AECOM

Environment

Submitted to:
Platte River Power Authority
Fort Collins, CO

Submitted by:
AECOM
Greenwood Village, CO
60605002
January 31, 2022

Final

Former Bottom Ash Transfer (BAT) Impoundments
Annual Groundwater Monitoring and Corrective Action Report For 2021

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Annual Groundwater Monitoring and Corrective Action Report For 2021

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Acronyms and Abbreviations

95% LCL	95 percent lower confidence limit
ACM	Assessment of Corrective Measure
AECOM	AECOM Technical Services, Inc.
amsl	above mean sea level
BAT	Bottom Ash Transfer
bgs	below ground surface
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
EROP	Engineering Report and Operational Plan
ft/day	foot per day
GWPS	Groundwater Protection Standard
mg/L	milligrams per liter
PLATTE RIVER	Platte River Power Authority
SSI	statistically significant increase
SSL	statistically significant level
TDS	total dissolved solids
UPL	upper prediction limit
USEPA	United States Environmental Protection Agency

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Executive Summary

This report summarizes groundwater monitoring and corrective action activities completed between January 1 and December 31, 2021 at the Coal Combustion Residuals (CCR) BAT Impoundments at the Platte River Power Authority (PLATTE RIVER) Rawhide station, as required by 40 Code of Federal Regulations Section 257.90(e) of the United States Environmental Protection Agency CCR Rule. The location of the CCR unit and program monitoring network for the CCR unit, including supporting monitoring wells, are illustrated on **Figure 1**. No program monitoring wells were modified or abandoned during the reporting period.

PLATTE RIVER completed assessment-mode groundwater monitoring of the BAT Impoundments in 2021 as well as completed the eighth round of baseline detection monitoring for three wells (BAT-10, BAT-11, and BAT-12). Assessment monitoring data reported the detection of Appendix IV constituents of chromium, cobalt, and lead in downgradient monitoring wells at concentrations that represent statistically significant increases (SSIs) over background. Per CCR rule requirements, the groundwater protection standards (GWPS) for each constituent were developed and the data were tested for whether the concentrations represented statistically significant levels (SSLs) above their respective GWPSs. Downgradient wells with a constituent or constituents reported above GWPSs at an SSL are as follows:

- Cobalt in monitoring wells BAT-05

Other salient points for the 2021 annual reporting period include:

- Semiannual assessment-mode groundwater monitoring events were conducted in April and October. Monitoring involved sampling of background monitoring wells and downgradient monitoring wells.
- Baseline Detection Monitoring of three groundwater monitoring wells (BAT-10, BAT-11, and BAT-12) was conducted in January.
- No program transitions (detection to assessment or vice versa) were triggered.

Anticipated activities for the next annual reporting period include:

- Completion of two semi-annual assessment-mode groundwater monitoring events.
- Statistical evaluation of groundwater data for Appendix III and Appendix IV constituents.
- Evaluation of final remedy selection and implementation. Evaluation will include determining if adequate monitoring data, hydrogeological data, contaminant migration pathways information and contaminant exposure pathways information is available to make the final remedy selection.

1.0 Introduction

This is the 2021 Annual Groundwater Monitoring and Corrective Action Report for the former Coal Combustion Residuals (CCR) Bottom Ash Transfer (BAT) Impoundments at the Platte River Power Authority (PLATTE RIVER) Rawhide Energy Station (Rawhide Station or Site) in Larimer County, Colorado. This report was developed by AECOM Technical Services, Inc. (AECOM) at the request of PLATTE RIVER. The purpose of this report is to provide a summary of the groundwater monitoring activities performed at the decommissioned BAT Impoundments in 2021 to comply with the requirements of Title 40 of the Code of Federal Regulations (CFR) Part 257 Subpart D, known as the CCR Rule, which became effective on October 19, 2015. The rule provides standards for the disposal of CCR in landfills and surface impoundments (CCR units) and establishes groundwater monitoring requirements in 40 CFR 257.90 through 257.95. In accordance with 40 CFR 257.90(e), an annual report must be prepared and document the status of the groundwater monitoring and correction action program (as applicable) for the CCR unit, summarize the key actions completed the previous year, describe any problems encountered, discuss actions taken to resolve the problems, and project key activities for the upcoming year. The annual report will be considered complete when it is placed in the facility operating record by January 31, 2022.

1.1 Report Organization

This report is divided into eight sections as outlined below and includes text, tables, figures, and appendices. The sections include:

- Section 1.0 includes an introduction and report organization;
- Section 2.0 provides a facility description that includes the facility location and operational history, a description of the CCR unit and a summary of the areal and site hydrogeology;
- Section 3.0 summarizes the groundwater monitoring activities performed in 2021, and references appendices to this report that contain detailed documentation of those activities;
- Section 4.0 summarizes the groundwater sampling; sampling data analysis and results; and problems encountered and actions taken during groundwater sampling;
- Section 5.0 provides the statistical analysis and results;
- Section 6.0 provides a projection of the key activities anticipated in 2022;
- Section 7.0 provides a summary and findings; and
- Section 8.0 provides a list of references cited in the report.

The report also includes three appendices that provide supporting documentation of the groundwater monitoring and related activities conducted in 2021 that include:

- Appendix A Groundwater Sampling Forms
- Appendix B Laboratory Analytical and Data Validation Reports
- Appendix C Statistical Analysis Results

2.0 Facility Description

2.1 Facility Location and Operational History

The Rawhide Station encompasses approximately 4,560 acres north of Wellington in Larimer County, Colorado. In addition to the plant buildings, the major feature of the facility is an approximately 500-acre dry-land construction reservoir of reclaimed wastewater from the City of Fort Collins, also known as Hamilton Reservoir, which contains approximately 15,000 acre-feet of water and is used for cooling processes. The power block area contains the boiler and turbine buildings, the air quality control equipment, and the administrative offices. A rail spur along the northern edge of the Site connects the Rawhide Facility with the mainline of the Burlington Northern Santa Fe Railway Company Railway Company and is used to deliver coal and construction materials for plant operations. Six generating units are located at the Rawhide Station. Units A, B, C, D, and F are fueled by natural gas, and Unit 1 is fueled by coal from the Powder River Basin in Wyoming.

2.2 BAT Impoundments Description

The BAT Impoundments were located northwest of the main plant, south of the coal stockpile, and north of Hamilton Reservoir (**Figure 1**). Bottom ash produced during the coal combustion process and was hydraulically sluiced from the Unit 1 boiler to one of the two BAT impoundments. These impoundments also received resin filter backwash water from the demineralizer at the wastewater treatment plant. The impoundments were constructed in the early 1980s by excavating below grade into the underlying Pierre Shale and then lining the bottom with 18 inches of compacted clay. Each of the two impoundments measured approximately 725 feet by 225 feet at the surface (approximately 7.5 acres total) with a bottom elevation of 5,660 feet above mean sea level (amsl), a normal water elevation of 5,674 feet amsl, and a top of berm elevation of between 5,678 and 5,679 feet amsl.

In 2020, the BAT impoundments were decommissioned per the requirements of 40 CFR 257.101 and 257.102. A new concrete aboveground catchment is now used in place of the two BAT impoundments. During decommissioning of the BAT Impoundments, the CCR material was removed from the impoundments and hauled to the ASH monofill located at the northwest corner of the site for disposal. Water present in the impoundments was transferred to the PRS ponds located east of the ASH monofill. Following CCR material removal, the area was regraded and vegetated. Details of the BAT Impoundments decommissioning can be found in the Bottom Ash Transfer Impoundment Construction Completion Certification Report (AECOM 2021a). Groundwater in this area is currently being monitored to establish post-decommissioning groundwater conditions.

2.3 Rawhide Station Hydrogeology

The hydrogeology of the Rawhide Station is discussed in the Engineering Report and Operational Plan (EROP) for the Solid Waste Disposal Facility (Platte River 1980), and in the Final Report Investigation of the Groundwater Monitoring Program for the Bottom Ash Disposal Site conducted by Lidstone and Anderson (1989). According to the 1980 EROP, hydrogeology of the Rawhide Station was originally investigated by drilling and installing 23 piezometers in conjunction with the original geotechnical investigation of the site prior to construction of the facility. Data from the piezometers indicated that a groundwater table exists within the weathered and fractured Pierre Shale bedrock beneath the Site, and in alluvial deposits along Coal Creek. The report indicated that the depth to groundwater varied across the Site from 11 to 67 feet below ground surface (bgs), with groundwater generally flowing to the south-southeast. The shallow water table, as explained in the 1980 EROP, was reported to be directly recharged by infiltration from precipitation and surface runoff.

Following construction and operation of the Rawhide Station, Lidstone and Anderson (1989) concluded that sufficient groundwater data were collected to determine that a mound had formed in the shallow, weathered, and fractured Pierre Shale in the vicinity of Hamilton Reservoir. After a review of available

groundwater level information for Rawhide Station, AECOM concluded that the CCR units present at the Site are located hydraulically upgradient of any groundwater mound created by Hamilton Reservoir.

2.4 BAT Impoundments Hydrogeology

The uppermost water-bearing stratum beneath the former BAT Impoundments is identified as the weathered and fractured Pierre Shale, which lies approximately 3 to 17 feet bgs and appeared to be largely recharged by leakage from the former impoundments. Groundwater beneath the former BAT Impoundments is present under water table conditions, where the depth to groundwater ranged from approximately 8.34 feet bgs in BAT-1 in April 2021 to 20.49 feet bgs in BAT-05 in January 2021. Groundwater flow is generally from north to south across the former BAT Impoundments towards Hamilton Reservoir, generally following the topographic slope. During 2020, a groundwater depression developed around the BAT Impoundments, and most noticeably near BAT-05, after the impoundments were drained of water and decommissioned between July and October 2020. This depression persisted into 2021 but has recovered partially.

Previous reports indicate that little to no groundwater was present in geotechnical boreholes completed in the area of the BAT Impoundments at the time of their construction (Black & Veatch Consulting Engineers 1979). The BAT Impoundments were constructed on a local topographic high, suggesting that groundwater, if present, likely flowed away from the area of the impoundments prior to construction. The previously observed water table beneath the BAT Impoundments, prior to impoundments decommissioning, appears to have been a perched saturated zone in the underlying weathered and fractured Pierre Shale. The drop and rebound of groundwater elevations in the monitored wells observed in 2020 and 2021, suggests that groundwater temporarily drained toward and into the BAT pond excavations and the wells are slowly returning to equilibrium with natural static levels.

3.0 Groundwater Monitoring Activities in 2021

This section summarizes groundwater monitoring activities conducted during 2021 to comply with the CCR Rule that included:

- Measuring groundwater levels at each monitoring well prior to purging for sampling to provide potentiometric data.
- Semiannual assessment-mode groundwater monitoring events were conducted in April and October. Monitoring involved sampling of background monitoring wells and downgradient monitoring wells for analysis of detection (Appendix III) and assessment (Appendix IV) monitoring constituents to identify potential releases from the BAT Impoundments and to collect supplemental data to update the background statistics in the future.
- Baseline Detection Monitoring of three groundwater monitoring wells (BAT-10, BAT-11, and BAT-12) monitoring was conducted in January for Appendix III and Appendix IV parameters. These wells were added to the monitoring well network after the initial network baseline detection.
- Statistical analysis of the 2021 Appendix III detection and Appendix IV assessment monitoring data to determine if there were any statistically significant increases (SSIs) over background and whether any of the SSIs were above groundwater protection standards (GWPS) at a statistically significant level (SSL).

3.1 Water Level Measurements

During each monitoring event, groundwater levels were measured using an electronic water level meter. AECOM also measured the total depth of each monitoring well by lowering the meter sensor to the bottom of the well. Groundwater levels and total depth measurements were recorded to the nearest hundredth (0.01) of a foot. The water level meter cable and sensor were decontaminated at the start of field activities and after use at each well to limit the potential for cross-contamination between wells. Water level measurements were recorded on groundwater sampling forms, provided in **Appendix A**, and are tabulated in **Table 2** for the four groundwater sampling rounds in January, April, and October 2021.

3.2 Groundwater Sample Collection

Two rounds of Appendix III detection and Appendix IV assessment monitoring groundwater samples were collected from the BAT Impoundments monitoring wells (BAT-01, BAT-02, BAT-03, BAT-04R, BAT-05, BAT-06, BAT-08, BAT-09, BAT-10, BAT-11, and BAT-12) from April 7 to 21, 2021 and October 11 to 22, 2021. One round of baseline detection and assessment monitoring samples were also collected at monitoring wells BAT-10, BAT-11, and BAT-12 on January 6 to 13, 2021.

Groundwater samples were collected in general accordance with the CCR BAT Impoundments Groundwater Detection Monitoring Plan (AECOM 2017). Each well was initially purged using a submersible bladder pump and dedicated polyethylene bonded tubing. Disposable bladder liners were replaced before sampling each monitoring well and the pump casing was decontaminated prior to purging and sampling each monitoring well to avoid cross contamination between wells. The bladder pump and tubing were lowered into the well to a depth within the screen interval that was at least 1 to 2 feet off the bottom of the well to avoid disturbing accumulated sediment in the lower part of the well screen. Monitoring wells were purged using low flow sampling techniques until field parameter measurements of pH, temperature, dissolved oxygen, oxidation reduction potential, turbidity, and conductivity stabilized within ±10 percent and drawdown in the well was less than 0.33 feet for three consecutive readings. If wells did not stabilize, the well was purged dry and allowed to recharge prior to sample collection within 24 hours of purging. Purge water volumes were recorded on groundwater sampling forms (**Appendix A**).

After purging, the groundwater samples were collected from the discharge tube of the bladder pump directly into laboratory-supplied sample containers. Sample water was slowly pumped into each laboratory sample container until the containers were appropriately filled, taking care not to spill the laboratory preservative contained in sample bottles. The sample containers were then labeled and placed on ice in a sample cooler. At the conclusion of the field day, the samples were delivered by overnight carrier to Pace Analytical in Lenexa, Kansas, or Greensburg, Pennsylvania for analysis.

3.3 Analytical Program

Groundwater samples collected from the BAT Impoundments wells were analyzed using U.S. Environmental Protection Agency (USEPA) SW-846 methods for Appendix III and IV constituents. All analytical results are reported as totals. **Table 3** summarizes the 2021 groundwater analytical results for each sampling event. The laboratory analytical reports are provided in **Appendix B**.

Appendix III constituents include:

Chemical Name	Analytical Method
Boron	6010C
Chloride	9056A
Calcium	6010C
Fluoride	9056A
pH	Field measurement
Sulfate	9056A
TDS	TDS (American Public Health Association at al. [1998] standard method 2540C)

TDS = total dissolved solids

Appendix IV constituents include:

Chemical Name	Analytical Method
Antimony	6020A
Arsenic	6020A
Barium	6020A
Beryllium	6020A
Cadmium	6020A
Chromium	6020A
Cobalt	6020A
Fluoride	9056A
Lead	6020A
Lithium	6010C
Mercury	7470A
Molybdenum	6020A
Selenium	6020A
Thallium	6020A
Radium 226 and 228, combined	9315/9320

3.4 Quality Control/Quality Assurance

Quality assurance and quality control samples collected during sampling activities included one field duplicate for each round of detection and assessment monitoring, one equipment rinse blank, and one matrix spike/matrix spike duplicate sample. The field duplicate samples were collected immediately following collection of the primary samples using the same sampling procedures. The equipment rinse blank samples were collected after decontaminating the bladder pump casing using techniques outlined in the sampling and analysis plan.

3.1 Data Validation

The laboratory data were validated by AECOM chemists using USEPA guidance. Data validation reports are provided in **Appendix B**.

4.0 Monitoring Results and Evaluation

This section discusses potentiometric surface elevations, groundwater flow directions, and groundwater analytical results for the BAT Impoundments during 2021.

4.1 Groundwater Potentiometric Surface

The groundwater elevations were used to prepare potentiometric surface maps for the January, April, and October 2021 sampling rounds (**Figure 2**, **Figure 3**, and **Figure 4**, respectively). These maps indicate that groundwater in the uppermost aquifer beneath the former BAT Impoundments flows back into the impoundment area towards monitoring wells BAT-02 and BAT-05 at an average hydraulic gradient of 0.0058 foot per foot in 2021 between monitoring wells BAT-11 and BAT-05. This hydraulic gradient towards BAT-05 is consistent with past gradient results in the impoundment area in previous annual reports (AECOM 2018, 2019a, 2019b, 2020b, 2021b). In the future, it is anticipated that the groundwater flow will return to equilibrium and that the groundwater will flow from north to south towards Hamilton Reservoir.

4.2 Groundwater Flow Rate

An average groundwater flow rate was calculated for the uppermost aquifer beneath the former BAT Impoundments using the average hydraulic gradient (0.0058 foot per foot) determined between monitoring wells BAT-11 and BAT-05 in 2021, the minimum [(0.0002 foot per day [ft/day]] and maximum (0.33 ft/day), and geometric mean (0.029 ft/day) hydraulic conductivities determined from historic slug tests, and an assumed effective porosity of 15 percent for fractured Pierre Shale. The results indicate that groundwater in the uppermost aquifer beneath the former BAT Impoundments in 2021 flows at a rate ranging from approximately 7.749E-6 to 1.279E-2 feet per day and a geometric mean of 1.124E-3 feet per day towards the depressions seen in groundwater in monitoring wells BAT-02 and BAT-05. These groundwater flow rates are consistent with those previously calculated for the BAT impoundment area and reported in past annual reports (AECOM 2018, 2019a). Groundwater conditions present in 2021 show that groundwater is flowing inwards towards BAT-05, while post-decommissioning equilibrium conditions are being attained.

4.3 Groundwater Analytical Results

Groundwater samples were collected and analyzed for Appendix III and Appendix IV parameters during the January, April, and October 2021 sampling events and analyzed as specified in Section 3.3. The laboratory analytical reports are provided in **Appendix B** and included in the facility operating record. The laboratory results were reviewed for completeness against the project-required analytical methods and the chain-of-custody forms and subsequently validated by AECOM. The data were found to be valid and useable without qualification. The laboratory analytical and data validation reports are provided in **Appendix B**.

Table 3 summarizes the groundwater analytical results for the January, April, and October 2021 sampling rounds, respectively. Monitoring wells BAT-01, BAT-02, BAT-03, BAT-04R, BAT-05, BAT-06, BAT-08, BAT-09, BAT-10, BAT-11, and BAT-12 were sampled during April and October to fulfill the semiannual assessment monitoring requirement. Recently installed monitoring wells BAT-10, BAT-11, and BAT-12 also were sampled during January to collect the eighth baseline detection and assessment monitoring data at these wells.

