hydroxide Alkalinity	<5.00	mg/L	0/2 (0%)	<5.00	Maximum	--	--	--	--	--
	Magnesium	83.0	mg/L	3/3 (100%)	83.0	Maximum	--	400	RDWC	N	BSL
	Nitrate as N	0.24	mg/L	2/6 (33%)	0.24	Maximum	--	10	SMCL	N	BSL
	Potassum	12.1	mg/L	3/3 (100%)	12.1	Maximum	--	--	--	--	--
	Sodium	81.0	mg/L	3/3 (100%)	81.0	Maximum	--	--	--	--	--
	Specific Conductance	2950	umhos/cm	3/3(100%)	2950	Maximum	--	--	--	--	--
	Chemical Oxygen Demand	6.0	mg/L	1/5 (20%)	6.0	Maximum	--	--	--	--	--

Notes:

(1) Established as part of CCR program at the Facility

(2) RSL = Regional Screening Level for Tapwater, MCL - Maximum Contaminant Level, SMCL - Secondard MCL, RDWC - Michigan Criteria

(3) ASL = Above Screening Level; BSL = Below Screening Level; IFD = Infrequent Detection

Table 4. Occurrence, Distribution, and Selection of Chemicals of Potential Concern for Shallow Groundwater associated with Planned Impoundment F0-O8 - MW-9

Western Farmers Power Station, Fort Towson, Oklahoma

Scenario Timeframe:	Current/Future
Location:	MW-9
Medium:	On-site Shallow Groundwater
Exposure Medium:	On-site Shallow Groundwater

Exposure Point	Chemical	Maximum Concentration	Units	Detection Frequency	Concentration Used for Screening		Site-Specific Background Level (1)	Screening Toxicity Value	Screening Toxicity Value Source (2)	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
On-Site Shallow Groundwater	Boron	0.322	mg/L	14/16 (87.5%)	0.322	Maximum	1.935	4	RSL	N	BSL, BKG
	Calcium	159.0	mg/L	16/16 (100%)	159.0	Maximum	961.4	--	--	N	BKG
	Chloirde	5.720	mg/L	16/16 (100%)	5.720	Maximum	11.6	250	SMCL	N	BSL, BKG
	Fluoride	0.3600	mg/L	16/16 (100%)	0.3600	Maximum	2.84	4	MCL	N	BSL, BKG
	pH	8.30	SU	16/16 (100%)	8.30	Maximum	8	6.5-8.5	SMCL	N	BSL
	Sulfate	33.90	mg/L	16/16 (100%)	33.90	Maximum	2,156	250	SMCL	N	BSL
	Total Dissolved Solids	216.0	mg/L	16/16 (100%)	216.0	Maximum	3,333	500	SMCL	N	BSL
	Antimony	0.0011	mg/L	1/13 (8%)	0.0011	Maximum	--	0.006	MCL	N	BSL, IFD
	Arsenic	0.0044	mg/L	13/13 (100%)	0.0044	Maximum	--	0.01	MCL	N	BSL
	Barium	0.1510	mg/L	13/13 (100%)	0.1510	Maximum	--	2	MCL	N	BSL
	Beryllium	0.0005	mg/L	7/13 (54%)	0.0005	Maximum	--	0.004	MCL	N	BSL
	Cadmium	<0.00080	mg/L	0/13 (0%)	<0.00080	Maximum	--	0.005	MCL	N	BSL, IFD
	Chromium	0.0062	mg/L	11/13 (85%)	0.0062	Maximum	--	0.4	MCL	N	BSL
	Cobalt	0.0018	mg/L	11/13 (85%)	0.0018	Maximum	--	0.006	RSL	N	BSL
	Lead	0.0012	mg/L	11/13 (85%)	0.0012	Maximum	--	0.015	MCL	N	BSL
	Lithium	0.0042	mg/L	6/15 (40%)	0.0042	Maximum	0.4282	0.04	RSL	N	BSL, BKG
	Mercury	<0.000150	mg/L	0/13 (0%)	<0.000150	Maximum	--	0.002	MCL	N	BSL, IFD
	Molybdenum	<0.00100	mg/L	0/15 (0%)	<0.00100	Maximum	--	0.1	RSL	N	BSL, IFD
	Selenium	0.00135	mg/L	6.13 (46%)	0.00135	Maximum	--	0.05	MCL	N	BSL
	Thallium	<0.00400	mg/L	0/13 (0%)	<0.00400	Maximum	--	0.002	MCL	N	BSL, IFD
	Radium-226 + Radium-228	0.810	piC/L	4/13 (31%)	0.810	Maximum	--	5	MCL	N	BSL
	Carbonate Alkalinity	<5.0	mg/L	0/2 (0%)	<5.0	Maximum	--	--	--	--	--
	Bicarbonate Alkalinity	104.0	mg/L	2/2 (100%)	104.0	Maximum	--	--	--	--	--
	Hydroxide Alkalinity	<5.0	mg/L	0/2 (0%)	<5.0	Maximum	--	--	--	--	--
	Magnesium	2.64	mg/L	2/2 (100%)	2.64	Maximum	--	400	RDWC	N	BSL
	Nitrate as N	0.4790	mg/L	4/4 (100%)	0.4790	Maximum	--	10	SMCL	N	BSL
	Potassum	0.8870	mg/L	2/2 (100%)	0.8870	Maximum	--	--	--	--	--
	Sodium	19.50	mg/L	2/2 (100%)	19.50	Maximum	--	--	--	--	--
	Specific Conductance	197.0	umhos/cm	2/2 (100%)	197.0	Maximum	--	--	--	--	--
	Chemical Oxygen Demand	8.0	mg/L	4/4 (100%)	8.0	Maximum	--	--	--	--	--