4.4 Groundwater Monitoring System Evaluation

All monitoring wells comprising the former BAT Impoundments groundwater monitoring network in 2021 were inspected during each sampling round and were found to be in good condition and capable of supplying a representative sample.

Analysis of the 2021 potentiometric surface maps constructed using the groundwater elevation measurements from the monitoring events confirm that monitoring wells BAT-09, BAT-10, and BAT-11 are located upgradient of the former BAT Impoundments and represent background groundwater quality, and that monitoring wells BAT-01, BAT-02, BAT-03, BAT-04R, BAT-05, BAT-06, BAT-08, and BAT-12 are located downgradient of the former BAT Impoundments and represent downgradient groundwater quality.

4.5 Problems Encountered and Actions Taken

No problems were encountered, or actions taken during 2021 with the exception of a sampling pump becoming stuck in the bottom of BAT-08 during the October 2021 sampling. This occurred after the water levels and analytical samples were collected, hence there were no disruptions to the 2021 sampling events. Numerous unsuccessful attempts were made in the field to remove the pump. AECOM will recommend abandoning this well if water quality data is observed to be affected.

5.0 Statistical Analysis Results

The Appendix III and Appendix IV groundwater quality data were evaluated using the certified statistical approach presented in the CCR BAT Impoundments Groundwater Detection Monitoring Plan (AECOM 2017). The Appendix III and IV groundwater quality data were evaluated using an interwell approach that statistically compared constituent concentrations at downgradient monitoring wells to those present at background monitoring wells. For the PLATTE RIVER former BAT Impoundments, monitoring wells BAT-09, BAT-10, and BAT-11 are designated as background wells because they are located upgradient of the impoundments, whereas monitoring wells BAT-01, BAT-02, BAT-03, BAT-4R, BAT-05, BAT-06, BAT-08, and BAT-12 are designated as compliance wells because they are located downgradient of the former impoundments.

The statistical analyses were performed in accordance with the USEPAs Final CCR Rule 40 CFR Parts 257.93(f), 257.93(g), and 257.93(h) and the Statistical Method Certification (AECOM 2017). Using ProUCL Version 5.1, prediction limits (i.e., parametric or nonparametric) with 1 of 2 retesting were developed for each constituent based on the frequency of non-detect values and whether the background data for that constituent exhibited a normal, lognormal, or nonparametric distribution. For the statistical analysis, non-detect values were represented as one-half the detection limit. No outliers were identified in the background data. Analytical data from the background monitoring wells collected between March 2016 and October 2021 were used to develop an upper prediction limit (UPL) for the Appendix III and IV background data at 95 percent confidence. Data from the downgradient monitoring wells for the same time period were compared to the UPL to identify SSIs over background. The Appendix III and Appendix IV UPLs are provided in **Table 4** and **Table 5**, respectively. The Appendix IV assessment monitoring statistical analysis results are summarized in **Table 9**. The Appendix III and Appendix IV background statistical analysis results are provided in **Appendix C**.

5.1 Appendix III SSI Determination

The Appendix III detection monitoring results were compared against their respective background UPLs (**Table 4**) to determine if they exhibited SSIs above background. The statistical analysis results indicate that Appendix III constituent calcium at monitoring well BAT-05 and Chloride at BAT-01 and BAT-02 have SSIs over background that were confirmed by subsequent sampling events. Cobalt, fluoride, lead, lithium, and Radium all exceeded the UPL once but were not confirmed as SSIs by subsequent sampling events (**Table 3**). Boron, pH, and TDS did not have any verified Appendix III SSIs over background. Appendix III SSIs found during 2021 are generally consistent with those identified during 2020 and confirm that assessment monitoring is required at the BAT Impoundments. Specific events where exceedances were observed, and analytical concentrations of detections can be found on **Table 3**.

Well	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	TDS
BAT-01	-----	----	SSI	-----	-----	-----	-----
BAT-02	-----	-----	SSI	-----	-----	-----	-----
BAT-03	-----	-----	-----	-----	-----	-----	----
BAT-04R	-----	-----	-----	-----	-----	-----	-----
BAT-05	-----	SSI	-----	-----	-----	-----	----
BAT-06	-----	-----	-----	-----	-----	-----	-----
BAT-08	-----	-----	-----	-----	-----	-----	-----
BAT-12	-----	-----	-----	-----	-----	-----	-----

Notes:

----- = Concentration below UPL

SSI = Statistically Significant Increase (Indicating concentrations above the background UPL)

SSL = Statistically Significant Level (indicating 95% LCL exceeded the GWPS)

TDS = total dissolved solids

5.2 Appendix IV SSI Determination

The Appendix IV assessment monitoring results were compared against their respective background UPLs (**Table 5**) to determine if they exhibited SSIs above background. This comparison indicates that chromium (Cr) at BAT-05, cobalt (Co) at BAT-01 and BAT-05, and lead (Pb) at BAT-05, were the only constituents identified as having an SSI above background. Cobalt (Co) at BAT-03 and BAT-04R, Lithium (Li) at BAT-03, and Radium (Ra) at BAT-02, BAT-03, and BAT-12 all exceeded the UPL once but were not confirmed as SSIs by subsequent sampling events (**Table 3**). No other Appendix IV constituents exhibited SSIs as observed in the table below. SSLs were calculated for select constituents and are described in section 5.4 below.

Well	Sb	As	Ba	Be	Cd	Cr	Co	F	Pb	Li	Hg	Mo	Ra	Se	Th
BAT-01	----	----	----	----	----	----	SSI	----	----	----	----	----	----	----	----
BAT-02	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BAT-03	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BAT-04R	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BAT-05	----	----	----	----	----	SSI	SSL	----	SSI	----	----	----	----	----	----
BAT-06	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BAT-08	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
BAT-12	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Notes:

---- = Concentration below UPL

SSI = Statistically Significant Increase (Indicating concentrations above the background UPL)

SSL = Statistically Significant Level (indicating LCL exceeded GWPS

TDS = total dissolved solids

5.3 Establishment of Groundwater Protection Standards

GWPS were selected for the BAT Impoundments using the criteria specified in 40 CFR 257.95(h). The GWPS listed on **Tables 3**, **4**, **5** were selected from the USEPA drinking water maximum contaminant limits, groundwater standards provided in 40 CFR 257.95(3)(h)(2), or the background UPLs where they exceed either of the previous standards.

5.4 Appendix IV SSL Determination

Appendix IV constituents exhibiting an SSI over background (cobalt, lead, and chromium at BAT-05) were further evaluated to determine whether they are present at an SSL relative to GWPS established under the CCR Rule [40 CFR 257.95(d)(2)]. SSLs were identified by calculating the 95 percent lower confidence limit (95% LCL) at each well where the assessment monitoring constituents exhibited an SSI over background and comparing the 95% LCL to the GWPS. A constituent is present at an SSL over the GWPS if the 95% LCL is greater than the GWPS. Cobalt at monitoring well BAT-05 was the only Appendix IV constituent found to exhibit an SSL above its GWPS because its 95% LCL (0.00805 milligrams per liter [mg/L]) was greater than the GWPS of 0.006 mg/L. Appendix IV constituents that exceed the GWPS at an SSL require an alternate source demonstration or corrective action. No other Appendix IV constituents exhibited an SSL above the GWPS.

Well No.	Parameter with SSI over background	95% LCL (mg/L)	GWPS (mg/L)
BAT-05	Cobalt	0.00805	0.006
BAT-05	Lead	0.00126	0.015
BAT-05	Chromium	-0.00009	0.0085

Red highlighted value exceeds GWPS.

6.0 Projected Activities in 2022

The following activities are anticipated to be performed at the former BAT Impoundments in calendar year 2022:

- PLATTE RIVER will continue groundwater monitoring on a semiannual basis for the Appendix III and IV constituents that were detected as specified in 40 CFR 257.95(d)(1) or 40 CFR 257.95(f). The full list of Appendix IV constituents also will be sampled annually.
- An ACM was prepared in August 2019 to identify potential remedial alternatives for cobalt in groundwater at the former BAT Impoundments. The ACM included a range of cleanup options that included monitored natural attenuation, groundwater pump and treat, and a permeable reactive barrier. The ACM options were presented at a public meeting in November 2019. In 2022, the corrective actions presented in ACM will be evaluated for a final remedy selection and implementation. Remedy selection will be based on adequate monitoring data, the site hydrogeology, contaminant migration pathways and contaminant exposure pathways.

7.0 Summary and Findings

AECOM, on behalf of PLATTE RIVER, oversaw groundwater sampling and analysis of semi-annual detection (Appendix III) and assessment (Appendix IV) monitoring at the former BAT Impoundments. Monitoring data and analytical results collected as part of the detection and assessment monitoring programs were evaluated to determine the aquifer hydraulic conductivities at the new monitoring wells, potentiometric surface elevations, groundwater flow directions and rates, and whether any constituents are present at an SSI above background UPLs or exceeded GWPS at an SSL.

Monitoring wells BAT-10, BAT-11, and BAT-12 (installed in 2018) were sampled quarterly in 2019 beginning in January to establish the baseline data. The eighth round of quarterly samples (January) were collected in 2021 to complete the collection of baseline sampling data for these wells. These data were incorporated into the monitoring program as collected.

Cobalt at monitoring well BAT-05 was found to have SSI above its background UPL. Additional statistical analysis found that cobalt exceeds the GWPS at an SSL at well BAT-05. These results require continued assessment monitoring at the former BAT Impoundments and corrective action.

An ACM was prepared in August 2019 to identify potential remedial alternatives for cobalt in groundwater at the BAT Impoundments. The ACM included a range of cleanup options that included monitored natural attenuation, groundwater pump and treat, and a permeable reactive barrier. The ACM options were presented at a public meeting in November 2019. Assessment monitoring results in 2020 confirms that cobalt exceeds the GWPS at a SSL at monitoring well BAT-05 and will require correction action. In 2022, the corrective actions presented in ACM will be evaluated for a final remedy selection and implementation.

8.0 References

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Tables

Table 1
BAT Impoundments Monitoring Well Construction Details
PRPA BAT Impoundments Annual Report for 2020
PRPA Rawhide Facility, Colorado

Well Name	Location Relative to Waste Unit	Easting (ft)	Northing (ft)	Ground Surface Elevation (ft amsl)	Top of Casing Elevation (ft amsl)	Total Depth (ft bgs)	Well Screen Interval (ft bgs)	Well Screen Lithology
BAT-01	Downgradient	3129532.039	1557740.813	5683.12	5682.48	34.0	23-33	Shale
BAT-02	Downgradient	3129988.382	1557738.969	5682.95	5682.41	33.8	23.8-33.8	Shale
BAT-03	Downgradient	3130388.569	1557729.857	5682.96	5682.40	36.0	26-36	Shale
BAT-04R	Downgradient	3130456.241	1557262.480	5684.62	5686.98	34.0	24-34	Shale
BAT-05	Downgradient	3129956.757	1557217.374	5682.63	5682.13	39.0	23-38	Shale
BAT-06	Downgradient	3129515.003	1557233.002	5682.84	5685.46	49.0	25-35	Shale
BAT-08	Downgradient	3129532.956	1557921.033	5686.67	5686.04	43.5	25-35	Shale
BAT-09	Upgradient	3129552.166	1558136.308	5690.86	5693.03	36.5	26.5-36.5	Shale
BAT-10	Upgradient	3130029.322	1558338.258	5687.73	5690.59	29.0	12-27	Shale
BAT-11	Upgradient	3130022.498	1560138.622	5702.01	5704.87	37.0	20-35	Shale
BAT-12	Downgradient	3129941.937	1557014.170	5698.62	5701.60	42.0	25-40	Shale

Notes:

BAT = Bottom Ash Transfer

ft amsl = feet above mean sea level; ft bgs = feet below ground surface

Wells surveyed in North American Datum 1983 (NAD83) and North American Vertical Datum 1988 (NAVD88)

Table 2
BAT Impoundments Water Level Measurements 2021
PRPA BAT Impoundments Annual Report for 2021
PRPA Rawhide Facility, Colorado

Well ID	Sampling Event	Measurement Date	Measuring Pont Elevation (ft amsl)	Depth to water (btoc)	Measured Depth of Well (btoc)	Groundwater Elevation (ft amsl)
BAT-01	January 2021	1/5/2021	5682.48	13.53	30.92	5668.95
BAT-01	April 2021	4/6/2021	5682.48	8.34	30.96	5674.14
BAT-01	October 2021	10/11/2021	5682.48	9.22	--	5673.26
BAT-02	January 2021	1/5/2021	5682.41	18.81	33.38	5663.6
BAT-02	April 2021	4/6/2021	5682.41	15.03	33.39	5667.38
BAT-02	October 2021	10/11/2021	5682.41	14.48	--	5667.93
BAT-03	January 2021	1/5/2021	5682.4	12.64	35.21	5669.76
BAT-03	April 2021	4/6/2021	5682.4	10.73	35.21	5671.67
BAT-03	October 2021	10/11/2021	5682.4	10.29	--	5672.11
BAT-04R	January 2021	1/5/2021	5686.98	14.7	36.18	5672.28
BAT-04R	April 2021	4/6/2021	5686.98	13.52	36.21	5673.46
BAT-04R	October 2021	10/11/2021	5686.98	13.35	--	5673.63
BAT-05	January 2021	1/5/2021	5682.13	20.49	36.9	5661.64
BAT-05	April 2021	4/6/2021	5682.13	19.97	37.21	5662.16
BAT-05	October 2021	10/11/2021	5682.13	18.66	--	5663.47
BAT-06	January 2021	1/5/2021	5685.46	15.28	37.55	5670.18
BAT-06	April 2021	4/6/2021	5685.46	15.05	37.56	5670.41
BAT-06	October 2021	10/11/2021	5685.46	16.34	--	5669.12
BAT-08	January 2021	1/5/2021	5686.04	13.5	32.95	5672.54
BAT-08	April 2021	4/6/2021	5686.04	11.94	32.95	5674.1
BAT-08	October 2021	10/11/2021	5686.04	11.61	--	5674.43
BAT-09	January 2021	1/5/2021	5693.03	21.03	34.71	5672
BAT-09	April 2021	4/6/2021	5693.03	13.68	34.69	5679.35
BAT-09	October 2021	10/11/2021	5693.03	16.27	--	5676.76
BAT-10	January 2021	1/5/2021	5690.59	12.29	31.28	5678.3
BAT-10	April 2021	4/6/2021	5690.59	10.75	31.26	5679.84
BAT-10	October 2021	10/11/2021	5690.59	11.15	--	5679.44
BAT-11	January 2021	1/5/2021	5704.87	26.95	38.93	5677.92
BAT-11	April 2021	4/6/2021	5704.87	27.18	38.9	5677.69
BAT-11	October 2021	10/11/2021	5704.87	24.83	--	5680.04
BAT-12	January 2021	1/5/2021	5701.6	30.52	45.02	5671.08
BAT-12	April 2021	4/6/2021	5701.6	30.54	45.04	5671.06
BAT-12	October 2021	10/11/2021	5701.6	28.34	--	5673.26

Notes:
BAT = Bottom Ash Transfer
NM = not measured
ft = feet
ft amsl = feet above mean sea level
ft btoc = feet below top of casing

Table 3
BAT Impoundments Analytical Results and Statistical Summary 2021
PRPA BAT Impoundments Annual Report for 2021
PRPA Rawhide Facility, Colorado

				Sample Location	BAT-01	BAT-01	BAT-01	BAT-02	BAT-02	BAT-03	BAT-03	BAT-04R
				Sample Type	Duplicate							
				Sample Date	4/13/2021	4/13/2021	10/19/2021	4/14/2021	10/20/2021	4/14/2021	10/20/2021	4/15/2021
Chemical Name	**Analytical Method**	**Background UPL**	**GWPS**	**Unit**								
Appendix III Parameters												
Boron	SW6010	2.39	--	mg/L	**1.71**	**1.62**	**1.58**	**1.22**	**1.25**	**1.04**	**1.25**	**0.832**
Calcium	SW6010	435	--	mg/L	**62.7**	**65**	**84.5**	**252**	**322**	**328**	**457**	**419**
Chloride	EPA9056	175	--	mg/L	**227**	**222**	**313**	**242**	**304**	**63.6**	**15.8**	**60.0 J+**
Fluoride	EPA9056	0.55	--	mg/L	**0.24**	**0.23**	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Sulfate	EPA9056	2805	--	mg/L	**645 J**	**427 J**	**567**	**1360**	**1400**	**1610**	**2860**	**1930**
Total Dissolved Solid	SM2540C	4252	--	mg/L	**1300**	**1320**	**1590**	**2470**	**2740**	**2630**	**3890**	**3370**
Appendix IV Parameters												
Antimony	SW6020	0.003	0.006	mg/L	< 0.0010	< 0.0010	**0.0011**	< 0.0010	< 0.0030	< 0.0010	< 0.0030	< 0.0010
Arsenic	SW6020	0.004	0.05	mg/L	**0.0011**	< 0.0010	< 0.0010	**0.0012**	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Barium	SW6020	0.097	2.0	mg/L	**0.0540**	**0.0454**	**0.0433**	**0.0179**	**0.0141**	**0.103**	**0.0282**	**0.0250**
Beryllium	SW6020	0.002	0.004	mg/L	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cadmium	SW6020	0.002	0.005	mg/L	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.0015	< 0.00050	< 0.0015	< 0.00050
Chromium	SW6020	0.005	0.10	mg/L	**0.0043**	**0.0023**	< 0.0010	< 0.0010	< 0.0010	**0.0014**	**0.0011**	**0.0014**
Cobalt	SW6020	0.002	0.042	mg/L	**0.0030**	**0.0026**	**0.0012**	< 0.0010	< 0.0010	**0.0013**	**0.0021**	< 0.0010
Fluoride	EPA9056	0.55	4.0	mg/L	**0.24**	**0.23**	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Lead	SW6020	0.004	0.015	mg/L	**0.0017**	**0.0012**	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Lithium	SW6010	0.33	0.57	mg/L	**0.135**	**0.129**	**0.179**	**0.187**	**0.236**	**0.394**	**0.275**	**0.158**
Mercury	EPA7470	0.0002	0.002	mg/L	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Molybdenum	SW6020	0.046	0.10	mg/L	**0.0092**	**0.0075**	**0.0062**	**0.0065**	**0.0030**	**0.0031**	< 0.0010	**0.0016**
Radium, total	TRC	2.24	5.0	pCi/L	**0.641**	**0.439**	**0.380**	**1.18 J+**	**2.32**	**0.969**	**2.72**	**0.521**
Radium-226	E903.1	2.24	5.0	pCi/L	**0.423 J**	**0.0550**	**0.256**	**0.286 J**	**0.675**	**0.360**	**0.200**	**0.378**
Radium-228	E904.0	2.24	5.0	pCi/L	**0.218**	**0.384**	**0.124**	**0.893 J+**	**1.64**	**0.609**	**2.52**	**0.143**
Selenium	SW6020	0.214	0.05	mg/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	**0.0286**
Thallium	SW6020	0.004	0.004	mg/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Field Parameters												
Conductivity	Field Measure	--	--	us/cm	**2116**	**2116**	**2637**	**3992**	**3882**	**4197**	**5298**	**2768**
Dissolved Oxygen	Field Measure	--	--	mg/l	**1.32**	**1.32**	**0.13**	**0.4**	**0.39**	**0.48**	**0.05**	**1.29**
ORP	Field Measure	--	--	mv	**60.1**	**60.1**	**-362.9**	**9.9**	**-287**	**114.3**	**-372.3**	**111.7**
pH	Field Measure	7.77	--	su	**7.66**	**7.66**	**7.32**	**7.15**	**7**	**6.91**	**6.81**	**7.35**
Turbidity	Field Measure	--	--	NTU	**12.24**	**12.24**	**9.34**	**10.7**	**4.15**	**19.4**	**12.5**	**13.6**

Notes:
N = primary sample
FD = field duplicate
mg/L = milligrams per liter
pCi/L = picoCuries per liter
Bold **black** value is detected result
Bold **red** value exceeds groundwater protection standard (GWPS)
SSI = statistically significant increase over background upper prediction limit (UPL)
SSL = statistically significant level above the GWPS
J = estimated concentration (+ = biased high, - = biased low)

Table 3
BAT Impoundments Analytical Results and Statistical Summary 2021
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				Sample Location	BAT-04R	BAT-04R	BAT-05	BAT-05	BAT-06	BAT-06	BAT-08	BAT-08
				Sample Type								
				Sample Date	10/21/2021	10/22/2021	4/13/2021	10/21/2021	4/13/2021	10/20/2021	4/14/2021	10/18/2021
Chemical Name	**Analytical Method**	**Background UPL**	**GWPS**	**Unit**								
Appendix III Parameters												
Boron	SW6010	2.39	--	mg/L	**0.778**	--	**1.24**	**1.32**	**1.96**	**1.93**	**2.08**	**1.95**
Calcium	SW6010	435	--	mg/L	**452**	--	**472**	**593**	**132**	**108**	**40.2**	**43.7**
Chloride	EPA9056	175	--	mg/L	**48.1 J**	--	**40.6**	**32.3**	**10.8**	**11.3**	**20.7**	**18.9**
Fluoride	EPA9056	0.55	--	mg/L	< 0.20	--	< 0.20	< 0.20	< 0.20	**0.21**	< 0.20	< 0.20
Sulfate	EPA9056	2805	--	mg/L	**2130 J**	--	**2420**	**2790**	**1580**	**1460**	**605**	**626**
Total Dissolved Solid	SM2540C	4252	--	mg/L	**2780**	--	**3500**	**4140**	**2410**	**2420**	**1260**	**1290**
Appendix IV Parameters												
Antimony	SW6020	0.003	0.006	mg/L	< 0.0010	--	< 0.0010	< 0.0010	< 0.0010	< 0.0030	< 0.0010	< 0.0010
Arsenic	SW6020	0.004	0.05	mg/L	< 0.0010	--	**0.0133**	**0.0152**	< 0.0010	**0.0016**	**0.0015**	**0.0013**
Barium	SW6020	0.097	2.0	mg/L	**0.0154**	--	**0.135**	**0.3**	**0.0128**	**0.0161**	**0.0760**	**0.0836**
Beryllium	SW6020	0.002	0.004	mg/L	< 0.00050	--	**0.0016**	**0.0017**	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cadmium	SW6020	0.002	0.005	mg/L	< 0.00050	--	**0.00052**	**0.00064**	< 0.00050	< 0.0015	< 0.00050	< 0.00050
Chromium	SW6020	0.005	0.10	mg/L	< 0.0010	--	**0.0362**	**0.0639**	< 0.0010	< 0.0010	**0.0037**	**0.0030**
Cobalt	SW6020	0.002	0.042	mg/L	**0.0043**	--	**0.0350**	**0.0270**	< 0.0010	< 0.0010	**0.0016**	**0.0013**
Fluoride	EPA9056	0.55	4.0	mg/L	< 0.20	--	< 0.20	< 0.20	< 0.20	**0.21**	< 0.20	< 0.20
Lead	SW6020	0.004	0.015	mg/L	< 0.0010	--	**0.0450**	**0.0354**	< 0.0010	< 0.0010	**0.0027**	**0.0016**
Lithium	SW6010	0.33	0.57	mg/L	**0.162**	--	**0.287**	**0.268**	**0.178**	**0.175**	**0.102**	**0.117**
Mercury	EPA7470	0.0002	0.002	mg/L	< 0.00020	--	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Molybdenum	SW6020	0.046	0.10	mg/L	**0.0021**	--	**0.0035**	**0.0048**	**0.0112**	**0.0117**	**0.0201**	**0.0200**
Radium, total	TRC	2.24	5.0	pCi/L	--	**1.15**	**1.78 J+**	**1.70**	**0.571**	**2.04**	**1.31**	**0.187**
Radium-226	E903.1	2.24	5.0	pCi/L	--	**0.200**	**0.506 J**	**0.153**	**0.159**	**0.408**	**-0.0580**	**0.155 J**
Radium-228	E904.0	2.24	5.0	pCi/L	--	**0.950**	**1.27 J+**	**1.55**	**0.412**	**1.63**	**1.31 J+**	**0.0321**
Selenium	SW6020	0.214	0.05	mg/L	**0.0190**	--	**0.0096**	**0.0047**	< 0.0010	< 0.0010	**0.0013**	< 0.0010
Thallium	SW6020	0.004	0.004	mg/L	< 0.0010	--	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Field Parameters												
Conductivity	Field Measure	--	--	us/cm	**3650**	--	**4445**	**5249**	**3405**	**3787**	**1876**	**2121**
Dissolved Oxygen	Field Measure	--	--	mg/l	**0.1**	--	**0.42**	**0.41**	**0.8**	**0.9**	**1.07**	**1.42**
ORP	Field Measure	--	--	mv	**-337.2**	--	**42.2**	**-338**	**71.4**	**-225.1**	**67.2**	**-349.8**
pH	Field Measure	7.77	--	su	**6.99**	--	**7.00**	**7.06**	**7.61**	**7.49**	**7.8**	**7.67**
Turbidity	Field Measure	--	--	NTU	**25.8**	--	**26**	**156**	**7.84**	**4.42**	**12.32**	**32.5**

Notes:
N = primary sample
FD = field duplicate
mg/L = milligrams per liter
pCi/L = picoCuries per liter
Bold **black** value is detected result
Bold **red** value exceeds groundwater protection standard (GWPS)
SSI = statistically significant increase over background upper prediction limit (UPL)
SSL = statistically significant level above the GWPS
J = estimated concentration (+ = biased high, - = biased low)

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				Sample Location	BAT-09	BAT-09	BAT-10	BAT-10	BAT-10	BAT-10	BAT-11	BAT-11	BAT-11
				Sample Type			Duplicate						
				Sample Date	4/14/2021	10/15/2021	1/7/2021	1/7/2021	4/21/2021	10/18/2021	1/7/2021	4/21/2021	10/12/2021
Chemical Name	**Analytical Method**	**Background UPL**	**GWPS**	**Unit**									
Appendix III Parameters													
Boron	SW6010	2.39	--	mg/L	**2.17**	**2.15**	**0.844**	**0.788**	**0.798**	**0.689**	**0.445**	**0.316**	**< 0.5**
Calcium	SW6010	435	--	mg/L	**161**	**221**	**395**	**397**	**396**	**431**	**92.9**	**88.2**	**100**
Chloride	EPA9056	175	--	mg/L	**168**	**188**	**25.4**	**22.2**	**22.8**	**24.5**	**8.4**	**5.3**	**6.5**
Fluoride	EPA9056	0.55	--	mg/L	< 0.20	< 0.20	**0.43**	**0.50**	< 0.20	< 0.20	**0.25**	< 0.20	**0.25**
Sulfate	EPA9056	2805	--	mg/L	< 1.0	**4.3**	**2750**	**2490**	**14.8**	**2330**	**185**	**166**	**170**
Total Dissolved Solid	SM2540C	4252	--	mg/L	**2650**	**3250**	**4270**	**4270**	**3810**	**3950**	**696**	**1000**	**638**
Appendix IV Parameters													
Antimony	SW6020	0.003	0.006	mg/L	< 0.0010	< 0.0010	< 0.001	< 0.001	< 0.0010	< 0.0010	< 0.001	< 0.0010	< 0.0010
Arsenic	SW6020	0.004	0.05	mg/L	< 0.0010	< 0.0010	< 0.001	< 0.001	< 0.0010	< 0.0010	< 0.001	< 0.0010	< 0.0010
Barium	SW6020	0.097	2.0	mg/L	**0.0134**	**0.0138**	**0.0215**	**0.0178**	**0.0188**	**0.0246**	**0.0456**	**0.0652**	**0.0466**
Beryllium	SW6020	0.002	0.004	mg/L	< 0.00050	< 0.00050	< 0.0005	< 0.0005	< 0.00050	< 0.00050	< 0.0005	< 0.00050	< 0.00050
Cadmium	SW6020	0.002	0.005	mg/L	< 0.00050	< 0.00050	< 0.0005	< 0.0005	< 0.00050	< 0.00050	< 0.0005	< 0.00050	< 0.00050
Chromium	SW6020	0.005	0.10	mg/L	< 0.0010	**0.0017**	< 0.001	< 0.001	< 0.0010	**0.0011**	< 0.001	**0.0012**	**0.0017**
Cobalt	SW6020	0.002	0.042	mg/L	< 0.0010	< 0.0010	< 0.001	< 0.001	< 0.0010	< 0.0010	< 0.001	< 0.0010	< 0.0010
Fluoride	EPA9056	0.55	4.0	mg/L	< 0.20	< 0.20	**0.43**	**0.50**	< 0.20	< 0.20	**0.25**	< 0.20	**0.25**
Lead	SW6020	0.004	0.015	mg/L	< 0.0010	< 0.0010	< 0.001	< 0.001	< 0.0010	< 0.0010	< 0.001	< 0.0010	< 0.0010
Lithium	SW6010	0.33	0.57	mg/L	**0.197**	**0.264**	**0.211**	**0.195**	**0.212**	**0.197**	**0.0731**	**0.0402**	**0.0561**
Mercury	EPA7470	0.0002	0.002	mg/L	< 0.00020	< 0.00020	< 0.0002	< 0.0002	< 0.00020	< 0.00020	< 0.0002	< 0.00020	< 0.00020
Molybdenum	SW6020	0.046	0.10	mg/L	**0.0054**	**0.0038**	**0.0059**	**0.0062**	**0.0082**	**0.0064**	**0.0073**	**0.0084**	**0.0068**
Radium, total	TRC	2.24	5.0	pCi/L	**0.884**	**2.81**	**0.381**	**1.20**	**1.93**	**0.666**	**0.161**	**1.26**	**0.192**
Radium-226	E903.1	2.24	5.0	pCi/L	**0.115**	**0.578**	**0.0574**	**0.280 J**	**0.507**	**0.309**	**0.161**	**0.389**	**0**
Radium-228	E904.0	2.24	5.0	pCi/L	**0.769**	**2.23**	**0.324**	**0.921**	**1.42**	**0.357**	**-0.119**	**0.867**	**0.192**
Selenium	SW6020	0.214	0.05	mg/L	< 0.0010	< 0.0010	**0.211**	**0.228**	**0.15**	**0.213**	**0.0012**	**0.0073**	**0.0081**
Thallium	SW6020	0.004	0.004	mg/L	< 0.0010	< 0.0010	< 0.001	< 0.001	< 0.0010	< 0.0010	< 0.001	< 0.0010	< 0.0010
Field Parameters													
Conductivity	Field Measure	--	--	us/cm	**3667**	**4468**	**3932**	**3932**	**4375**	**4874**	**930**	**979**	**940**
Dissolved Oxygen	Field Measure	--	--	mg/l	**0.70**	**0.18**	**2.41**	**2.41**	**3.89**	**3.52**	**5.53**	**6.93**	**6.49**
ORP	Field Measure	--	--	mv	**74.5**	**-321.5**	**47.1**	**47.1**	**95.8**	**-143.4**	**156.9**	**90.9**	**18.6**
pH	Field Measure	7.77	--	su	**7.38**	**7.34**	**7.5**	**7.5**	**7.35**	**7.33**	**7.55**	**7.59**	**7.61**
Turbidity	Field Measure	--	--	NTU	**10.66**	**3.9**	**19**	**19**	**5.44**	**7.65**	**3.4**	**1.49**	**4.04**

Notes:
N = primary sample
FD = field duplicate
mg/L = milligrams per liter
pCi/L = picoCuries per liter
Bold **black** value is detected result
Bold **red** value exceeds groundwater protection standard (GWPS)
SSI = statistically significant increase over background upper prediction limit (UPL)
SSL = statistically significant level above the GWPS
J = estimated concentration (+ = biased high, - = biased low)

Table 4
BAT Impoundments Analytical Results and Statistical Summary 2021
PRPA BAT Impoundments Annual Report for 2021
PRPA Rawhide Facility, Colorado

				Sample Location	BAT-12	BAT-12	BAT-12	BAT-12
				Sample Type			Duplicate	
				Sample Date	1/7/2021	4/15/2021	10/15/2021	10/15/2021
Chemical Name	**Analytical Method**	**Background UPL**	**GWPS**	**Unit**				
Appendix III Parameters								
Boron	SW6010	2.39	--	mg/L	**0.232**	**0.249**	**0.228**	**0.229**
Calcium	SW6010	435	--	mg/L	**90**	**91.4**	**87.7**	**90.2**
Chloride	EPA9056	175	--	mg/L	**128**	**150**	**134**	**137**
Fluoride	EPA9056	0.55	--	mg/L	**0.68**	**0.33 J-**	**0.36**	**0.36**
Sulfate	EPA9056	2805	--	mg/L	**308**	**329**	**365**	**325**
Total Dissolved Solid	SM2540C	4252	--	mg/L	**861**	**934**	**899**	**936**
Appendix IV Parameters								
Antimony	SW6020	0.003	0.006	mg/L	< 0.001	< 0.0010	< 0.0010	< 0.0010
Arsenic	SW6020	0.004	0.05	mg/L	**0.0012**	**0.0013**	**0.0012**	**0.0013**
Barium	SW6020	0.097	2.0	mg/L	**0.0306**	**0.0346**	**0.0283**	**0.0309**
Beryllium	SW6020	0.002	0.004	mg/L	< 0.0005	< 0.00050	< 0.00050	< 0.00050
Cadmium	SW6020	0.002	0.005	mg/L	< 0.0005	< 0.00050	< 0.00050	< 0.00050
Chromium	SW6020	0.005	0.10	mg/L	**0.0011**	**0.0012**	**0.0011**	**0.0014**
Cobalt	SW6020	0.002	0.042	mg/L	< 0.001	< 0.0010	< 0.0010	< 0.0010
Fluoride	EPA9056	0.55	4.0	mg/L	**0.68**	**0.33 J-**	**0.36**	**0.36**
Lead	SW6020	0.004	0.015	mg/L	< 0.001	< 0.0010	< 0.0010	< 0.0010
Lithium	SW6010	0.33	0.57	mg/L	**0.0815**	**0.0846**	**0.0890**	**0.0895**
Mercury	EPA7470	0.0002	0.002	mg/L	< 0.0002	< 0.00020	< 0.00020	< 0.00020
Molybdenum	SW6020	0.046	0.10	mg/L	**0.0070**	**0.0077**	**0.0076**	**0.0077**
Radium, total	TRC	2.24	5.0	pCi/L	**0.212**	**0.706**	**0.479**	**3.55**
Radium-226	E903.1	2.24	5.0	pCi/L	**0.189**	**0.154**	**0**	**0.305**
Radium-228	E904.0	2.24	5.0	pCi/L	**0.0225**	**0.552**	**0.479 J**	**3.24 J**
Selenium	SW6020	0.214	0.05	mg/L	**0.0029**	**0.0027**	**0.0031**	**0.0033**
Thallium	SW6020	0.004	0.004	mg/L	< 0.001	< 0.0010	< 0.0010	< 0.0010
Field Parameters								
Conductivity	Field Measure	--	--	us/cm	**1145**	**1291**	**1468**	**1468**
Dissolved Oxygen	Field Measure	--	--	mg/l	**4.74**	**5.07**	**4.51**	**4.51**
ORP	Field Measure	--	--	mv	**134**	**70.6**	**-212.2**	**-212.2**
pH	Field Measure	7.77	--	su	**7.79**	**7.68**	**7.69**	**7.69**
Turbidity	Field Measure	--	--	NTU	**78.8**	**31.5**	**5.43**	**5.43**

Notes:
N = primary sample
FD = field duplicate
mg/L = milligrams per liter
pCi/L = picoCuries per liter
Bold **black** value is detected result
Bold **red** value exceeds groundwater protection standard (GWPS)
SSI = statistically significant increase over background upper prediction limit (UPL)
SSL = statistically significant level above the GWPS
J = estimated concentration (+ = biased high, - = biased low)

Table 4
BAT Impoundments Appendix III Background Upper Prediction Limits
PRPA BAT Impoundments Annual Report for 2021
PRPA Rawhide Facility, Colorado

Parameter (Units)	Number of Samples	Percent Nondetects	Normal or Lognormal Distribution?	Statistical Test	Background Limit
Boron (mg/L)	37	0	No/No	Nonparametric	2.39
Calcium (mg/L)	37	0	No/No	Nonparametric	435
Chloride (mg/L)	37	0	No/No	Nonparametric	175
Fluoride (mg/L)	38	27	No/No	Nonparametric	0.55
pH (standard units)	33	0	No/No	Nonparametric	7.77
Sulfate (mg/L)	34	0	No/No	Nonparametric	2,805
Total Dissolved Solids (mg/L)	37	0	No/No	Nonparametric	4,252

Notes:
BAT = Bottom Ash Transfer
mg/L = milligrams per liter

Table 5
BAT Impoundments Appendix IV Background Upper Prediction Limits
PRPA BAT Impoundments Annual Report for 2021
PRPA Rawhide Facility, Colorado

Parameter (Units)	Number of Samples	Percent Nondetects	Normal or Lognormal Distribution?	Statistical Test	Background Limit	GWPS
Antimony (mg/L)	38	79	Yes/Yes	Nonparametric	0.003	0.006
Arsenic (mg/L)	38	61	Yes/Yes	Nonparametric	0.004	0.05
Barium (mg/L)	38	0	No/Yes	Parametric	0.097	2.0
Beryllium (mg/L)	38	100	No/No	MDL	0.002	0.004
Cadmium (mg/L)	38	97	No/No	MDL	0.002	0.005
Chromium (mg/L)	38	68	No/No	Nonparametric	0.005	0.1
Cobalt (mg/L)	38	61	Yes/Yes	Nonparametric	0.002	0.042
Fluoride (mg/L)	38	37	No/No	Nonparametric	0.55	4.0
Lead (mg/L)	38	92	No/No	MDL	0.004	0.015
Lithium (mg/L)	38	0	No/No	Nonparametric	0.33	0.57
Mercury (mg/L)	38	100	No/No	MDL	0.0002	0.002
Molybdenum (mg/L)	38	26	Yes/Yes	Parametric	0.046	0.1
Selenium (mg/L)	38	26	No/No	Nonparametric	0.214	0.05
Thallium (mg/L)	17	100	No/No	MDL	0.004	0.004
Radium-226+228 Combined (pCi//L)	36	0	Yes/No	Parametric	2.24	5

Notes:
BAT = Bottom Ash Transfer
GWPS = Groundwater Protection Standard
MDL = background limit set at maximum detection limit
mg/L = milligrams per liter
pCi/L = picoCuries per liter

All of the beryllium, mercury, and thallium results in the background monitoring well were reported as not detected and cadmium was only detected 5% of the time. For these constituents, the maximum detection limit was selected as the upper prediction limit (UPL) per the double quantification rule in the U.S. Environmental Protection Agency's Unified Statistical Guidance (2009).