Notes:

(1) Established as part of CCR program at the Facility

(2) RSL = Regional Screening Level for Tapwater, MCL - Maximum Contaminant Level, SMCL - Secondard MCL, RDWC - Michigan Criteria

(3) ASL = Above Screening Level; BSL = Below Screening Level; IFD = Infrequent Detection

Table 5. Occurrence, Distribution, and Selection of Chemicals of Potential Concern for Shallow Groundwater associated with Planned Impoundment F0-O8 - MW-10

Western Farmers Power Station, Fort Towson, Oklahoma

Scenario Timeframe:	Current/Future
Location:	MW-10
Medium:	On-site Shallow Groundwater
Exposure Medium:	On-site Shallow Groundwater

Exposure Point	Chemical	Maximum Concentration	Units	Detection Frequency	Concentration Used for Screening		Site-Specific Background Level (1)	Screening Toxicity Value	Screening Toxicity Value Source (2)	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
On-Site Shallow Groundwater	Boron	4.0	mg/L	17/17 (100%)	4.0	Maximum	1.935	4	RSL	N	BSL
	Calcium	246	mg/L	17/17(100%)	246	Maximum	961.4	--	--	N	BKG
	Chloride	42	mg/L	17/17 (100%)	42.00	Maximum	11.6	250	SMCL	N	BSL
	Fluoride	1.75	mg/L	16/17 (94%)	1.75	Maximum	2.84	4	MCL	N	BSL, BKG
	pH	8.2	SU	17/17 (100%)	8.2	Maximum	8	6.5-8.5	SMCL	N	BSL
	Sulfate	1,400	mg/L	17/17 (100%)	1,400	Maximum	2,156	250	SMCL	N	BKG
	Total Dissolved Solids	1,620	mg/L	17/17 (100%)	1,620	Maximum	3,333	500	SMCL	N	BKG
	Antimony	<0.004	mg/L	0/14 (0%)	<0.0040	Maximum	--	0.006	MCL	N	IFD
	Arsenic	0.00378	mg/L	14/14 (100%)	0.00378	Maximum	--	0.01	MCL	N	BSL
	Barium	0.0339	mg/L	14/14 (100%)	0.0339	Maximum	--	2	MCL	N	BSL
	Beryllium	<0.0010	mg/L	0/14 (0%)	<0.0010	Maximum	--	0.004	MCL	N	IFD
	Cadmium	<0.00040	mg/L	0/14 (0%)	<0.00040	Maximum	--	0.005	MCL	N	IFD
	Chromium	0.00502	mg/L	5/14 (36%)	0.00502	Maximum	--	0.4	MCL	N	BSL
	Cobalt	0.00424	mg/L	5/14 (36%)	0.00424	Maximum	--	0.006	RSL	N	BSL
	Lead	0.000163	mg/L	1/14 (7%)	0.000163	Maximum	--	0.015	MCL	N	BSL, IFD
	Lithium	0.0908	mg/L	16/16 (100%)	0.0908	Maximum	0.4282	0.04	RSL	N	BKG
	Mercury	<0.000150	mg/L	0/14 (0%)	<0.000150	Maximum	--	0.002	MCL	N	IFD
	Molybdenum	0.00263	mg/L	14/16 (87.5%)	0.00263	Maximum	--	0.1	RSL	N	BSL
	Selenium	0.00180	mg/L	3/14 (21%)	0.00180	Maximum	--	0.05	MCL	N	BSL
	Thallium	<0.0040	mg/L	0/14 (0%)	<0.0040	Maximum	--	0.002	MCL	N	IFD
	Radium-226 + Radium-228	1.57 +/- 0.440	piC/L	12/14 (86%)	1.57 +/- 0.440	Maximum	--	5	MCL	N	BSL
	Carbonate Alkalinity	<5.0	mg/L	0/2 (0%)	<5.0	Maximum	--	--	--	--	--
	Bicarbonate Alkalinity	112	mg/L	2/2 (100%)	112	Maximum	--	--	--	--	--
	Hydroxide Alkalinity	<5.0	mg/L	0/2 (0%)	<5.0	Maximum	--	--	--	--	--
	Magnesium	55.4	mg/L	3/3 (100%)	55.4	Maximum	--	400	RDWC	N	BSL
	Nitrate as N	1.42	mg/L	6/6 (100%)	1.42	Maximum	--	10	SMCL	N	BSL
	Potassum	13.2	mg/L	3/3 (100%)	13.2	Maximum	--	--	--	--	--
	Sodium	299.0	mg/L	3/3 (100%)	299.0	Maximum	--	--	--	--	--
	Specific Conductance	2,080	umhos/cm	2/2 (100%)	2,080	Maximum	--	--	--	--	--
	Chemical Oxygen Demand	6.0	mg/L	1/5 (20%)	6.0	Maximum	--	--	--	--	--

Notes:

(1) Established as part of CCR program at the Facility

(2) RSL = Regional Screening Level for Tapwater, MCL - Maximum Contaminant Level, SMCL - Secondard MCL, RDWC - Michigan Criteria

(3) ASL = Above Screening Level; BSL = Below Screening Level; IFD = Infrequent Detection

Table 6. Occurrence, Distribution, and Selection of Chemicals of Potential Concern for Shallow Groundwater associated with Planned Impoundment F0-O8 - MW-11

Western Farmers Power Station, Fort Towson, Oklahoma

Scenario Timeframe:	Current/Future
Location:	MW-11
Medium:	On-site Shallow Groundwater
Exposure Medium:	On-site Shallow Groundwater

Exposure Point	Chemical	Maximum Concentration	Units	Detection Frequency	Concentration Used for Screening		Site-Specific Background Level (1)	Screening Toxicity Value	Screening Toxicity Value Source (2)	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
On-Site Shallow Groundwater	Boron	3.82	mg/L	16/16 (100%)	3.82	Maximum	1.935	4	RSL	N	BSL
	Calcium	70.90	mg/L	16/16 (100%)	70.90	Maximum	961.4	--	--	N	BKG
	Chloride	62.20	mg/L	16/16 (100%)	62.20	Maximum	11.6	250	SMCL	N	BSL
	Fluoride	2.20	mg/L	16/16 (100%)	2.20	Maximum	2.84	4	MCL	N	BKG, BSL
	pH	8.40	SU	16/16 (100%)	8.40	Maximum	8	6.5-8.5	SMCL	N	BSL
	Sulfate	854.0	mg/L	16/16 (100%)	854.0	Maximum	2,156	250	SMCL	N	BKG
	Total Dissolved Solids	1,290	mg/L	16/16 (100%)	1,290	Maximum	3,333	500	SMCL	N	BKG
	Antimony	0.00438	mg/L	1/13 (7.7%)	0.00438	Maximum	--	0.006	MCL	N	BSL, IFD
	Arsenic	0.00308	mg/L	8/13 (62%)	0.00308	Maximum	--	0.01	MCL	N	BSL
	Barium	0.26200	mg/L	13/13 (100%)	0.26200	Maximum	--	2	MCL	N	BSL
	Beryllium	<0.00100	mg/L	0/13 (0%)	<0.00100	Maximum	--	0.004	MCL	N	IFD
	Cadmium	<0.000500	mg/L	0/13 (0%)	<0.000500	Maximum	--	0.005	MCL	N	IFD
	Chromium	0.00138	mg/L	3/13 (23%)	0.00138	Maximum	--	0.4	MCL	N	BSL
	Cobalt	0.000187	mg/L	2/13 (15%)	0.000187	Maximum	--	0.006	RSL	N	BSL
	Lead	0.001070	mg/L	1/13 (7.7%)	0.001070	Maximum	--	0.015	MCL	N	BSL, IFD
	Lithium	0.07380	mg/L	1515 (100%)	0.07380	Maximum	0.4282	0.04	RSL	N	BKG
	Mercury	<0.000150	mg/L	0/13 (0%)	<0.000150	Maximum	--	0.002	MCL	N	IFD
	Molybdenum	0.00481	mg/L	14/15 (93%)	0.00481	Maximum	--	0.1	RSL	N	BSL
	Selenium	0.00043	mg/L	1/13 (7.7%)	0.00043	Maximum	--	0.05	MCL	N	BSL, IFD
	Thallium	0.000329	mg/L	1/13 (7.7%)	0.000329	Maximum	--	0.002	MCL	N	BSL, IFD
	Radium-226 + Radium-228	1.40 +/- 0.419	piC/L	10/13 (77%)	1.40 +/- 0.419	Maximum	--	5	MCL	N	BSL
	Carbonate Alkalinity	<5.0	mg/L	0/2 (0%)	<5.0	Maximum	--	--	--	--	--
	Bicarbonate Alkalinity	187.0	mg/L	2/2 (100%)	187.0	Maximum	--	--	--	--	--
	Hydroxide Alkalinity	<5.0	mg/L	0/2 (0%)	<5.0	Maximum	--	--	--	--	--
	Magnesium	18.3	mg/L	2/2 (100%)	18.3	Maximum	--	400	RDWC	N	BSL
	Nitrate as N	1.70	mg/L	4/4 (100%)	1.70	Maximum	--	10	SMCL	N	BSL
	Potassum	7.90	mg/L	2/2 (100%)	7.90	Maximum	--	--	--	--	--
	Sodium	356.0	mg/L	2/2 (100%)	356.0	Maximum	--	--	--	--	--
	Specific Conductance	1,850	umhos/cm	2/2 (100%)	1,850	Maximum	--	--	--	--	--
	Chemical Oxygen Demand	<5.00	mg/L	0/4 (0%)	<5.00	Maximum	--	--	--	--	--

Notes:

(1) Established as part of CCR program at the Facility

(2) RSL = Regional Screening Level for Tapwater, MCL - Maximum Contaminant Level, SMCL - Secondard MCL, RDWC - Michigan Criteria