GWPS (groundwater protection standards) are U.S. Environmental Protection Agency primary drinking water standard maximum contaminant limits (MCL) or GWPS provided in 40 CFR 257.95(3)(h)(2), except for lithium and selenium which are based on the background UPL.

Figures

Last saved: 12/15/2021
Path: C:\Users\lilianageorgeta.croi\AECOM Directory\GDS GIS Services - GIS CAD PROJECTS\DCS AMERICAS\CENTRAL REGION US\PRPA\20211215\Work\Figure 1 BAT.mxd

Project Management Initials: Design RLH Drawn AGS Checked JH Approved VK ANSI B 11" x 17"

CCR 2021 Annual Groundwater Report
Platte River Power Authority Wellington, CO
Project No.: 60659991 Date: 2021-12-15

Rawhide Energy Station
BAT Monitoring Well Network

AECOM

Figure 1

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Path: C:\Users\lilianageorgeta.croi\AECOM Directory\GDS GIS Services - GIS CAD PROJECTS\DCS AMERICAS\CENTRAL REGION US\PRPA\20211215\Work\Figure 2 BAT.mxd

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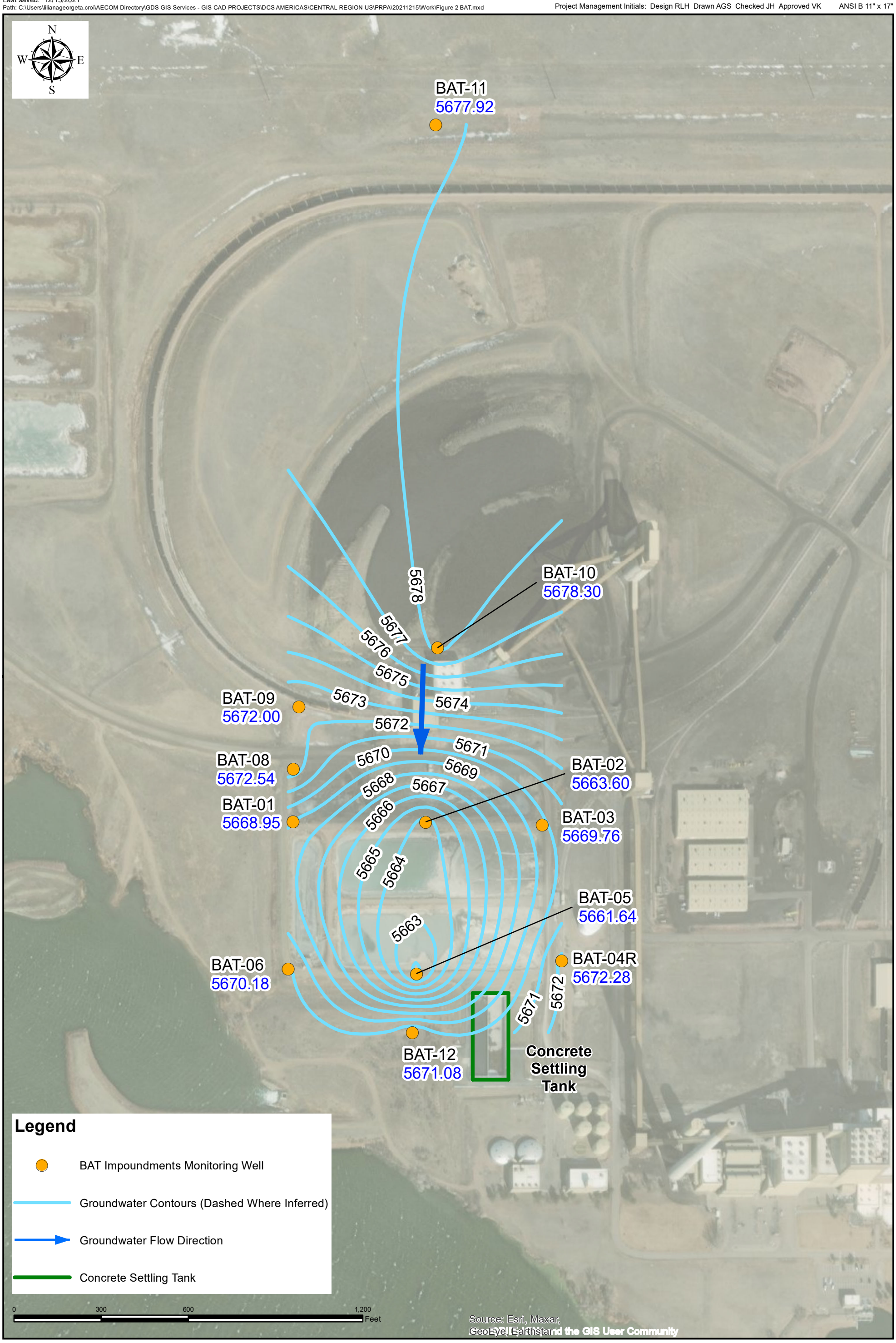

CCR 2021 Annual Groundwater Report
Platte River Power Authority Wellington, CO
Project No.: 60659991 Date: 2021-12-15

Rawhide Energy Station
BAT Monitoring Well Networks
January 2021 Water Levels

AECOM

Figure 2

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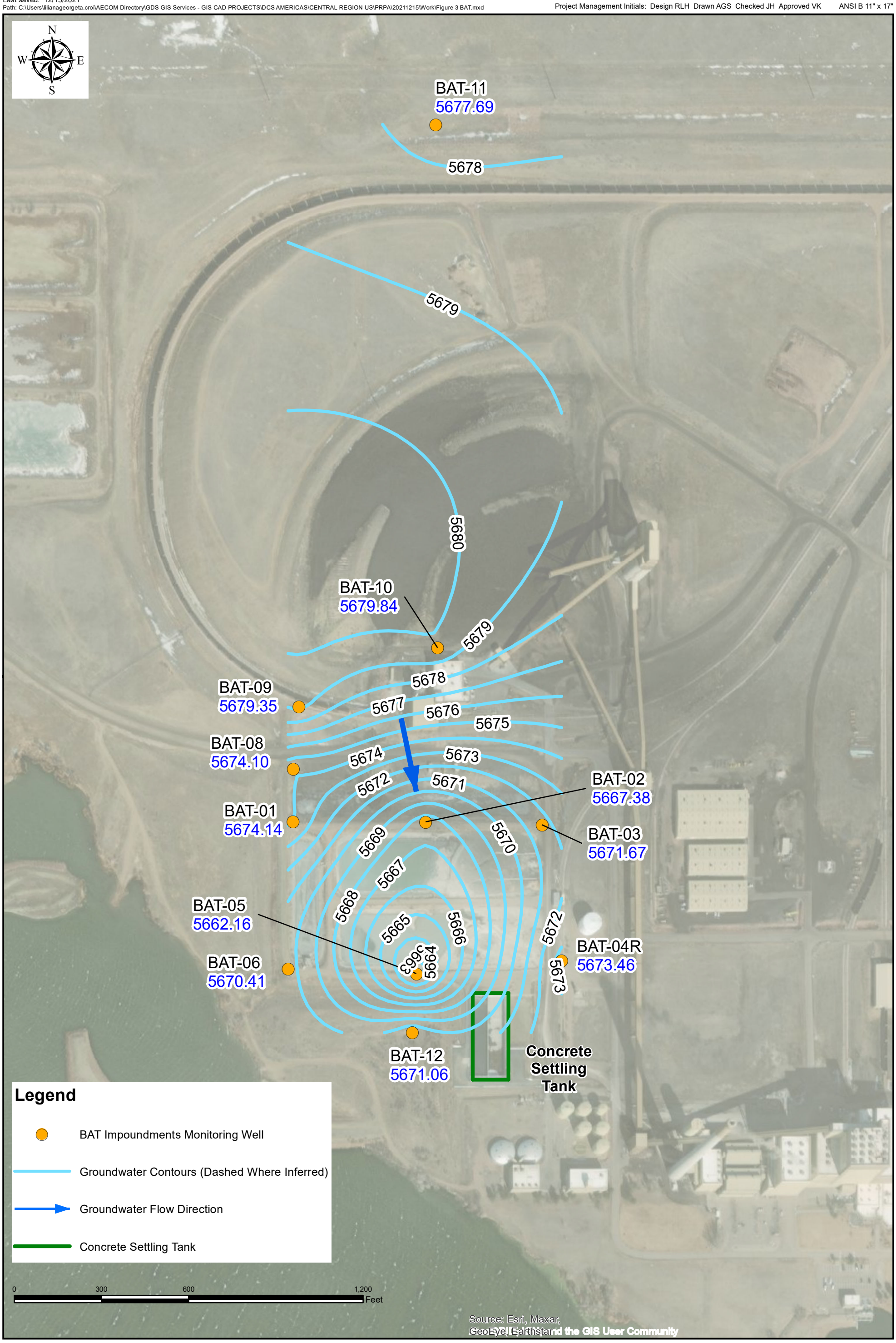
Path: C:\Users\lilianageorgeta.croi\AECOM Directory\GDS GIS Services - GIS CAD PROJECTS\DCS AMERICAS\CENTRAL REGION US\PRPA\20211215\Work\Figure 3 BAT.mxd

Project Management Initials: Design RLH Drawn AGS Checked JH Approved VK ANSI B 11" x 17"



CCR 2021 Annual Groundwater Report
Platte River Power Authority Wellington, CO
Project No.: 60659991 Date: 2021-12-15

Rawhide Energy Station
BAT Monitoring Well Networks
April 2021 Water Levels

AECOM

Figure 3

Last saved: 12/15/2021
Path: C:\Users\lilianageorgeta.croi\AECOM Directory\GDS GIS Services - GIS CAD PROJECTS\DCS AMERICAS\CENTRAL REGION US\PRPA\20211215\Work\Figure 5 BAT.mxd

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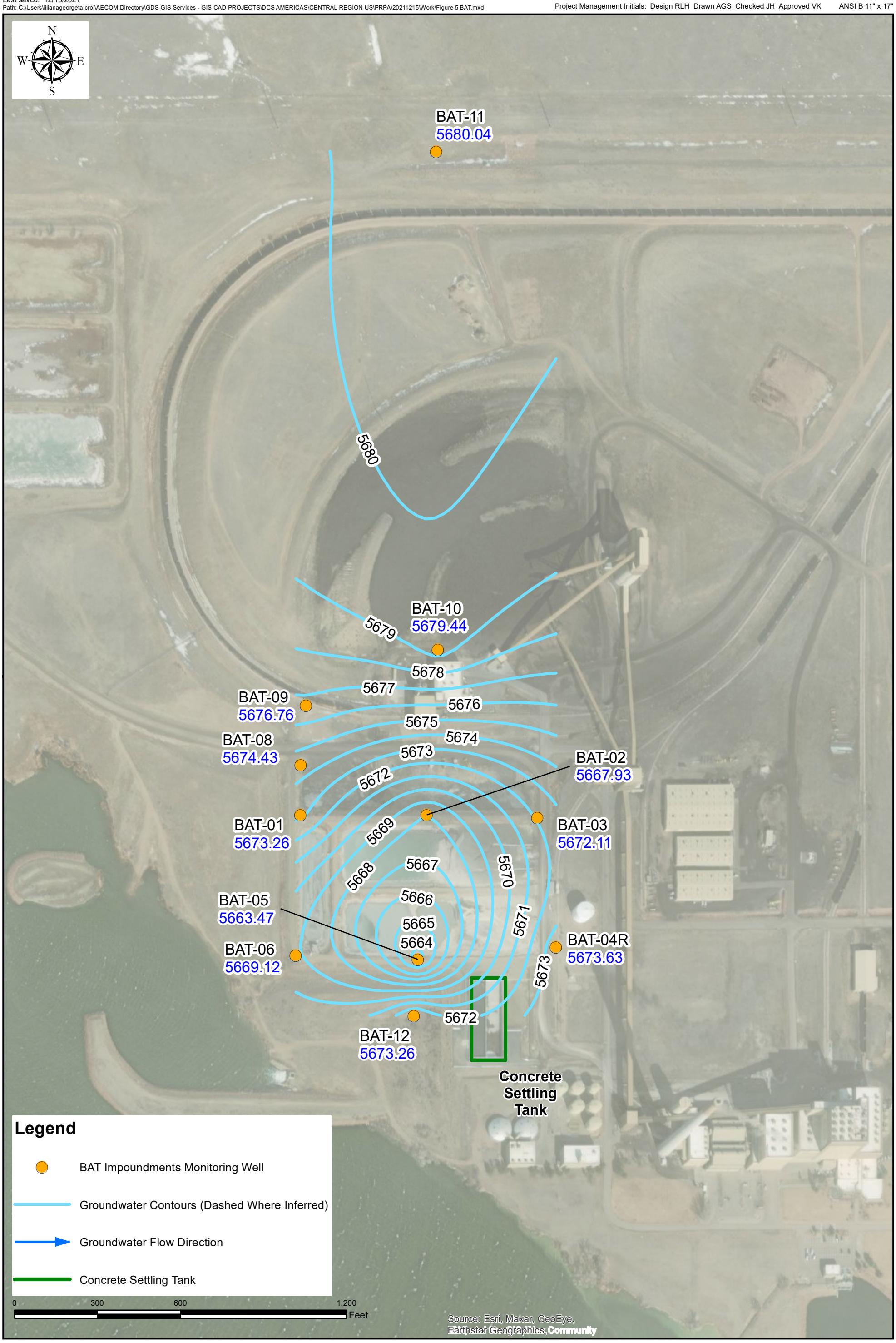

CCR 2021 Annual Groundwater Report
Platte River Power Authority Wellington, CO
Project No.: 60659991 Date: 2021-12-15

Rawhide Energy Station
BAT Monitoring Well Networks
October 2021 Water Levels

AECOM

Figure 4

Appendix A

Groundwater Sampling Forms

January 2021

AECOM

Well/Piezo ID: BAT-10

Ground Water Sample Collection Record

Client:	Platte River Power Authority	Date:	1/7/21
Project No:	CDPHE = 60630004, CCR = 60630103	Time: Start	08:05
Site Location:	Rawhide Generating Station	Finish	09:40
Weather Conds:	25°F, calm	Collector(s)	~~[illegible]~~ & J. Dobkowski, G. Dawson

WATER LEVEL DATA: (measured from Top of Casing) Well ☑ Piezometer ☐

a. Total Well Length 31.28 c. Casing Material PVC e. Length of Water Column _____ (a-b)

b. Water Table Depth 12.29 d. Casing Diameter 2" f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method: Bladder Pump with dedicated 1/4" x 1/4" polyethylene tubing

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ ___NA____ well volumes) _____ Low flow sampling

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	556	~~[illegible]~~ 06M171
Hach	2100 Q	19110C061364

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page #_____

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)	
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft	
8:14	0	10.12	7.39	3884	166.9	19.01	31.5	clear	13.48	300 ml/min
8:17	1L	11.43	7.42	4056	51.0	2.64	20.0	"	13.92	
8:20	1.5L	11.55	7.42	4071	41.6	2.08	22.0	"	14.61	200 ml/min
8:23	2.1L	11.68	7.42	4059	37.5	1.43	18.5	"	14.83	
8:26	2.8L	11.57	7.43	4056	42.5	2.18	19.1	"	15.04	150 ml/min
8:29	3.5L	11.30	7.45	3984	45.1	2.30	19.2	"	15.18	
8:32	4.0L	11.19	7.50	3932	47.1	2.41	19.0	"	15.30	

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump with dedicated 1/4" x 1/4" polyethylene tubing

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-10-CDPHE	See COC	See COC	See COC	See COC	0840
BAT-10-CCR	See COC	See COC	See COC	See COC	0840

Comments COC = Chain of Custody DUP-02-CCR collected

Signature Jeff Dobkowski Date 1/7/21

AECOM

Well/Piezo ID: BAT-11

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: calm, cold
Collector(s): ~~G. Ahrendt~~ & J. Dobkowski
G. Dawson

Date: 1/7/21
Time: Start 0950
Finish 1125

WATER LEVEL DATA: (measured from Top of Casing) Well ☑ Piezometer ☐

a. Total Well Length 38.93
b. Water Table Depth 26.95
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method: Bladder Pump with dedicated 1/4" x 1/4" polyethylene tubing

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ ___NA____ well volumes) _____ Low flow sampling

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	556	~~[illegible]~~ 06M171
Hach	2100 Q	191102061364