(3) ASL = Above Screening Level; BSL = Below Screening Level; IFD = Infrequent Detection

Table 7. Occurrence, Distribution, and Selection of Chemicals of Potential Concern for Planned Impoundment F0-O8 - MW-22A

Western Farmers Power Station, Fort Towson, Oklahoma

Scenario Timeframe:	Current/Future
Location:	MW-22A
Medium:	On-site Shallow Groundwater
Exposure Medium:	On-site Shallow Groundwater

Exposure Point	Chemical	Maximum Concentration	Units	Detection Frequency	Concentration Used for Screening		Site-Specific Background Level (1)	Screening Toxicity Value	Screening Toxicity Value Source (2)	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
On-Site Shallow Groundwater	Boron	2.18	mg/L	15/15 (100%)	2.18	Maximum	1.935	4	RSL	N	BSL
	Calcium	942	mg/L	15/15 (100%)	942	Maximum	961.4	--	--	N	BKG
	Chloirde	3.33	mg/L	15/15 (100%)	3.33	Maximum	11.6	250	SMCL	N	BSL, BKG
	Fluoride	2.24	mg/L	15/15 (100%)	2.24	Maximum	2.84	4	MCL	N	BSL, BKG
	pH	7.61	SU	15/15 (100%)	7.61	Maximum	8	6.5-8.5	SMCL	N	BSL, BKG
	Sulfate	2,030	mg/L	15/15 (100%)	2,030	Maximum	2,156	250	SMCL	N	BKG
	Total Dissolved Solids	3,170	mg/L	15/15 (100%)	3,170	Maximum	3,333	500	SMCL		BKG
	Antimony	<0.00400	mg/L	0/13 (0%)	<0.00400	Maximum	--	0.006	MCL		IFD
	Arsenic	0.00417	mg/L	12/13 (92%)	0.00417	Maximum	--	0.01	MCL		BSL
	Barium	0.0338	mg/L	13/13 (100%)	0.0338	Maximum	--	2	MCL		BSL
	Beryllium	0.000409	mg/L	1/13 (7.7%)	0.000409	Maximum	--	0.004	MCL		BSL, IFD
	Cadmium	<0.00200	mg/L	0/13 (0%)	<0.00200	Maximum	--	0.005	MCL		IFD
	Chromium	0.00315	mg/L	4/13 (31%)	0.00315	Maximum	--	0.4	MCL		BSL
	Cobalt	0.00106	mg/L	10/13 (77%)	0.00106	Maximum	--	0.006	RSL		BSL
	Lead	0.000231	mg/L	3/13 (23%)	0.000231	Maximum	--	0.015	MCL		BSL
	Lithium	0.351	mg/L	14/14(100%)	0.351	Maximum	0.4282	0.04	RSL		BKG
	Mercury	<0.000150	mg/L	0/13 (0%)	<0.000150	Maximum	--	0.002	MCL		IFD
	Molybdenum	0.000787	mg/L	3/13 (23%)	0.000787	Maximum	--	0.1	RSL		BSL
	Selenium	0.000622	mg/L	3/13 (23%)	0.000622	Maximum	--	0.05	MCL		BSL
	Thallium	<0.002500	mg/L	0/13 (0%)	<0.002500	Maximum	--	0.002	MCL		IFD
	Radium-226 + Radium-228	1.05 +/- 0.299	piC/L	6/13 (46%)	1.05 +/- 0.299	Maximum	--	5	MCL		BSL
	Carbonate Alkalinity	<5.0	mg/L	0/2 (9%)	<5.0	Maximum	--	--	--	--	--
	Bicarbonate Alkalinity	256	mg/L	2/2 (100%)	256	Maximum	--	--	--	--	--
	Hydroxide Alkalinity	<5.00	mg/L	0/2 (0%)	<5.00	Maximum	--	--	--	--	--
	Magnesium	107.0	mg/L	2/2 (100%)	107.0	Maximum	--	400	RDWC		BSL
	Nitrate as N	0.46	mg/L	2/4 (50%)	0.46	Maximum	--	10	SMCL		BSL
	Potassum	17.80	mg/L	2/2 (100%)	17.80	Maximum	--	--	--	--	--
	Sodium	169.0	mg/L	2/2 (100%)	169.0	Maximum	--	--	--	--	--
	Specific Conductance	3,180	umhos/cm	2/2 (100%)	3,180	Maximum	--	--	--	--	--
	Chemical Oxygen Demand	15.0	mg/L	2/4 (100%)	15.0	Maximum	--	--	--	--	--

Notes:

(1) Established as part of CCR program at the Facility

(2) RSL = Regional Screening Level for Tapwater, MCL - Maximum Contaminant Level, SMCL - Secondard MCL, RDWC - Michigan Criteria

(3) ASL = Above Screening Level; BSL = Below Screening Level; IFD = Infrequent Detection

Table 8. Occurrence, Distribution, and Selection of Chemicals of Potential Concern for Shallow Groundwater associated with Planned Impoundment F0-O8 - MW-23A
Western Farmers Power Station, Fort Towson, Oklahoma

Scenario Timeframe:	Current/Future
Location:	MW-23A
Medium:	On-site Shallow Groundwater
Exposure Medium:	On-site Shallow Groundwater

Exposure Point	Chemical	Maximum Concentration	Units	Detection Frequency	Concentration Used for Screening		Site-Specific Background Level (1)	Screening Toxicity Value	Screening Toxicity Value Source (2)	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
On-Site Shallow Groundwater	Boron	2.36	mg/L	16/16 (100%)	2.36	Maximum	1.935	4	RSL	N	BSL
	Calcium	827	mg/L	16/16 (100%)	827	Maximum	961.4	--	--	N	BKG
	Chloirde	12.80	mg/L	16/16 (100%)	12.80	Maximum	11.6	250	SMCL	N	BSL
	Fluoride	1.5	mg/L	16/16 (100%)	1.5	Maximum	2.84	4	MCL	N	BSL
	pH	8.0	SU	15/15 (100%	8.0	Maximum	8	6.5-8.5	SMCL	N	BSL
	Sulfate	2310	mg/L	16/16 (100%)	1930	95UCL	2,156	250	SMCL	Y	BKG
	Total Dissolved Solids	3280	mg/L	16/16 (100%)	3280	Maximum	3,333	500	SMCL	N	BKG
	Antimony	<0.004	mg/L	0/14 (0%)	<0.004	Maximum	--	0.006	MCL	N	IFD
	Arsenic	0.00321	mg/L	1214 (86%)	0.00321	Maximum	--	0.01	MCL	N	BSL
	Barium	0.209	mg/L	14/14 (100%)	0.209	Maximum	--	2	MCL	N	BSL
	Beryllium	<0.005	mg/L	0/14 (0%)	<0.005	Maximum	--	0.004	MCL	N	IFD
	Cadmium	<0.0008	mg/L	0/14 (0%)	<0.0008	Maximum	--	0.005	MCL	N	IFD
	Chromium	0.00376	mg/L	4/14 (29%)	0.00376	Maximum	--	0.4	MCL	N	BSL
	Cobalt	0.000996	mg/L	11/14 (79%)	0.000996	Maximum	--	0.006	RSL	N	BSL
	Lead	0.00631	mg/L	2/14 (14%)	0.00631	Maximum	--	0.015	MCL	N	BSL
	Lithium	0.311	mg/L	1515 (100%)	0.311	Maximum	0.4282	0.04	RSL	N	BKG
	Mercury	<0.00015	mg/L	0/15 (0%)	<0.00015	Maximum	--	0.002	MCL	N	IFD
	Molybdenum	0.00559	mg/L	1/15 (7%)	0.00559	Maximum	--	0.1	RSL	N	BSL, IFD
	Selenium	0.00141	mg/L	3/14 (21%)	0.00141	Maximum	--	0.05	MCL	N	IFD
	Thallium	<0.004	mg/L	0/14 (0%)	<0.004	Maximum	--	0.002	MCL	N	IFD
	Radium-226 + Radium-228	1.26 =/- 0.325	piC/L	10/13 (77%)	1.26 =/- 0.325	Maximum	--	5	MCL	N	BSL
	Carbonate Alkalinity	<5.0	mg/L	0/2 (0%)	<5.0	Maximum	--	--	--		
	Bicarbonate Alkalinity	310	mg/L	2/2 (100%)	310	Maximum	--	--	--		
	Hydroxide Alkalinity	<5.0	mg/L	0/2 (0%)	<5.0	Maximum	--	--	--		
	Magnsium	104.0	mg/L	3/3 (100%)	104.0	Maximum	--	400	RDWC	N	BSL
	Nitrate as N	0.053	mg/L	1/5 (20%)	0.053	Maximum	--	10	SMCL	N	BSL
	Potassum	15.5	mg/L	3/3 (100%)	15.5	Maximum	--	--	--	--	--
	Sodium	153.0	mg/L	3/3 (100%)	153.0	Maximum	--	--	--	--	--
	Specific Conductance	3200	umhos/cm	2/2 (100%)	3200	Maximum	--	--	--	--	--
	Chemical Oxygen Demand	<5.0	mg/L	0/4 (0%)	<5.0	Maximum	--	--	--	--	--

Notes:

(1) Established as part of CCR program at the Facility

(2) RSL = Regional Screening Level for Tapwater, MCL - Maximum Contaminant Level, SMCL - Secondard MCL, RDWC - Michigian Criteria

(3) ASL = Above Screening Level; BSL = Below Screening Level; IFD = Infrequent Detection, ABKG - Above Background Level

Table 9. Occurrence, Distribution, and Selection of Chemicals of Potential Concern for Shallow Groundwater associated with Planned Impoundment F0-O8 - MW-24
Western Farmers Power Station, Fort Towson, Oklahoma

Scenario Timeframe:	Current/Future
Location:	MW-24
Medium:	On-site Shallow Groundwater
Exposure Medium:	On-site Shallow Groundwater