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page #_____

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)	
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft	
0957	0	8.34	7.69	1076	148.2	5.22	33.9	clear	27.21	300 ml/min
1000	1L	10.41	7.43	1002	153.1	2.63	15.9	"	27.55	
1003	1.8L	10.48	7.45	980	152.4	3.50	20.7	"	27.92	
1006	2.5L	10.47	7.54	941	152.7	5.06	16.3	"	28.22	
1009	3.5L	10.47	7.56	923	153.8	5.64	9.10	"	28.59	
1012	4.2L	10.18	7.56	924	156.2	5.65	6.65	"	28.88	150 ml/min
1015	5L	10.04	7.56	927	156.7	5.60	4.10	"	28.93	
1018	5.9L	10.61	7.55	930	156.9	5.53	3.40	"	29.09	

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Bladder Pump with dedicated 1/4" x 1/4" polyethylene tubing

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-11-CDPHE	See COC	See COC	See COC	See COC	1030
BAT-11-CCR	See COC	See COC	See COC	See COC	1030

Comments COC = Chain of Custody ERB-01-CCR collected

Signature [signature] Date 1/7/21

AECOM

Well/Piezo ID: BAT-12

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: calm, 32°F Collector(s) [redacted] & J. Dobkowski G. Dawson

Date: 1/7/21
Time: Start 1255
Finish _____

WATER LEVEL DATA: (measured from Top of Casing) Well ☑ Piezometer ☐

a. Total Well Length 45.02 c. Casing Material PVC e. Length of Water Column _____ (a-b)

b. Water Table Depth 30.52 d. Casing Diameter 2" f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method: Bladder Pump with dedicated 1/4" x 1/4" polyethylene tubing

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ ___NA____ well volumes) _____ Low flow sampling

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	556	~~20946~~ 06M171
Hach	2100 Q	19110C061364

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page #_____

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
1306	0	10.83	7.93	1161	137.9	5.13	87.5	cloudy	30.79 250 mL/min
1309	0.75L	11.39	7.82	1151	133.5	4.55	86.6	"	31.06
1312	1.5L	11.48	7.79	1148	131.0	4.61	90.9	"	31.14
1315	3.1L	11.48	7.79	1139	130.0	4.61	104	"	31.30
1318	3.7L	11.50	7.80	1134	130.9	4.71	109	"	31.37
1321	4.5L	11.51	7.80	1131	131.7	4.75	98.5	"	31.35
1324	5.1L	11.49	7.80	1132	132.3	4.74	85.6	"	31.41
1328	5.8L	11.47	7.79	1147	133.3	4.75	79.2	"	31.50
1331	6.5L	11.45	7.79	1145	134.0	4.74	78.8		31.53

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below. Turb Stabilized @ ~79

SAMPLE COLLECTION: Method: Bladder Pump with dedicated 1/4" x 1/4" polyethylene tubing

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-12-CDPHE	See COC	See COC	See COC	See COC	1330
BAT-12-CCR	See COC	See COC	See COC	See COC	1330

Comments COC = Chain of Custody MS/MSD collected

Signature Jeff Dobkowski Date 1/7/21

April 2021

AECOM

Well/Piezo ID: BAT-1

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: _____ Collector(s) _____

Date: 13 Ap 2021
Time: Start 13:25
Finish _____

WATER LEVEL DATA: (measured from Top of Casing) Well ☐ Piezometer ☐

a. Total Well Length _____ c. Casing Material _____ e. Length of Water Column _____ (a-b)

b. Water Table Depth _____ d. Casing Diameter _____ f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method __bladder pump_____

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

	Make	Model	Serial Number
	YSI 556		
	Turbidity		

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page #_____

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
13:28	0.3	10.2	7.73	2111	79.2	3.23	12.87	Clear	8.10
13:31	1.2	10.4	7.69	2103	73.7	2.44	14.1	"	10.16
13:34	2.1	10.7	7.68	2103	71.6	0.64	12.5	"	11.48
13:37	3.0	10.6	7.67	2105	70.4	1.57	13.9	"	12.64
13:40	3.9	10.7	7.69	2109	67.2	1.65	11.38	"	13.99
13:43	4.8	10.6	7.67	2113	64.4	1.50	10.8	"	15.11
13:46	5.7	10.6	7.67	2120	61.6	1.38	12.16	"	16.21
13:49	6.6	10.6	7.66	2116	60.1	1.32	12.24	"	17.40

300 mL min

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time

Comments Started Sampling at 14:00 Collected ~~BM~~ DUP-03 (CCR) Collected DUP-04 (CDPHE)

Signature _____ Date _____

AECOM

Well/Piezo ID: BAT-2

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: Cloudy 30°F Collector(s) C. Ahrendt & G. Dawson

Date: 4/14/21
Time: Start 10:15
Finish

WATER LEVEL DATA: (measured from Top of Casing)

Well ☑ Piezometer ☐

a. Total Well Length 33.39
b. Water Table Depth 15.03
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column 18.36 (a-b)
f. Calculated Well Volume (see back) 3.0 gal

Flow Rate (< 500 ml/min): 150

WELL PURGING DATA

a. Purge Method __bladder pump with dedicated tubing

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

	Make	Model	Serial Number
YSI ~~556~~	Pro		12E100167 - Geotech Environmental
Turbidity			Pine Environmental 2206#

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # — Page # —

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
10:23	0.1	8.3	7.23	3904	35.7	1.71	14.26	Clr	15.80
10:26	0.4	9.2	7.16	4000	28.9	0.84	13.88	"	15.6
10:29	0.85	10.0	7.13	4076	20.4	0.54	12.9	"	16.14
10:32	1.3	10.1	7.14	4093	17.4	0.48	14.3	"	16.45
10:35	1.75	10.3	7.14	4082	15.4	0.4	13.5	"	16.76
10:38	2.20	10.3	7.13	4082	14.9	0.34	13.02	"	16.99
10:41	2.65	10.03	7.15	4055	12.7	0.45	10.94	"	17.20
10:44	3.10	10.03	7.18	4044	11.3	0.41	12.41	"	17.36
10:47	3.55	10.03	7.15	3982	9.9	0.4	10.7	"	17.34

100 mL min

150 ml/min

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☑
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-02-CDPHE	See COC	4			1100
BAT-02-CDPHE	1L Plastic	4			11:00
BAT-02-CCR	See COC	3			11:00
BAT-02-CCR	1 Liter Plastic	2			11:00

Comments

Signature C. Ahrendt Date 4/14/2021

AECOM

Well/Piezo ID: BAT-3

Ground Water Sample Collection Record

Client:	Platte River Power Authority	Date:	14 Apr 2021
Project No:	CDPHE = 60630004, CCR = 60630103	Time: Start	8:45
Site Location:	Rawhide Generating Station	Finish	
Weather Conds:	Cloudy 30°F	Collector(s)	C. Attwendt & G Dawson

WATER LEVEL DATA: (measured from Top of Casing) Well ☑ Piezometer ☐

a. Total Well Length 35.21 c. Casing Material PVC e. Length of Water Column 24.48 (a-b)

b. Water Table Depth 10.73 d. Casing Diameter 2" f. Calculated Well Volume (see back) 4.00

Flow Rate (< 500 ml/min): ~200 mL/min

WELL PURGING DATA

a. Purge Method __bladder pump with dedicated tubing

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI ~~556~~ Pro		12E100167 - Geotech Environmental
Turbidity		Pine Environmental 220C pine#

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page # _____

Time	Volume Removed (~~gal~~ L)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
8:55	0.45	8.9	6.80	3570	164.5	1.8	31.0	clear	10.40
8:58	0.90	9.3	6.89	4265	144.4	0.81	26.9	clear	11.53
9:01	1.35	9.5	6.90	4312	133.6	0.57	27.9	clear	11.88
9:04	1.8	9.5	6.89	4344	128.0	0.55	26.4	clear	12.16
9:07	2.25	9.5	6.91	4313	123.1	0.51	25.0	clear	12.44
9:10	2.7	9.5	6.91	4297	119.7	0.48	20.4	clear	12.70
9:13	3.15	9.3	6.91	4286	116.8	0.5	20.5	clear	12.91
9:16	3.6	9.2	6.91	4197	114.3	0.48	19.4	clear	13.11

150 ml/min

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☑
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: bladder pump with dedicated tubing

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
PA KS BAT-03 CDPHE	See COC	6			0925
BAT-03 ~~KS BAT-03~~ - CDPHE	1L Plastic	4			0925
KS BAT-03 - CCR	See COC	3			0925
PA BAT-03 - CCR	1 Liter Plastic	2			0925

Comments Started Sampling at 9:25 AM

Signature [signature] Date 4/14/2021

AECOM

Well/Piezo ID: BAT-04R

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: Cloudy Drizzle 30 Collector(s) C-Atwood & Graham Dawson

Date: 4/15/2021
Time: Start 1155
Finish

WATER LEVEL DATA: (measured from Top of Casing)

Well ☑ Piezometer ☐

a. Total Well Length 36-21
b. Water Table Depth 13.52
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column 22.69 (a-b)
f. Calculated Well Volume (see back) 3.70

Flow Rate (< 500 ml/min): 200

WELL PURGING DATA

a. Purge Method __bladder pump

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

	Make	Model	Serial Number
YSI 556			
Turbidity			

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page #_____

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
11:54	—	8.1	7.19	2357	106.0	7.12	16.6	Clear	13.30
11:57	0.6	8.9	7.66	2376	103.2	4.48	22.6	clear	13.35
12:00	1.2	9.3	7.5	2483	105.5	6.60	26.9	clear	13.44
12:03	1.8	9.4	7.46	2561	107.4	5.66	25.0	clear	13.60
12:06	2.4	9.5	7.42	2635	108.3	1.44	22.7	clear	13.65
12:09	0.36	9.7	7.41	2671	2574	1.36	20.4	clear	13.81
12:12	0.36	9.7	7.39	2603	110.4	1.25	19.9	clear	14.44
12:15	0.42	9.7	7.39	2711	111.2	1.19	17.1	clear	13.88
12:18	0.48	9.7	7.35	2764	111.7	1.29	13.6	clear	14.22

200 ml/min

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

Sampled at 1

SAMPLE COLLECTION: Method: bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
					12:30

Comments: Sampled at 12:30

Signature _____ Date _____

AECOM

Well/Piezo ID: BAT-04R

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: P-Sunny +40°
Collector(s): J. Lay + G. Ahrendt

Date: 4/22/21
Time: Start 1222
Finish 1300

WATER LEVEL DATA: (measured from Top of Casing)

Well ☑ Piezometer ☐

a. Total Well Length 36.21
b. Water Table Depth 13.52
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method __bladder pump

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

	Make	Model	Serial Number
YSI 556			
Turbidity			

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page # _____

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
12:26	0.0						12.40	Clear	13.57
12:29	0.5						12.45	Clear	13.98
12:33	0.8						12.49	Clear	14.22
12:37	1.1						7.95	Clear	14.32
12.40	1.3						7.04	Clear	14.36
12.43	1.6						4.79	Clear	14.43
12.46	1.9						4.52	Clear	14.54
12.52	2.5						3.45	Clear	14.64

NM

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☐	☐	☑

If no or N/A - Explain below.
YSI meter broke, will use purge volume + turbidity of initial sampling

SAMPLE COLLECTION: Method: bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-04R-CDPHE	2 L Plastic	2	None	Nitrite + Nitrate	1255

Comments: Re-sample

Signature: [signature]

Date: 4/22/2021

AECOM

Well/Piezo ID: BAT-5

Ground Water Sample Collection Record

Client:	Platte River Power Authority	Date:	4/13/2021
Project No:	CDPHE = 60630004, CCR = 60630103	Time: Start	0943
Site Location:	Rawhide Generating Station	Finish	
Weather Conds:		Collector(s)	CA, GD

WATER LEVEL DATA: (measured from Top of Casing) Well ☑ Piezometer ☐

a. Total Well Length 37.21 c. Casing Material PVC e. Length of Water Column 17.24 (a-b)

b. Water Table Depth 19.97 d. Casing Diameter _____ f. Calculated Well Volume (see back) 2.81

Flow Rate (< 500 ml/min): ~250

WELL PURGING DATA

a. Purge Method __bladder pump

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

	Make	Model	Serial Number
YSI 556	Pro		12F100167
Turbidity			

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page #_____

mL removed

	Time	mL Volume Removed (~~gal~~)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
	Stabilization	-- ~~3x~~	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
0.9	9:57	0.30	10.4	7.05	4430	31.2	0.30	11.92	Clear	21.58
1.8	9:01	0.6	10.3	6.99	4407	25.2	0.37	11.83	"	21.98
2.7	9:04	0.9	10.0	6.98	4323	29.4	0.41	11.83	"	22.38
3.6	9:07	1.2	10.4	6.97	4258	35.1	0.44	13.0	"	22.78
4.5	9:10	1.4	10.3	6.97	4245	40.3	0.50	21.2	"	23.0
	9:13	4.8	10.3	6.97	4316	41.9	0.51	24.5	"	23.42
	9:14	5.4	10.5	6.97	4363	42.6	0.54	27.0	"	23.82
	9:23	6.4	10.6	6.94	4403	41.4	0.42	26.4	"	24.33
	9:28	7.4	10.6	7.00	4445	42.2	0.42	26	"	25.09

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-05-CCR		3			0930
BAT-05-CCR		2			0930
BAT-05-CDPHE		4			0930
BAT-05-CDPHE		4			0930

Pit
Pit

Comments Started sampling at 9:30

Signature _____ Date _____

AECOM

Well/Piezo ID: BAT-06

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: _____ Collector(s) GD AH

Date: 13 APR 2021
Time: Start 11:46
Finish _____

WATER LEVEL DATA: (measured from Top of Casing) Well ☐ Piezometer ☐

a. Total Well Length _____ c. Casing Material _____ e. Length of Water Column _____ (a-b)

b. Water Table Depth _____ d. Casing Diameter _____ f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method __bladder pump_____

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

	Make	Model	Serial Number
	YSI 556		
	Turbidity		

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page #_____

Time	Volume Removed ~~(gal)~~ L	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
11:48	0.2	9.0	7.72	3430	84.2	2.15	13.2	Clear	15.80
11:51	0.8	9.5	7.62	3430	81.3	1.45	7.22	"	16.55
11:54	1.4	9.5	7.61	3428	79.0	1.09	8.90	"	17.19
11:57	2.0	9.6	7.61	3426	77.3	0.95	9.59	"	17.91
12:00	2.6	9.5	7.61	3419	75.3	0.88	9.75	"	18.92
12:03	3.2	9.4	7.61	3412	74.2	0.85	9.3	"	19.60
12:06	3.8	9.5	7.63	3412	73.2	0.88	8.91	"	20.31
12:09	4.4	9.6	7.57	3407	72.3	0.80	7.96	"	21.05
12:12	5.0	9.8	7.61	3405	71.4	0.80	7.84	"	21.77

200 ml min

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
					12:15

Comments _____

Signature _____ Date _____

AECOM

Well/Piezo ID: BAT-8

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: Cloudy 30°F Collector(s) C. Ahrendt & G. Dawson

Date: 4/14/2021
Time: Start 11:50
Finish

WATER LEVEL DATA: (measured from Top of Casing)

Well ☑ Piezometer ☐

a. Total Well Length 32.95
b. Water Table Depth 11.94
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column 21.01 (a-b)
f. Calculated Well Volume (see back) 3.42

Flow Rate (< 500 ml/min): 250.

WELL PURGING DATA

a. Purge Method __bladder pump with dedicated tubing

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

	Make	Model	Serial Number
YSI ~~556~~	PRO		Geotech
Turbidity			Pine

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # — Page # —

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
11:52	0.86	10.0	7.87	1877	83.9	3.86	9.58	N/A	12.50
11:55	1.35	10.7	7.83	1888	81.1	2.34	13.81	N/A	13.62
11:58	2.20	10.8	7.82	1886	78.7	2.03	13.36	N/A	14.32
12:01	2.95	10.9	7.82	1892	75.3	1.63	12.9	N/A	15.38
12:04	3.7	10.8	7.80	1890	72.9	1.46	11.6	N/A	16.10
12:07	4.45	10.9	7.81	1881	70.9	1.29	12.9	N/A	17.02
12:10	5.2	10.8	7.81	1880	69.3	1.19	12.2	N/A	17.88
12:13	5.95	10.9	7.81	1877	68.1	1.13	11.5	N/A	18.8
12:16	6.7	10.9	7.80	1876	67.1	1.07	12.32	N/A	19.68

~700 mL/min
~280 mL/min

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☑
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: bladder pump

	Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
KS	BAT-09-CDPHE	Sea COC	10			1230
PA	BAT-09-CDPHE	1 Liter	4			
KS	BAT-09-CCR	Sea COC	3			
PA	BAT-09-CCR	1 Liter	2			

Comments

Signature [signature] Date 4/14/2021

AECOM

Well/Piezo ID: BAT-09

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: _____ Collector(s) _____

Date: 4/14/21
Time: Start 1318
Finish _____

WATER LEVEL DATA: (measured from Top of Casing) Well ☑ Piezometer ☐

a. Total Well Length 34.69
b. Water Table Depth 13.68
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): ~~300~~ 250

WELL PURGING DATA

a. Purge Method __bladder pump with dedicated tubing

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

	Make	Model	Serial Number
	YSI 556		
	Turbidity		

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page #_____

Time	Volume Removed ~~(gal)~~ L	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)	
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft	
13:10	—	9.1	7.62	3600	103.2	2.05	7.47	Cl.	14.43	400 ml/min
13:22	1.2	10.4	5.70	3661	102	5.87	7.05	"	15.64	
13:25	2.4	10.7	7.41	3674	97.1	5.71	7.34	"	16.55	- 300 ml/min
13:28	3.3	10.7	7.41	3666	93.5	5.54	6.34	"	17.52	- 250 ml/min
13:31	4.05	10.5	7.4	3663	91.1	4.86	8.18	"	18.36	
13:34	4.4	10.6	7.4	3667	89.0	[illegible]	9.15	"	19.47	DO 4.08
13:37	5.55	10.5	7.4	3665	86.8	5.32	9.15	"	20.42	
13:40	6.3	10.6	7.4	3663	84.5	4.74	8.83	"	21.1	
13:43	7.05	10.6	7.4	3665	81.9	4.10	10.43	"	22.22	
13:46	7.8	10.7	7.39	3665	80.2	5.41	11.36	"	23.02	
13:49	8.65	10.7	7.39	3673	79.0	0.97	10.47	"	23.95	- shook air bubbles out.
13:52	9.40	10.7	7.39	3671	77.4	0.76	10.94	"	25.03	
13:55	10.15	10.7	7.39	3671	75.5	0.72	11.17	"	25.45	
13:58	10.90	10.7	7.38	3667	74.5	0.70	10.66	"	25.93	

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
					14:10

Comments _____

Signature _____ Date _____

AECOM

Well/Piezo ID: BAT-10

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: Cloudy 0% snow 28° Collector(s) J. Levy + C Ahrendt

Date: 4/21/21
Time: Start 0840
Finish 0955

WATER LEVEL DATA: (measured from Top of Casing) Well ☑ Piezometer ☐

a. Total Well Length 31.26 c. Casing Material PVC e. Length of Water Column _____ (a-b)

b. Water Table Depth 10.75 d. Casing Diameter 2" f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method __bladder pump_____

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

	Make	Model	Serial Number
	YSI 556		
	Turbidity		

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page #_____

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
0847	Initial	8.2	7.06	4200	108.7	4.15	11.4	Clear	10.99
0850	0.25	8.2	7.31	4408	97.5	3.50	11.62	Clear	12.22
0853	0.5	9.3	7.32	4406	95.9	3.50	9.21	Clear	13.07
0856	1.0	9.2	7.34	4411	94.2	3.59	9.01	Clear	14.54
0859	1.25	9.1	7.35	4401	94.4	3.75	7.46	Clear	NM
0903	1.50	8.9	7.35	4399	95.0	3.69	6.33	Clear	15.20
0906	1.75	9.0	7.35	4375	96.8	3.89	5.44	Clear	15.48

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☑
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.
Low flow sampling.