Exposure Point	Chemical	Maximum Concentration	Units	Detection Frequency	Concentration Used for Screening		Site-Specific Background Level (1)	Screening Toxicity Value	Screening Toxicity Value Source (2)	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
On-Site Shallow Groundwater	Boron	1.55	mg/L	16/16 (100%)	1.55	Maximum	1.935	4	RSL	N	BSL, BKG
	Calcium	940	mg/L	16/16 (100%)	940	Maximum	961.4	--	--	N	BKG
	Chloirde	24.90	mg/L	16/16 (100%)	24.90	Maximum	11.6	250	SMCL	N	BSL
	Fluoride	2.12	mg/L	16/16 (100%)	2.12	Maximum	2.84	4	MCL	N	BSL, BKG
	pH	8.00	SU	16/16 (100%)	8.00	Maximum	8	6.5-8.5	SMCL	N	BSL, BKG
	Sulfate	2,470	mg/L	16/16 (100%)	2,058	95UCL	2,156	250	SMCL	N	BKG
	Total Dissolved Solids	3290	mg/L	16/16 (100%)	3,290	Maximum	3,333	500	SMCL	N	BKG
	Antimony	0.00451	mg/L	1/13 (7.7%)	0.00451	Maximum	--	0.006	MCL	N	BSL, IFD
	Arsenic	0.00443	mg/L	6/13 (46%)	0.00443	Maximum	--	0.01	MCL	N	BSL
	Barium	0.00878	mg/L	12/13 (92%)	0.00878	Maximum	--	2	MCL	N	BSL
	Beryllium	0.000551	mg/L	1/13 (7.7%)	0.000551	Maximum	--	0.004	MCL	N	BSL
	Cadmium	<0.0010	mg/L	0/13 (0%)	<0.0010	Maximum	--	0.005	MCL	N	IFD
	Chromium	0.00578	mg/L	1/13 (7.7%)	0.00578	Maximum	--	0.4	MCL	N	BSL, IFD
	Cobalt	0.0012	mg/L	6/13 (46%)	0.0012	Maximum	--	0.006	RSL	N	BSL
	Lead	<0.0010	mg/L	0/13 (0%)	<0.0010	Maximum	--	0.015	MCL	N	IFD
	Lithium	0.392	mg/L	15/15 (100%)	0.392	Maximum	0.4282	0.04	RSL	N	BKG
	Mercury	0.000035	mg/L	1/13 (7.7%)	0.000035	Maximum	--	0.002	MCL	N	BSL, IFD
	Molybdenum	<0.010	mg/L	0/15 (0%)	<0.010	Maximum	--	0.1	RSL	N	IFD
	Selenium	0.003	mg/L	3/13 (23%)	0.003	Maximum	--	0.05	MCL	N	BSL
	Thallium	0.00603	mg/L	1/13 (7.7%)	0.00603	Maximum	--	0.002	MCL	N	BSL, IFD
	Radium-226 + Radium-228	1.32 +/- 0.332	piC/L	11/13 (85%)	1.32 +/- 0.332	Maximum	--	5	MCL	N	BSL
	Carbonate Alkalinity	<5.0	mg/L	0/3 (0%)	<5.0	Maximum	--	--	--	--	--
	Bicarbonate Alkalinity	309	mg/L	3/3 (100%)	309	Maximum	--	--	--	--	--
	Hydroxide Alkalinity	<5.00	mg/L	0/3 (0%)	<5.00	Maximum	--	--	--	--	--
	Magnesium	115.0	mg/L	3/3 (100%)	115.0	Maximum	--	400	RDWC	N	BSL
	Nitrate as N	0.37	mg/L	1/4 (25%)	0.37	Maximum	--	10	SMCL	N	BSL
	Potassum	13	mg/L	3/3 (100%)	13	Maximum	--	--	--	--	--
	Sodium	274.0	mg/L	3/3 (100%)	274.0	Maximum	--	--	--	--	--
	Specific Conductance	3,500	umhos/cm	3/3 (100%)	3500	Maximum	--	--	--	--	--
	Chemical Oxygen Demand	6.0	mg/L	14 (25%)	6.0	Maximum	--	--	--	--	--

Notes:

(1) Established as part of CCR program at the Facility

(2) RSL = Regional Screening Level for Tapwater, MCL - Maximum Contaminant Level, SMCL - Secondard MCL, RDWC - Michigan Criteria

(3) ASL = Above Screening Level; BSL = Below Screening Level; IFD = Infrequent Detection

Table 10. Occurrence, Distribution, and Selection of Chemicals of Potential Concern for Shallow Groundwater associated with Planned Impoundment F0-O8 - MW-25R

Western Farmers Power Station, Fort Towson, Oklahoma

Scenario Timeframe:	Current/Future
Location:	MW-25R
Medium:	On-site Shallow Groundwater
Exposure Medium:	On-site Shallow Groundwater