SAMPLE COLLECTION: Method: bladder pump

	Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
KS	BAT-10-CDPHE	See CoC	6	See CoC	See CoC	0920
PA	BAT-10-CDPHE	1 L Plastic	4	None/HNO3	See CoC	0920
KS	BAT-10-CCR	See CoC	8	None/HNO3	See CoC	0920
PA	BAT-10-CCR	1 L Plastic	2	None/HNO3	See CoC	0920

Comments NM = Not Measured. Tubing was removed from well

Signature [signature] Date 4/21/2021

AECOM

Well/Piezo ID: BAT-11

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: cloudy + 30° W winds Collector(s) J. Kay + C. Ahrendt

Date: 4/21/21
Time: Start 1200
Finish 1325

WATER LEVEL DATA: (measured from Top of Casing) Well ☑ Piezometer ☐

a. Total Well Length 38.92 c. Casing Material PVC e. Length of Water Column _____ (a-b)

b. Water Table Depth 27.18 d. Casing Diameter 2" f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method __bladder pump

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

	Make	Model	Serial Number
	YSI 556		
	Turbidity		

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page #_____

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
1207	Initial	8.8	7.52	1185	93.6	8.96	3.22	Clear	26.12
1210	0.25	9.8	7.35	1154	70.6	7.73	2.87	Clear	26.26
1213	0.5	9.9	7.32	1133	68.7	7.35	4.90	Clear	26.50
1216	0.75	9.9	7.30	1111	71.1	7.12	7.43	Clear	26.78
1220	1	10.0	7.36	1067	77.8	6.83	5.57	Clear	27.18
1223	1.25	10.0	7.46	1025	81.3	6.73	4.32	Clear	27.43
1226	1.5	10.0	7.61	967	84.7	6.83	3.04	Clear	27.68
1229	1.75	10.0	7.61	974	88.4	6.87	2.02	Clear	27.90
1232	2	10.0	7.59	979	90.9	6.93	1.99	Clear	28.22

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☑
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.
low flow sampling

SAMPLE COLLECTION: Method: bladder pump

	Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
KS	BAT-11-CDPHE	See CoC	6	See CoC	See CoC	1245
PA	BAT-11-CDPHE	1 L Plastic	4	None/HNO3	See CoC	1245
KS	BAT-11-CCR	See CoC	3	None/HNO3	See CoC	1245
PA	BAT-11-CCR	1 L Plastic	2	HNO3	See CoC	1245

Comments

Signature [signature] Date 4/21/2021

AECOM

Well/Piezo ID: BAT-12

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: Cloudy Collector(s) C. Hawkins & J. Levy

Date: 4/15/2021
Time: Start 9:00
Finish _____

WATER LEVEL DATA: (measured from Top of Casing) Well ☑ Piezometer ☐

a. Total Well Length 45.04
b. Water Table Depth 30.54
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column 14.5 (a-b)
f. Calculated Well Volume (see back) 2.36

Flow Rate (< 500 ml/min): >50

WELL PURGING DATA

a. Purge Method __bladder pump with dedicated tubing

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

	Make	Model	Serial Number
	YSI ~~556~~ Pro		
	Turbidity		

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page #_____

30.74

Time	Volume Removed (~~gal~~ L)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
9:07	—	9.4	6.90	1356	37.7	6.33	614	cloudy	>50 ml/min
9:10	0.75	10.3	7.38	1379	15.6	3.44	65	"	30.88
9:13	1.5	10.3	7.58	1332	39.2	2.56	58.7	"	31.00
9:16	2.25	10.5	7.63	1313	41.3	6.61	37.5	clear	31.13
9:19	2.9	10.5	7.66	1306	62.1	4.94	30.6	"	31.18
9:22	3.6	10.6	7.67	1297	69.2	3.07	34.3	"	31.29
9:25	4.24	10.4	7.68	1288	69.3	5.00	29.3	"	31.32
9:28	5.15	10.4	7.68	1291	70.6	5.07	31.5	"	31.38
9:31	5.9								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
					9:40

Comments Collected at 9:40

Signature _____ Date _____

AECOM

Well/Piezo ID: BAT-12

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60630004, CCR = 60630103
Site Location: Rawhide Generating Station
Weather Conds: Sunny +40°
Collector(s): J. Ley + G. Ahrendt

Date: 4/22/12
Time: Start 1145
Finish 1220

WATER LEVEL DATA: (measured from Top of Casing)

Well ☑ Piezometer ☐

a. Total Well Length 45.04
b. Water Table Depth 30.54
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method __bladder pump

b. Acceptance Criteria defined (from workplan)
- Minimum Required Purge Volume (@ _____ well volumes) ___ Low flow

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI 556		
Turbidity		

d. Field Testing Equipment Calibration Documentation Found in Field Notebook # _____ Page # _____

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 MV	+/- 10%	5 NTU, 10%		0.3 ft
1149	Initial						26.8	Clear	30.39
1152	0.2						28.8	Clear	30.62
1155	0.4						31.0	Clear	30.80
1158	0.8						31.1	Clear	30.86
1201	1						31.5	Clear	30.95
1204	1.2			NM			31.4	Clear	31.02
1207	1.4						29.6	Clear	31.13

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☐	☐	☑

If no or N/A - Explain below.
YSI Meter broke. Will use purge volume + turbidity of initial sample

SAMPLE COLLECTION: Method: bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-12-CDPHE	1 L Plastic	1	None	Nitrate + Nitrite	1210

Comments: Re-sample

Signature: [signature] Date: 4/22/2021

October 2021

AECOM

Well ID: BAT-01

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60658468, CCR = 60659991
Site Location: Rawhide Generating Station
Weather Conds: Ovcast+wind Collector(s) J. Levy & G. Dawson

Date: 10/19/21
Time: Start 1110
Finish 1250

WATER LEVEL DATA: (measured from Top of Casing) Well [X] Piezometer [ ]

a. Total Well Length –
b. Water Table Depth 9.22
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): 200

WELL PURGING DATA

a. Purge Method Low flow sampling with disposble bladder pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	Professional Pro	12C100180
Geotech	Turbidimeter	21063268

c. Field Testing Equipment Calibration Documentation Found on Designated Calibration Log

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 mV	+/- 10%	5 NTU, 10%	--	0.3 ft
1115	Initial	13.4	7.24	2647	-310.7	0.70	106	Cloudy	9.89
1118	0.15	13.0	7.27	2689	-337.9	0.31	55.7	Clear	10.62
1121	0.3	12.8	7.28	2682	-345.8	0.23	26.7	Clear	11.59
1126	0.45	12.8	7.30	2668	-353.3	0.22	19.5	Clear	12.15
1131	0.6	12.7	7.31	2669	-357.8	0.16	17.2	Clear	13.39
1137	0.9	12.7	7.33	2665	-359.1	0.14	11.3	Clear	14.58
1142	1.1	12.7	7.33	2664	-361.2	0.13	9.85	Clear	15.34
1147	1.3	12.6	7.33	2655	-363.2	0.13	7.01	Clear	16.26
1151	1.5	12.5	7.32	2637	-362.9	0.13	9.34	Clear	17.30

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	[X]	[ ]	[ ]
Have parameters stabilized	[X]	[ ]	[ ]

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Low Flow with disposable bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-01 -CDPHE	250mL Plastic	1	H2SO4	Total Phosphorus	1220
	250mL Amber	1	H2SO4	TOC by SM 5310C	
	1L Plastic	3	None	Dissolved Metals - 200.7 TDS - 2540C Anions (Cl, F, SO4, NO3, NO2), Alkalinity	
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	
	1L Plastic	2	None	Dissovled Radium 226 & 228*	
BAT-01 -CCR	250mL Plastic	1	None	Anoions (Cl, F, SO4) - 9056	1220
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	1	None	TDS - 2540C	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	

Comments

Signature [signature] Date 10/19/21

AECOM

Well ID: BAT-02

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60658468, CCR = 60659991
Site Location: Rawhide Generating Station
Weather Conds: Sunny, windy, 45°F Collector(s) J. Levy & G. Dawson

Date: 10-20-21
Time: Start 0925
Finish 1100

WATER LEVEL DATA: (measured from Top of Casing) Well ☒ Piezometer ☐

a. Total Well Length –
b. Water Table Depth 14.98
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method Low flow sampling with disposble bladder pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	Professional Pro	12C100180
Geotech	Turbidimeter	21063268

c. Field Testing Equipment Calibration Documentation Found on Designated Calibration Log

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)	
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 mV	+/- 10%	5 NTU, 10%	--	0.3 ft	
0931	Initial	12.4	7.24	4477	-277.5	0.72	612	Brown	14.63	400 mL/min
0936	0.3	12.1	7.15	4404	-298.2	0.50	36.0	Clear	16.80	
0941	0.7	12.4	6.91	3902	-285.2	0.75	20.4	Clear	18.14	
0946	1.2	12.5	6.92	3878	-273.2	0.69	9.13	Clear	19.20	
0951	2	12.5	6.93	3879	-287.2	0.67	5.14	Clear	19.92	
0954	2.2	12.6	6.95	3877	-293.6	0.57	9.73	Clear	19.25	150 mL/min
0958	2.4	12.7	6.96	3891	-277.1	0.78	4.83	Clear	18.72	
1001	2.7	12.4	7.00	3930	-282.9	0.54	2.72	Clear	18.91	325 mL/min
1004	3	12.4	6.99	3932	-284.5	0.54	2.92	Clear	19.15	
1007	3.4	12.4	6.99	3927	-286.5	0.53	3.40	Clear	19.29	
1010	3.8	12.4	7.00	3915	-283.9	0.52	3.55	Clear	19.51	
1013	4.2	12.4	7.00	3882	-287.0	0.39	4.15	Clear	19.55	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Low Flow with disposable bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-02 -CDPHE	250mL Plastic	1	H2SO4	Total Phosphorus	1045
	250mL Amber	1	H2SO4	TOC by SM 5310C	
	1L Plastic	3	None	Dissolved Metals - 200.7 TDS - 2540C Anions (Cl, F, SO4, NO3, NO2), Alkalinity	
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	
	1L Plastic	2	None	Dissovled Radium 226 & 228*	
BAT-02 -CCR	250mL Plastic	1	None	Anoions (Cl, F, SO4) - 9056	1045
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	1	None	TDS - 2540C	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	

Comments Tubing replaced

Signature [signature] Date 10/19/21

AECOM

Well ID: BAT-03

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60658468, CCR = 60659991
Site Location: Rawhide Generating Station
Weather Conds: Sunny w/mid 45°F Collector(s) J. Levy & G. Dawson

Date: 10/20/21
Time: Start 1235
Finish 1400

WATER LEVEL DATA: (measured from Top of Casing) Well [X] Piezometer [ ]

a. Total Well Length -
b. Water Table Depth 10.29
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method Low flow sampling with disposble bladder pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	Professional Pro	12C100180
Geotech	Turbidimeter	21063268

c. Field Testing Equipment Calibration Documentation Found on Designated Calibration Log

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)	
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 mV	+/- 10%	5 NTU, 10%	--	0.3 ft	
1239	Initial	13.8	6.83	5275	-278.7	0.35	70.9	Cloudy	10.71	450 mL/min
1244	0.5	13.5	6.81	5181	-316.4	0.22	170	Cloudy	12.73	
1249	1.1	13.5	6.81	5130	-326.0	0.18	105	Hazy	14.33	
1254	1.75	13.5	6.81	5094	-340.5	0.22	41.4	Clear	15.89	
1259	2.4	13.3	6.80	5128	-355.8	0.16	30.0	Clear	17.25	
1304	2.7	15.0	6.82	5154	-336.1	0.18	21.9	Clear	17.82	150 mL/min
1309	2.9	15.4	6.81	5260	-356.0	0.10	17.0	Clear	17.98	
1312	3.1	15.6	6.81	5284	-367.7	0.10	16.3	Clear	18.06	
1315	3.3	15.3	6.80	5282	-372.1	0.13	12.6	Clear	18.21	
1318	3.5	15.3	6.79	5272	-371.3	0.07	14.4	Clear	18.31	
1321	3.7	15.4	6.81	5298	-372.3	0.05	12.5	Clear	18.45	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	[X]	[ ]	[ ]
Have parameters stabilized	[X]	[ ]	[ ]

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Low Flow with disposable bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-03 -CDPHE	250mL Plastic	1	H2SO4	Total Phosphorus	1345
	250mL Amber	1	H2SO4	TOC by SM 5310C	
	1L Plastic	3	None	Dissolved Metals - 200.7 TDS - 2540C Anions (Cl, F, SO4, NO3, NO2), Alkalinity	
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	
	1L Plastic	2	None	Dissovled Radium 226 & 228*	
BAT-03 -CCR	250mL Plastic	1	None	Anoions (Cl, F, SO4) - 9056	1345
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	1	None	TDS - 2540C	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	

Comments

Signature [signature] Date 10/20/21

AECOM

Well ID: BAT-04R

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60658468, CCR = 60659991
Site Location: Rawhide Generating Station
Weather Conds: overcast + 40°F Collector(s) J. Levy & G. Dawson

Date: 10-21-21
Time: Start 0846
Finish 1015

WATER LEVEL DATA: (measured from Top of Casing) Well ☒ Piezometer ☐

a. Total Well Length –
b. Water Table Depth 13.35
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method Low flow sampling with disposble bladder pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	Professional Pro	12C100180
Geotech	Turbidimeter	21063268

c. Field Testing Equipment Calibration Documentation Found on Designated Calibration Log

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)	
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 mV	+/- 10%	5 NTU, 10%	--	0.3 ft	
0842	Initial	12.6	7.04	3253	-268.2	0.57	144	Cloudy	14.02	300mL/min
0845	0.3	12.3	6.92	3605	-291.9	0.29	111	Cloudy	14.18	
0848	0.6	12.3	6.94	3598	-305.7	0.29	94.1	Hazy	14.34	
08:51	0.9	12.2	6.96	3533	-313.01	0.14	59.7	Hazy	14.45	
08:54	1.2	12.3	6.98	3485	-318.2	0.18	48.2	Hazy	14.55	
08:57	1.5	12.3	6.99	3509	-319.9	0.18	44.5	Hazy	14.60	
0900	1.86	12.3	6.99	3581	-321.2	0.15	40.4	Hazy	14.68	
0903	1.75	12.3	6.99	3578	-326.7	0.14	32.2	Hazy	14.72	
0906	1.90	12.4	6.99	3606	-331.3	0.12	28.1	Clear	14.75	
0911	2.25	12.4	6.99	3634	-335.1	0.12	26.5	Clear	14.80	
0914	2.5	12.4	6.99	3650	-337.2	0.10	~~14.87~~ 25.8	Clear	14.87	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Low Flow with disposable bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-04R -CDPHE	250mL Plastic	1	H2SO4	Total Phosphorus	1000
	250mL Amber	1	H2SO4	TOC by SM 5310C	
	1L Plastic	3	None	Dissolved Metals - 200.7 TDS - 2540C Anions (Cl, F, SO4, NO3, NO2), Alkalinity	
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	
	1L Plastic	2	None	Dissovled Radium 226 & 228*	
BAT-04R -CCR	250mL Plastic	~~1~~ 3	None	Anoions (Cl, F, SO4) - 9056	1000
	1L Plastic	~~1~~ 3	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	1	None	TDS - 2540C	
	1L Plastic	~~1~~ 6	HNO3	Total Radium 226 & 228*	

Comments CCR MS/MSD collected here

Signature [signature] Date 10/21/21

AECOM

Well ID: BAT-OS

Ground Water Sample Collection Record

Client:	Platte River Power Authority	Date:	10.20.21
Project No:	CDPHE = 60658468, CCR = 60659991	Time: Start	1110
Site Location:	Rawhide Generating Station	Finish	1225
Weather Conds:	Sunny+windy, 45°F Collector(s) J. Levy & G. Dawson		

WATER LEVEL DATA: (measured from Top of Casing) Well [x] Piezometer [ ]

a. Total Well Length – c. Casing Material PVC e. Length of Water Column _____ (a-b)

b. Water Table Depth 18.66 d. Casing Diameter 2" f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): _____

WELL PURGING DATA

a. Purge Method Low flow sampling with disposble bladder pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	Professional Pro	12C100180
Geotech	Turbidimeter	21063268

c. Field Testing Equipment Calibration Documentation Found on Designated Calibration Log

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)	
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 mV	+/- 10%	5 NTU, 10%	--	0.3 ft	
1113	Initial	12.7	7.10	5107	-228.6	1.33	598	lt. brown	19.72	500mL/min
1118	0.6	12.3	6.97	5131	-280.0	0.45	480	lt. brown	21.11	
1123	1.4	12.3	6.96	5118	-293.0	0.38	353	white	22.68	
1128	2	12.4	6.92	5015	-296.9	0.39	192	Cloudy	24.06	
1133	2.6	12.5	6.91	4964	-307.9	0.46	141	Cloudy	26.00	
1138	3.3	12.5	6.93	5038	-319.9	0.31	353	white	28.54	
1143	4	12.4	6.98	5112	-317.9	0.34	543	lt. brown	30.17	
1148	4.5	12.5	7.02	5130	-305.5	0.54	448	lt. brown	32.18	
1153	5	12.9	7.05	5196	-258.5	1.22	248	Cloudy	33.01	
1158	5.5	12.4	7.04	5112	-305.8	0.28	208	Cloudy	33.91	
1203	6	12.6	7.05	5211	-303.0	0.47	648	lt. brown	34.76	
1208	6.5	12.4	7.04	5228	-338.1	0.11	121	Cloudy	35.25	
1213	7	12.5	7.06	5249	-338.0	0.41	156	Cloudy	35.94	top of pump

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	[ ]	[ ]	[x]
Have parameters stabilized	[ ]	[ ]	[x]

If no or N/A - Explain below. well pumped dry

SAMPLE COLLECTION: Method: Low Flow with disposable bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-OS -CDPHE	250mL Plastic	1	H2SO4	Total Phosphorus	1045
	250mL Amber	1	H2SO4	TOC by SM 5310C	
	1L Plastic	3	None	Dissolved Metals - 200.7 TDS - 2540C Anions (Cl, F, SO4, NO3, NO2), Alkalinity	
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	
	1L Plastic	2	None	Dissovled Radium 226 & 228*	
BAT-OS -CCR	250mL Plastic	1	None	Anoions (Cl, F, SO4) - 9056	1045
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	1	None	TDS - 2540C	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	

10/21/21

Comments 1216- Well went dry

Signature [signature] Date 10/20/21

AECOM

Well ID: BAT-06

Ground Water Sample Collection Record

Client:	Platte River Power Authority		Date: 10/20/21
Project No:	CDPHE = 60658468, CCR = 60659991		Time: Start 0740
Site Location:	Rawhide Generating Station		Finish 0815
Weather Conds:	Sunny + 35°F	Collector(s) J. Levy & G. Dawson	

WATER LEVEL DATA: (measured from Top of Casing) Well ☒ Piezometer ☐

a. Total Well Length - c. Casing Material PVC e. Length of Water Column _____ (a-b)

b. Water Table Depth 16.34 d. Casing Diameter 2" f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): 175

WELL PURGING DATA

a. Purge Method Low flow sampling with disposble bladder pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	Professional Pro	12C100180
Geotech	Turbidimeter	21063268

c. Field Testing Equipment Calibration Documentation Found on Designated Calibration Log

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 mV	+/- 10%	5 NTU, 10%	--	0.3 ft
0746	Initial	9.8	7.51	3772	-160.3	1.80	12.8	Clear	16.61
0749	0.15	10.8	7.42	3783	-207.0	1.04	13.0	Clear	17.11
0752	0.4	10.6	7.44	3796	-210.8	0.82	9.96	Clear	17.51
0756	0.55	10.6	7.44	3765	-215.2	0.84	9.15	"	19.11
0759	0.75	10.7	7.44	3741	-213.0	0.77	9.04	"	19.80
0802	1.0	10.6	7.47	3740	-217.7	0.83	5.46	"	20.25
0806	1.25	10.3	7.45	3736	-238.6	0.88	5.66	"	20.73
0809	1.40	10.2	7.47	3791	-214.5	0.82	5.55	"	21.0
0812	1.65	10.3	7.47	3793	-218.5	0.80	7.45	"	21.28
0815	1.9	10.2	7.49	3787	-225.1	0.90	4.42	"	21.6

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

Air bubbles in Sensor.

SAMPLE COLLECTION: Method: Low Flow with disposable bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-06 -CDPHE	250mL Plastic	1	H2SO4	Total Phosphorus	0830
	250mL Amber	1	H2SO4	TOC by SM 5310C	
	1L Plastic	3	None	Dissolved Metals - 200.7 TDS - 2540C Anions (Cl, F, SO4, NO3, NO2), Alkalinity	
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	
	1L Plastic	2	None	Dissovled Radium 226 & 228*	
BAT-06 -CCR	250mL Plastic	1	None	Anoions (Cl, F, SO4) - 9056	0830
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	1	None	TDS - 2540C	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	

Comments

Signature [signature] Date 10/19/21

AECOM

Well ID: BAT-08

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60658468, CCR = 60659991
Site Location: Rawhide Generating Station
Weather Conds: P. Cloudy + 50°F Collector(s) J. Levy & G. Dawson

Date: 10.18.21
Time: Start 1015
Finish 1326

WATER LEVEL DATA: (measured from Top of Casing) Well ☒ Piezometer ☐

a. Total Well Length –
b. Water Table Depth 11.61
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): 225

WELL PURGING DATA

a. Purge Method Low flow sampling with disposble bladder pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	Professional Pro	12C100180
Geotech	Turbidimeter	21063268

c. Field Testing Equipment Calibration Documentation Found on Designated Calibration Log

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)	
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 mV	+/- 10%	5 NTU, 10%	--	0.3 ft	
1020	Initial	14.1	7.83	2198	-312.1	0.97	38.0	Clear	12.08	
1023	0.15	13.6	7.63	2143	-311.7	0.64	47.6	Hazy	12.42	
1026	0.3	13.4	7.58	2142	-313.7	0.44	50.5	Hazy	13.07	
1029	0.45	13.5	7.57	2139	-309.8	0.41	51.7	Hazy	13.91	
1032	0.6	13.6	7.58	2127	-320.7	0.32	41.3	Hazy	14.92	
1036	0.85	13.9	7.61	2129	-325.7	0.50	47.0	Clear	15.50	
1039	1	13.8	7.64	2131	-331.1	0.26	52.6	Hazy	16.13	
1043	1.15	13.6	7.66	2132	-342.7	0.19	45.3	Hazy	17.22	
1047	1.3	15.1	7.67	2129	-349.8	0.21	33.2	Clear	17.61	
1050	1.45	13.9	7.68	2131	-352.0	0.47	46.4	Clear	18.12	
1053	1.6	13.8	7.66	2128	-357.3	0.46	39.3	Clear	18.60	
1056	1.85	13.7	7.66	2128	-351.1	1.50	34.5	Clear	19.08	
1100	2	14.6	7.71	2137	-352.2	1.59	36.5	Clear	19.50	125 mL/min
1103	2.15	13.9	7.69	2126	-348.4	1.53	35.6	Clear	19.83	
1106	2.3	13.9	7.67	2121	-349.8	1.42	32.5	Clear	20.23	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Low Flow with disposable bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-08 -CDPHE	250mL Plastic	1	H2SO4	Total Phosphorus	1130
	250mL Amber	1	H2SO4	TOC by SM 5310C	
	1L Plastic	3	None	Dissolved Metals - 200.7 TDS - 2540C Anions (Cl, F, SO4, NO3, NO2), Alkalinity	
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	
	1L Plastic	2	None	Dissovled Radium 226 & 228*	
BAT-08 -CCR	250mL Plastic	1	None	Anoions (Cl, F, SO4) - 9056	1130
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	1	None	TDS - 2540C	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	

Comments The bladder pump lodged itself at ~18ft

Signature [signature] Date 10/18/21

AECOM

Well ID: BAt -09

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60658468, CCR = 60659991
Site Location: Rawhide Generating Station
Weather Conds: Sunny + windy 40F Collector(s) J. Levy & G. Dawson

Date: 10.15.21
Time: Start 1305
Finish 1450

WATER LEVEL DATA: (measured from Top of Casing) Well [x] Piezometer [ ]

a. Total Well Length –
b. Water Table Depth 16.27
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): 400

WELL PURGING DATA

a. Purge Method Low flow sampling with disposble bladder pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	Professional Pro	12C100180
Geotech	Turbidimeter	21063268

c. Field Testing Equipment Calibration Documentation Found on Designated Calibration Log

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 mV	+/- 10%	5 NTU, 10%	--	0.3 ft
1307	Initial	11.8	7.37	4460	-262.9	1.25	23.0	Hazy	17.41
1310	0.3	11.8	7.25	4457	-293.2	0.50	20.9	Clear	19.23
1313	0.6	11.9	7.24	4438	-302.0	0.40	20.7	Clear	20.81
1316	0.9	11.8	7.25	4428	-309.1	0.17	6.82	Clear	22.75
1319	1.2	11.9	7.26	4419	-313.9	0.16	6.43	Clear	24.53
1322	1.6	12.0	7.26	4420	-309.9	0.33	10.2	Clear	25.56
1325	2	12.1	7.28	4410	-303.3	0.47	15.5	Clear	26.61
1328	2.4	12.0	7.27	4423	-305.7	0.39	117	Hazy	27.31
1331	2.8	11.8	7.30	4427	-311.4	0.24	39.9	Hazy	27.91
1334	3.2	11.7	7.33	4432	-316.6	0.18	11.4	Clear	28.45
1337	3.6	11.6	7.30	4467	-302.6	0.41	48.5	~~Clear~~	28.61
1340	4	11.6	7.31	4472	-313.4	0.23	29.8	Hazy	28.90
1343	4.4	11.6	7.33	4472	-320.3	0.14	8.56	Clear	29.03
1346	4.6	11.5	7.34	4465	-321.6	0.19	6.62	Clear	29.25
1348	4.8	11.6	7.34	4468	-321.5	0.18	3.90	Clear	29.67

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	[x]	[ ]	[ ]
Have parameters stabilized	[x]	[ ]	[ ]

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Low Flow with disposable bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-09 -CDPHE	250mL Plastic	1	H2SO4	Total Phosphorus	1415
	250mL Amber	1	H2SO4	TOC by SM 5310C	
	1L Plastic	3	None	Dissolved Metals - 200.7 TDS - 2540C Anions (Cl, F, SO4, NO3, NO2), Alkalinity	
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	
	1L Plastic	2	None	Dissovled Radium 226 & 228*	
BAT-09 -CCR	250mL Plastic	1	None	Anoions (Cl, F, SO4) - 9056	1415
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	1	None	TDS - 2540C	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	

Comments Well went dry at 1445. Will return to fill Dissolved Radium

Signature [signature] Date 10/15/2021

AECOM

Well ID: BAT-10

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60658468, CCR = 60659991
Site Location: Rawhide Generating Station
Weather Conds: P. Cloudy + Sunny Collector(s) J. Levy & G. Dawson

Date: 10/18/21
Time: Start 0845
Finish 1010

WATER LEVEL DATA: (measured from Top of Casing) Well [X] Piezometer [ ]

a. Total Well Length –
b. Water Table Depth 11.15
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): 200

WELL PURGING DATA

a. Purge Method Low flow sampling with disposble bladder pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	Professional Pro	12C100180
Geotech	Turbidimeter	21063268

c. Field Testing Equipment Calibration Documentation Found on Designated Calibration Log

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 mV	+/- 10%	5 NTU, 10%	–	0.3 ft
0850	Initial	13.4	7.24	4927	-116.5	1.11	21.2	Clear	11.22
0853	0.1	13.0	7.23	5018	-132.8	0.67	26.3	Clear	11.97
0856	0.25	13.0	7.25	4973	-147.9	0.56	27.4	Clear	12.91
0859	0.4	13.0	7.25	5006	-152.5	0.97	29.2	Clear	13.71
0904	0.6	13.1	7.28	5011	-153.9	1.56	16.3	Clear	14.63
0907	0.85	13.2	7.31	4976	-148.5	2.81	8.73	Clear	14.96
0910	1.05	13.4	7.33	4846	-144.4	3.36	8.08	Clear	15.14
0913	1.2	13.5	7.33	4874	-143.4	3.52	7.65	Clear	15.40

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	[X]	[ ]	[ ]
Have parameters stabilized	[X]	[ ]	[ ]

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Low Flow with disposable bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-10 -CDPHE	250mL Plastic	1	H2SO4	Total Phosphorus	0930
	250mL Amber	1	H2SO4	TOC by SM 5310C	
	1L Plastic	3	None	Dissolved Metals - 200.7 TDS - 2540C Anions (Cl, F, SO4, NO3, NO2), Alkalinity	
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	
	1L Plastic	2	None	Dissovled Radium 226 & 228*	
BAT-10 -CCR	250mL Plastic	1	None	Anoions (Cl, F, SO4) - 9056	0930
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	1	None	TDS - 2540C	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	

Comments

Signature [signature] Date 10/18/21

AECOM

Well ID: BAT-11

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60658468, CCR = 60659991
Site Location: Rawhide Generating Station
Weather Conds: Cloudy - 50°F w/ wind Collector(s) J. Levy & G. Dawson

Date: 10/12/21
Time: Start 1230
Finish 1345

WATER LEVEL DATA: (measured from Top of Casing) Well [x] Piezometer [ ]

a. Total Well Length —
b. Water Table Depth 24.83
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): 350

WELL PURGING DATA

a. Purge Method Low flow sampling with disposble bladder pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	Professional Pro	12C100180
Geotech	Turbidimeter	21063268

c. Field Testing Equipment Calibration Documentation Found on Designated Calibration Log

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 mV	+/- 10%	5 NTU, 10%	--	0.3 ft
1234	Initial	10.7	7.36	1099	-1.2	1.49	21.4	Clear	25.30
1238	0.3	10.8	7.55	960	11.8	5.86	16.9	Clear	25.71
1241	0.6	10.8	7.58	947	13.6	5.98	12.9	Clear	26.05
1244	0.9	10.9	7.61	941	16.4	6.34	6.38	Clear	26.34
1247	1.2	10.9	7.61	940	18.6	~~4.0~~ 6.99	4.04	Clear	26.63

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	[x]	[ ]	[ ]
Have parameters stabilized	[x]	[ ]	[ ]

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Low Flow with disposable bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-11 -CDPHE	250mL Plastic	1	H2SO4	Total Phosphorus	1315
	250mL Amber	1	H2SO4	TOC by SM 5310C	
	1L Plastic	3	None	Dissolved Metals - 200.7 TDS - 2540C Anions (Cl, F, SO4, NO3, NO2), Alkalinity	
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	
	1L Plastic	2	None	Dissovled Radium 226 & 228*	
BAT-11 -CCR	250mL Plastic	1	None	Anoions (Cl, F, SO4) - 9056	1315
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	1	None	TDS - 2540C	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	

Comments Air bubbles present in flow through

Signature [signature] Date 10/12/2021

AECOM

Well ID: BAT-12

Ground Water Sample Collection Record

Client: Platte River Power Authority
Project No: CDPHE = 60658468, CCR = 60659991
Site Location: Rawhide Generating Station
Weather Conds: Sunny + wind 40°F Collector(s) J. Levy & G. Dawson

Date: 10-15-21
Time: Start 1105
Finish 1255

WATER LEVEL DATA: (measured from Top of Casing) Well [X] Piezometer [ ]

a. Total Well Length –
b. Water Table Depth 28.34
c. Casing Material PVC
d. Casing Diameter 2"
e. Length of Water Column _____ (a-b)
f. Calculated Well Volume (see back) _____

Flow Rate (< 500 ml/min): 350

WELL PURGING DATA

a. Purge Method Low flow sampling with disposble bladder pump

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	Professional Pro	12C100180
Geotech	Turbidimeter	21063268

c. Field Testing Equipment Calibration Documentation Found on Designated Calibration Log

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW (ft)
Stabilization	--	+/- 3%	+/- 0.1	+/- 3%	+/- 10 mV	+/- 10%	5 NTU, 10%	--	0.3 ft
1108	Initial	11.9	7.83	1535	-210.9	4.39	59.6	Hazy	28.70
1111	0.3	12.2	7.71	1513	-212.6	4.09	201	Cloudy	29.01
1114	0.6	12.2	7.72	1513	-212.0	4.16	132	Cloudy	29.20
1117	0.9	12.3	7.72	1506	-212.4	4.26	96.6	Cloudy	29.40
1120	1.2	12.3	7.72	1496	-212.3	4.25	76.5	Hazy	29.52
1123	1.5	12.3	7.70	1468	-210.9	4.52	59.7	Hazy	29.69
1126	1.8	12.2	7.68	1434	-208.7	4.86	46.7	Hazy	29.72
1129	2.1	12.3	7.67	1430	-207.3	4.85	30.6	Hazy	29.88
1132	2.4	12.3	7.68	1440	-207.9	4.81	21.8	Clear	29.94
1135	2.7	12.4	7.67	1445	-206.0	4.76	13.4	Clear	29.99
1138	3	12.4	7.68	1455	-209.8	4.74	11.5	Clear	29.99
1141	3.3	12.3	7.68	1462	-210.7	4.57	8.07	Clear	30.10
1144	3.6	12.4	7.68	1468	-212.0	4.51	6.04	Clear	30.11
1147	3.9	12.3	7.68	1468	-212.2	4.51	5.43	Clear	30.12

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required turbidity been reached	[X]	[ ]	[ ]
Have parameters stabilized	[X]	[ ]	[ ]

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Low Flow with disposable bladder pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
BAT-12 -CDPHE	250mL Plastic	1	H2SO4	Total Phosphorus	1215
	250mL Amber	1	H2SO4	TOC by SM 5310C	
	1L Plastic	3	None	Dissolved Metals - 200.7 TDS - 2540C Anions (Cl, F, SO4, NO3, NO2), Alkalinity	
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	
	1L Plastic	2	None	Dissovled Radium 226 & 228*	
BAT-12 -CCR	250mL Plastic	1	None	Anoions (Cl, F, SO4) - 9056	1215
	1L Plastic	1	HNO3	Total Metals - 6020, 6010, 7470	
	1L Plastic	1	None	TDS - 2540C	
	1L Plastic	2	HNO3	Total Radium 226 & 228*	

Comments DUP-02-CDPHE + DUP-02-CCR collected here

Signature [signature] Date 10/15/2021

Appendix B

Laboratory Analytical and Data Validation Reports

January 2021

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60358678
Sampling Event: January 7, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: February 19, 2021
Peer Reviewer: Katie Abbott — Date Completed: March 8, 2021

This report contains the final results of the data validation conducted for the water samples collected January 7th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540-R-2017-001 (January 2017).