Exposure Point	Chemical	Maximum Concentration	Units	Detection Frequency	Concentration Used for Screening		Site-Specific Background Level (1)	Screening Toxicity Value	Screening Toxicity Value Source (2)	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
On-Site Shallow Groundwater	Boron	3.38	mg/L	17/17 (100%)	3.38	Maximum	1.935	4	RSL	N	BSL
	Calcium	499	mg/L	17/17 (100%)	499	Maximum	961.4	--	--	N	BKG
	Chloirde	30.80	mg/L	17/17 (100%)	30.80	Maximum	11.6	250	SMCL	N	BSL, BKG
	Fluoride	1.74	mg/L	17/17 (100%)	1.74	Maximum	2.84	4	MCL	N	BSL, BKG
	pH	7.8	SU	17/17 (100%)	7.8	Maximum	8	6.5-8.5	SMCL	N	BSL, BKG
	Sulfate	1480	mg/L	17/17 (100%)	1480	Maximum	2,156	250	SMCL	N	BKG
	Total Dissolved Solids	2580	mg/L	17/17 (100%)	2580	Maximum	3,333	500	SMCL	N	BKG
	Antimony	<0.004	mg/L	0/13 (0%)	<0.004	Maximum	--	0.006	MCL	N	IFD
	Arsenic	0.0027	mg/L	9/13 (69%)	0.0027	Maximum	--	0.01	MCL	N	BSL
	Barium	0.0404	mg/L	13/13 (100%)	0.0404	Maximum	--	2	MCL	N	BSL
	Beryllium	0.00011	mg/L	1/13 (7.7%)	0.00011	Maximum	--	0.004	MCL	N	BSL, IFD
	Cadmium	<0.00050	mg/L	0/13 (0%)	<0.00050	Maximum	--	0.005	MCL	N	IFD
	Chromium	0.00649	mg/L	5/13 (38%)	0.00649	Maximum	--	0.4	MCL	N	BSL
	Cobalt	0.00243	mg/L	11/13 (85%)	0.00243	Maximum	--	0.006	RSL	N	BSL
	Lead	0.0141	mg/L	11/13 (85%)	0.0141	Maximum	--	0.015	MCL	N	BSL
	Lithium	0.149	mg/L	16/16 (100%)	0.149	Maximum	0.4282	0.04	RSL	N	BSK, BKG
	Mercury	0.0001	mg/L	3/13 (23%)	0.0001	Maximum	--	0.002	MCL	N	BSL
	Molybdenum	0.00327	mg/L	8/16 (50%)	0.00327	Maximum	--	0.1	RSL	N	BSL
	Selenium	0.00031	mg/L	3/13 (23%)	0.00031	Maximum	--	0.05	MCL	N	BSL
	Thallium	<0.00400	mg/L	0/13 (0%)	<0.00400	Maximum	--	0.002	MCL	N	IFD
	Radium-226 + Radium-228	2.11 +/- 0.519	piC/L	10/13 (77%)	2.11 +/- 0.519	Maximum	--	5	MCL	N	BSL
	Carbonate Alkalinity	<5.00	mg/L	0/2 (0%)	<5.00	Maximum	--	--	--	--	--
	Bicarbonate Alkalinity	375	mg/L	2/2 (100%)	375	Maximum	--	--	--	--	--
	Hydroxide Alkalinity	<5.00	mg/L	0/2 (0%)	<5.00	Maximum	--	--	--	--	--
	Magnesium	49.4	mg/L	2/2 (100%)	49.4	Maximum	--	400	RDWC	N	BSL
	Nitrate as N	0.35	mg/L	1/4 (25%)	0.35	Maximum	--	10	SMCL	N	BSL
	Potassum	8.59	mg/L	2/2 (100%)	8.59	Maximum	--	--	--	--	--
	Sodium	134.0	mg/L	2/2 (100%)	134.0	Maximum	--	--	--	--	--
	Specific Conductance	2540	umhos/cm	2/2 (100%)	2540	Maximum	--	--	--	--	--
	Chemical Oxygen Demand	5.3	mg/L	2/4 (50%)	5.3	Maximum	--	--	--	--	--

Notes:

(1) Established as part of CCR program at the Facility

(2) RSL = Regional Screening Level for Tapwater, MCL - Maximum Contaminant Level, SMCL - Secondard MCL, RDWC - Michigan Criteria

(3) ASL = Above Screening Level; BSL = Below Screening Level; IFD = Infrequent Detection

Appendix A. ProUCL Output

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.13/9/2020 10:06:33 AM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Sulfate MW24

General Statistics			
Total Number of Observations	16	Number of Distinct Observations	15
		Number of Missing Observations	0
Minimum	1700	Mean	1978
Maximum	2470	Median	1920
SD	183.5	Std. Error of Mean	45.88
Coefficient of Variation	0.0928	Skewness	1.357
Normal GOF Test			
Shapiro Wilk Test Statistic	0.888	Shapiro Wilk GOF Test	
		Data appear Normal at 5% Significance	
5% Shapiro Wilk Critical Value	0.887	Level	
Lilliefors Test Statistic	0.204	Lilliefors GOF Test	
		Data appear Normal at 5% Significance	
5% Lilliefors Critical Value	0.213	Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
		95% Adjusted-CLT UCL (Chen-	
95% Student's-t UCL	2058	1995)	2070
		95% Modified-t UCL (Johnson-1978)	2061
Gamma GOF Test			
A-D Test Statistic	0.657	Anderson-Darling Gamma GOF Test	
		Detected data appear Gamma Distributed at 5%	
5% A-D Critical Value	0.736	Significance Level	
		Kolmogorov-Smirnov Gamma GOF	
K-S Test Statistic	0.193	Test	
		Detected data appear Gamma Distributed at 5%	
5% K-S Critical Value	0.214	Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	131.6	k star (bias corrected MLE)	107
Theta hat (MLE)	15.03	Theta star (bias corrected MLE)	18.49
nu hat (MLE)	4211	nu star (bias corrected)	3423
MLE Mean (bias corrected)	1978	MLE Sd (bias corrected)	191.2
		Approximate Chi Square Value (0.05)	3288
Adjusted Level of Significance	0.0335	Adjusted Chi Square Value	3273
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	2059	95% Adjusted Gamma UCL (use when n<50)	2068
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.917	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.887	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.187	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.213	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	7.438	Mean of logged Data	7.586
Maximum of Logged Data	7.812	SD of logged Data	0.0888
Assuming Lognormal Distribution			
95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	2109
95% Chebyshev (MVUE) UCL	2169	97.5% Chebyshev (MVUE) UCL	2252
99% Chebyshev (MVUE) UCL	2415		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	2053	95% Jackknife UCL	2058
95% Standard Bootstrap UCL	2051	95% Bootstrap-t UCL	2090
95% Hall's Bootstrap UCL	2114	95% Percentile Bootstrap UCL	2058
95% BCA Bootstrap UCL	2063		
90% Chebyshev(Mean, Sd) UCL	2115	95% Chebyshev(Mean, Sd) UCL	2178
97.5% Chebyshev(Mean, Sd) UCL	2264	99% Chebyshev(Mean, Sd) UCL	2434
Suggested UCL to Use			
95% Student's-t UCL	2058		

UCL Statistics for Uncensored Full Data Sets

Date/Time of Computation	ProUCL 5.11/27/2020 2:21:10 PM		
From File	WorkSheet.xls		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		

MW23A Sulfate

General Statistics			
Total Number of Observations	16	Number of Distinct Observations	14
		Number of Missing Observations	0
Minimum	1560	Mean	1847
Maximum	2310	Median	1815
SD	168.3	Std. Error of Mean	42.08
Coefficient of Variation	0.0911	Skewness	1.345
Normal GOF Test			
Shapiro Wilk Test Statistic	0.881	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.887	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.234	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.213	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1921	95% Adjusted-CLT UCL (Chen-1995)	1931
		95% Modified-t UCL (Johnson-1978)	1923
Gamma GOF Test			
A-D Test Statistic	0.7	Anderson-Darling Gamma GOF Test	
		Detected data appear Gamma Distributed at 5%	
5% A-D Critical Value	0.736	Significance Level	
K-S Test Statistic	0.219	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.214	Data Not Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	136	k star (bias corrected MLE)	110.5
Theta hat (MLE)	13.58	Theta star (bias corrected MLE)	16.71
nu hat (MLE)	4352	nu star (bias corrected)	3537

MLE Mean (bias corrected)	1847	MLE Sd (bias corrected)	175.7
		Approximate Chi Square Value (0.05)	3400
Adjusted Level of Significance	0.0335	Adjusted Chi Square Value	3385
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	1921	95% Adjusted Gamma UCL (use when n<50)	1930
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.91	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.887	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.216	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.213	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	7.352	Mean of logged Data	7.518
Maximum of Logged Data	7.745	SD of logged Data	0.0875
Assuming Lognormal Distribution			
95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	1968
95% Chebyshev (MVUE) UCL	2023	97.5% Chebyshev (MVUE) UCL	2099
99% Chebyshev (MVUE) UCL	2249		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1916	95% Jackknife UCL	1921
95% Standard Bootstrap UCL	1914	95% Bootstrap-t UCL	1954
95% Hall's Bootstrap UCL	2049	95% Percentile Bootstrap UCL	1920
95% BCA Bootstrap UCL	1933		
90% Chebyshev(Mean, Sd) UCL	1973	95% Chebyshev(Mean, Sd) UCL	2030
97.5% Chebyshev(Mean, Sd) UCL	2110	99% Chebyshev(Mean, Sd) UCL	2266
Suggested UCL to Use			
95% Adjusted Gamma UCL	1930		

Outlier Tests for Selected Uncensored Variables

User Selected Options
Date/Time of Computation ProUCL 5.13/9/2020 10:07:14 AM
From File
Full Precision

Dixon's Outlier Test for Sulfate MW24

Number of Observations = 16
10% critical value: 0.454
5% critical value: 0.507

1. Observation Value 2470 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.565

For 10% significance level, 2470 is an outlier.
For 5% significance level, 2470 is an outlier.

2. Observation Value 1700 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.357

For 10% significance level, 1700 is not an outlier.
For 5% significance level, 1700 is not an outlier.

Outlier Tests for Selected Uncensored Variables

User Selected Options

Date/Time of Computation	ProUCL 5.11/30/2020 9:12:15 AM
From File	WorkSheet.xls
Full Precision	OFF

Dixon's Outlier Test for Sulfate
MW23A

Number of Observations = 16
10% critical value: 0.454
5% critical value: 0.507
1% critical value: 0.595

1. Observation Value 2310 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.561

For 10% significance level, 2310 is an outlier.
For 5% significance level, 2310 is an outlier.
For 1% significance level, 2310 is not an outlier.

2. Observation Value 1560 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.419

For 10% significance level, 1560 is not an outlier.
For 5% significance level, 1560 is not an outlier.
For 1% significance level, 1560 is not an outlier.