General Overall Assessment:

__X__ Data are usable without qualification.
_____ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.	X		
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges. Results in the native sample greater than four times the concentration of the spike added during digestions/extractions are not considered to be a representative measure of accuracy. Further action with respect to spike recovery evaluation or qualification of data was not considered necessary.	X		
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • When both the sample and duplicate values are >5x the reporting limit (RL), acceptable sampling and analytical precision is indicated by an relative percent difference (RPD) between the results of ≤20%. • Where the result for one or both analytes of the method duplicate pair is <5xRL, satisfactory precision is indicated if	X		

<table>
<tr><th>Review Parameter</th><th>Criteria</th><th colspan="3">Criteria Met?</th></tr>
<tr><td>Sample-specific Parameters</td><td>For each “No” response, list qualified data and bias direction in Table 1 or explain no qualification in comments.</td><td>Yes</td><td>No</td><td>NA</td></tr>
<tr><td></td><td>the absolute difference between the method duplicate results is <1xRL.</td><td></td><td></td><td></td></tr>
<tr><td>Field Duplicate</td><td>The field duplicate sample results satisfied the evaluation criteria below:
<table>
<tr><th>Parent Sample</th><th>Field Duplicate</th></tr>
<tr><td>BAT-10-CCR</td><td>DUP-02-CCR</td></tr>
</table>

When both the sample and duplicate values are >5xRL acceptable sampling and analytical precision is indicated by a RPD between the results of ≤30%.
Where the result for one or both analytes of the field duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the field duplicate results is <2xRL.
</td><td>X</td><td></td><td></td></tr>
<tr><td>Equipment Blanks</td><td>No target analytes reported in the associated equipment blank.
<table>
<tr><th>Analyte</th><th>Concentration</th></tr>
<tr><td colspan="2">60358678</td></tr>
<tr><td colspan="2">ERB-01-CCR</td></tr>
<tr><td>TDS</td><td>29.0 mg/L</td></tr>
<tr><td colspan="2">60358957</td></tr>
<tr><td colspan="2">ERB-04-CCR</td></tr>
<tr><td>TDS</td><td>5.0 mg/L</td></tr>
</table>
mg/L – Milligrams per Liter</td><td></td><td>X[1]</td><td></td></tr>
<tr><td>Reporting Limits Met</td><td>No samples performed at dilutions or reported as non-detect at elevated method detection limits/reporting limits.</td><td>X</td><td></td><td></td></tr>
<tr><td>Reporting</td><td>No reporting issues were found and further qualification was not considered necessary.</td><td>X</td><td></td><td></td></tr>
<tr><td>Package Completeness</td><td>No results were qualified as unusable and the data are 100% complete.</td><td>X</td><td></td><td></td></tr>
<tr><th colspan="5">Comments</th></tr>
<tr><td colspan="5">1 – As the TDS sample results were reported at concentrations >5x the concentration of the blank contamination, qualification was not considered necessary.</td></tr>
</table>

> – Greater Than
mg/L – Milligram per Liter
LCS – Laboratory Control Sample
NA – Not Applicable
< – Less Than
% – Percent
LCSD – Laboratory Control Sample Duplicate
RL – Reporting Limit
≤ – Less Than or Equal To
± – Plus or Minus/High or Low Bias
MS/MSD – Matrix Spike/Matrix Spike Duplicate
RPD – Relative Percent Difference

Pace Analytical Services, LLC
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January 22, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on January 08, 2021. 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 Analytical Services - Kansas City

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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CERTIFICATIONS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

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

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SAMPLE SUMMARY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60358678001	**BAT-10-CCR**	Water	01/07/21 08:40	01/08/21 09:00
60358678002	**DUP-02-CCR**	Water	01/07/21 08:00	01/08/21 09:00
60358678003	**BAT-11-CCR**	Water	01/07/21 10:30	01/08/21 09:00
60358678004	**ERB-01-CCR**	Water	01/07/21 10:35	01/08/21 09:00
60358678005	**BAT-12-CCR**	Water	01/07/21 13:30	01/08/21 09:00

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SAMPLE ANALYTE COUNT

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60358678001	**BAT-10-CCR**	EPA 6010	MRV	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	VRP	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60358678002	**DUP-02-CCR**	EPA 6010	MRV	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	VRP	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60358678003	**BAT-11-CCR**	EPA 6010	MRV	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	VRP	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60358678004	**ERB-01-CCR**	EPA 6010	MRV	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	VRP	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60358678005	**BAT-12-CCR**	EPA 6010	MRV	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	VRP	1	PASI-K
		EPA 9056	CRN2	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

Sample: BAT-10-CCR **Lab ID: 60358678001** Collected: 01/07/21 08:40 Received: 01/08/21 09:00 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							
Boron	**788**	ug/L	100	1	01/19/21 10:28	01/20/21 11:00	7440-42-8	
Calcium	**397000**	ug/L	200	1	01/19/21 10:28	01/20/21 11:00	7440-70-2	
Lithium	**195**	ug/L	10.0	1	01/19/21 10:28	01/20/21 11:00	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:44	7440-36-0	
Arsenic	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:44	7440-38-2	
Barium	**17.8**	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:44	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/19/21 10:28	01/21/21 13:44	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/19/21 10:28	01/21/21 13:44	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:44	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:44	7440-48-4	
Lead	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:44	7439-92-1	
Molybdenum	**6.2**	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:44	7439-98-7	
Selenium	**228**	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:44	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:44	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	01/18/21 09:56	01/18/21 14:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**4270**	mg/L	66.7	1		01/14/21 11:16		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**22.2**	mg/L	2.0	2		01/12/21 21:38	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	1		01/12/21 21:09	16984-48-8	
Sulfate	**2490**	mg/L	200	200		01/12/21 22:07	14808-79-8	

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

Sample: DUP-02-CCR **Lab ID: 60358678002** Collected: 01/07/21 08:00 Received: 01/08/21 09:00 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							
Boron	**844**	ug/L	100	1	01/19/21 10:28	01/20/21 11:03	7440-42-8	
Calcium	**395000**	ug/L	200	1	01/19/21 10:28	01/20/21 11:03	7440-70-2	
Lithium	**211**	ug/L	10.0	1	01/19/21 10:28	01/20/21 11:03	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:49	7440-36-0	
Arsenic	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:49	7440-38-2	
Barium	**21.5**	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:49	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/19/21 10:28	01/21/21 13:49	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/19/21 10:28	01/21/21 13:49	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:49	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:49	7440-48-4	
Lead	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:49	7439-92-1	
Molybdenum	**5.9**	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:49	7439-98-7	
Selenium	**211**	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:49	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:49	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	01/18/21 09:56	01/18/21 14:29	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**4270**	mg/L	66.7	1		01/14/21 11:19		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**25.4**	mg/L	2.0	2		01/13/21 12:15	16887-00-6	
Fluoride	**0.43**	mg/L	0.20	1		01/12/21 23:06	16984-48-8	
Sulfate	**2750**	mg/L	200	200		01/13/21 12:29	14808-79-8	

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

Sample: BAT-11-CCR **Lab ID: 60358678003** Collected: 01/07/21 10:30 Received: 01/08/21 09:00 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							
Boron	**445**	ug/L	100	1	01/19/21 10:28	01/20/21 11:06	7440-42-8	
Calcium	**92900**	ug/L	200	1	01/19/21 10:28	01/20/21 11:06	7440-70-2	
Lithium	**73.1**	ug/L	10.0	1	01/19/21 10:28	01/20/21 11:06	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:53	7440-36-0	
Arsenic	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:53	7440-38-2	
Barium	**45.6**	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:53	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/19/21 10:28	01/21/21 13:53	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/19/21 10:28	01/21/21 13:53	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:53	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:53	7440-48-4	
Lead	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:53	7439-92-1	
Molybdenum	**7.3**	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:53	7439-98-7	
Selenium	**1.2**	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:53	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:53	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	01/18/21 09:56	01/18/21 14:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**696**	mg/L	10.0	1		01/14/21 11:19		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**8.4**	mg/L	1.0	1		01/12/21 23:50	16887-00-6	
Fluoride	**0.25**	mg/L	0.20	1		01/12/21 23:50	16984-48-8	
Sulfate	**185**	mg/L	50.0	50		01/13/21 00:05	14808-79-8	

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

Sample: ERB-01-CCR **Lab ID: 60358678004** Collected: 01/07/21 10:35 Received: 01/08/21 09:00 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							
Boron	ND	ug/L	100	1	01/19/21 10:28	01/20/21 11:08	7440-42-8	
Calcium	ND	ug/L	200	1	01/19/21 10:28	01/20/21 11:08	7440-70-2	
Lithium	ND	ug/L	10.0	1	01/19/21 10:28	01/20/21 11:08	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:58	7440-36-0	
Arsenic	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:58	7440-38-2	
Barium	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:58	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/19/21 10:28	01/21/21 13:58	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/19/21 10:28	01/21/21 13:58	7440-43-9	
Chromium	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:58	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:58	7440-48-4	
Lead	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:58	7439-92-1	
Molybdenum	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:58	7439-98-7	
Selenium	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:58	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 13:58	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	01/18/21 09:56	01/18/21 14:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**29.0**	mg/L	5.0	1		01/14/21 11:19		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	ND	mg/L	1.0	1		01/13/21 00:19	16887-00-6	
Fluoride	ND	mg/L	0.20	1		01/13/21 00:19	16984-48-8	
Sulfate	ND	mg/L	1.0	1		01/13/21 00:19	14808-79-8	

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

Sample: BAT-12-CCR **Lab ID: 60358678005** Collected: 01/07/21 13:30 Received: 01/08/21 09:00 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							
Boron	**232**	ug/L	100	1	01/19/21 10:28	01/20/21 11:11	7440-42-8	
Calcium	**90000**	ug/L	200	1	01/19/21 10:28	01/20/21 11:11	7440-70-2	M1
Lithium	**81.5**	ug/L	10.0	1	01/19/21 10:28	01/20/21 11:11	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 14:08	7440-36-0	
Arsenic	**1.2**	ug/L	1.0	1	01/19/21 10:28	01/21/21 14:08	7440-38-2	
Barium	**30.6**	ug/L	1.0	1	01/19/21 10:28	01/21/21 14:08	7440-39-3	
Beryllium	ND	ug/L	0.50	1	01/19/21 10:28	01/21/21 14:08	7440-41-7	
Cadmium	ND	ug/L	0.50	1	01/19/21 10:28	01/21/21 14:08	7440-43-9	
Chromium	**1.1**	ug/L	1.0	1	01/19/21 10:28	01/21/21 14:08	7440-47-3	
Cobalt	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 14:08	7440-48-4	
Lead	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 14:08	7439-92-1	
Molybdenum	**7.0**	ug/L	1.0	1	01/19/21 10:28	01/21/21 14:08	7439-98-7	
Selenium	**2.9**	ug/L	1.0	1	01/19/21 10:28	01/21/21 14:08	7782-49-2	
Thallium	ND	ug/L	1.0	1	01/19/21 10:28	01/21/21 14:08	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	01/18/21 09:56	01/18/21 14:35	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**861**	mg/L	10.0	1		01/14/21 11:19		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**128**	mg/L	10.0	10		01/13/21 02:02	16887-00-6	
Fluoride	**0.68**	mg/L	0.20	1		01/13/21 00:49	16984-48-8	
Sulfate	**308**	mg/L	50.0	50		01/13/21 02:46	14808-79-8	

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(913)599-5665

QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

QC Batch: 699677
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60358678001, 60358678002, 60358678003, 60358678004, 60358678005

METHOD BLANK: 2822395
Matrix: Water
Associated Lab Samples: 60358678001, 60358678002, 60358678003, 60358678004, 60358678005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	01/18/21 13:50	

LABORATORY CONTROL SAMPLE: 2822396

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2822397 2822398

Parameter	Units	60358678005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.5	4.6	90	92	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

QC Batch: 699914
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60358678001, 60358678002, 60358678003, 60358678004, 60358678005

METHOD BLANK: 2822964
Matrix: Water
Associated Lab Samples: 60358678001, 60358678002, 60358678003, 60358678004, 60358678005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	01/20/21 10:55	
Calcium	ug/L	ND	200	01/20/21 10:55	
Lithium	ug/L	ND	10.0	01/20/21 10:55	

LABORATORY CONTROL SAMPLE: 2822965

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	984	98	80-120	
Calcium	ug/L	10000	10200	102	80-120	
Lithium	ug/L	1000	993	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2822966 2822967

Parameter	Units	60358678005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	232	1000	1000	1210	1240	98	101	75-125	2	20	
Calcium	ug/L	90000	10000	10000	95800	97300	58	73	75-125	2	20	M1
Lithium	ug/L	81.5	1000	1000	1040	1080	96	100	75-125	4	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

QC Batch: 699912 | Analysis Method: EPA 6020
QC Batch Method: EPA 3010 | Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60358678001, 60358678002, 60358678003, 60358678004, 60358678005

METHOD BLANK: 2822956 | Matrix: Water
Associated Lab Samples: 60358678001, 60358678002, 60358678003, 60358678004, 60358678005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	01/21/21 13:39	
Arsenic	ug/L	ND	1.0	01/21/21 13:39	
Barium	ug/L	ND	1.0	01/21/21 13:39	
Beryllium	ug/L	ND	0.50	01/21/21 13:39	
Cadmium	ug/L	ND	0.50	01/21/21 13:39	
Chromium	ug/L	ND	1.0	01/21/21 13:39	
Cobalt	ug/L	ND	1.0	01/21/21 13:39	
Lead	ug/L	ND	1.0	01/21/21 13:39	
Molybdenum	ug/L	ND	1.0	01/21/21 13:39	
Selenium	ug/L	ND	1.0	01/21/21 13:39	
Thallium	ug/L	ND	1.0	01/21/21 13:39	

LABORATORY CONTROL SAMPLE: 2822957

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.2	98	80-120	
Arsenic	ug/L	40	39.2	98	80-120	
Barium	ug/L	40	37.6	94	80-120	
Beryllium	ug/L	40	38.9	97	80-120	
Cadmium	ug/L	40	38.4	96	80-120	
Chromium	ug/L	40	38.9	97	80-120	
Cobalt	ug/L	40	36.5	91	80-120	
Lead	ug/L	40	37.4	94	80-120	
Molybdenum	ug/L	40	39.3	98	80-120	
Selenium	ug/L	40	40.5	101	80-120	
Thallium	ug/L	40	36.1	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2822958 2822959

Parameter	Units	60358678005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	37.3	36.9	93	92	75-125	1	20	
Arsenic	ug/L	1.2	40	40	41.7	41.7	101	101	75-125	0	20	
Barium	ug/L	30.6	40	40	68.9	67.0	96	91	75-125	3	20	
Beryllium	ug/L	ND	40	40	37.0	37.2	92	93	75-125	1	20	
Cadmium	ug/L	ND	40	40	34.6	34.2	87	86	75-125	1	20	
Chromium	ug/L	1.1	40	40	43.1	43.1	105	105	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2822958 2822959

Parameter	Units	60358678005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	38.1	38.4	95	95	75-125	1	20	
Lead	ug/L	ND	40	40	33.1	33.5	83	83	75-125	1	20	
Molybdenum	ug/L	7.0	40	40	47.7	47.2	102	101	75-125	1	20	
Selenium	ug/L	2.9	40	40	42.2	42.3	98	98	75-125	0	20	
Thallium	ug/L	ND	40	40	32.9	33.2	82	83	75-125	1	20	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

QC Batch: 698754
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60358678001, 60358678002, 60358678003, 60358678004, 60358678005

METHOD BLANK: 2819098
Matrix: Water
Associated Lab Samples: 60358678001, 60358678002, 60358678003, 60358678004, 60358678005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	01/14/21 11:16	

LABORATORY CONTROL SAMPLE: 2819099

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1020	102	80-120	

SAMPLE DUPLICATE: 2819100

Parameter	Units	60358678005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	861	882	2	10	

SAMPLE DUPLICATE: 2819101

Parameter	Units	60358711001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	992	999	1	10	

SAMPLE DUPLICATE: 2819102

Parameter	Units	60358712001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	509	513	1	10	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

QC Batch: 698908 | Analysis Method: EPA 9056
QC Batch Method: EPA 9056 | Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60358678001, 60358678002, 60358678003, 60358678004, 60358678005

METHOD BLANK: 2819491 Matrix: Water
Associated Lab Samples: 60358678001, 60358678002, 60358678003, 60358678004, 60358678005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	01/12/21 20:25	
Fluoride	mg/L	ND	0.20	01/12/21 20:25	
Sulfate	mg/L	ND	1.0	01/12/21 20:25	

METHOD BLANK: 2821258 Matrix: Water
Associated Lab Samples: 60358678001, 60358678002, 60358678003, 60358678004, 60358678005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	01/13/21 08:59	
Fluoride	mg/L	ND	0.20	01/13/21 08:59	
Sulfate	mg/L	ND	1.0	01/13/21 08:59	

LABORATORY CONTROL SAMPLE: 2819492

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	100	80-120	
Fluoride	mg/L	2.5	2.5	99	80-120	
Sulfate	mg/L	5	5.1	103	80-120	

LABORATORY CONTROL SAMPLE: 2821259

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.4	107	80-120	
Fluoride	mg/L	2.5	2.5	101	80-120	
Sulfate	mg/L	5	5.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2819505 2819506

Parameter	Units	60358678005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	128	50	50	184	183	113	110	80-120	1	15	
Fluoride	mg/L	0.68	2.5	2.5	2.7	2.8	82	86	80-120	3	15	
Sulfate	mg/L	308	250	250	576	575	107	107	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

SAMPLE DUPLICATE: 2819495

Parameter	Units	60358678001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	22.2	22.2	0	15	
Fluoride	mg/L	0.50	0.51	1	15	
Sulfate	mg/L	2490	2470	1	15	

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QUALIFIERS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

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

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: 60630103.200.0 PRPA CCR
Pace Project No.: 60358678

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60358678001	**BAT-10-CCR**	EPA 3010	699914	EPA 6010	700051
60358678002	**DUP-02-CCR**	EPA 3010	699914	EPA 6010	700051
60358678003	**BAT-11-CCR**	EPA 3010	699914	EPA 6010	700051
60358678004	**ERB-01-CCR**	EPA 3010	699914	EPA 6010	700051
60358678005	**BAT-12-CCR**	EPA 3010	699914	EPA 6010	700051
60358678001	**BAT-10-CCR**	EPA 3010	699912	EPA 6020	700054
60358678002	**DUP-02-CCR**	EPA 3010	699912	EPA 6020	700054
60358678003	**BAT-11-CCR**	EPA 3010	699912	EPA 6020	700054
60358678004	**ERB-01-CCR**	EPA 3010	699912	EPA 6020	700054
60358678005	**BAT-12-CCR**	EPA 3010	699912	EPA 6020	700054
60358678001	**BAT-10-CCR**	EPA 7470	699677	EPA 7470	699744
60358678002	**DUP-02-CCR**	EPA 7470	699677	EPA 7470	699744
60358678003	**BAT-11-CCR**	EPA 7470	699677	EPA 7470	699744
60358678004	**ERB-01-CCR**	EPA 7470	699677	EPA 7470	699744
60358678005	**BAT-12-CCR**	EPA 7470	699677	EPA 7470	699744
60358678001	**BAT-10-CCR**	SM 2540C	698754		
60358678002	**DUP-02-CCR**	SM 2540C	698754		
60358678003	**BAT-11-CCR**	SM 2540C	698754		
60358678004	**ERB-01-CCR**	SM 2540C	698754		
60358678005	**BAT-12-CCR**	SM 2540C	698754		
60358678001	**BAT-10-CCR**	EPA 9056	698908		
60358678002	**DUP-02-CCR**	EPA 9056	698908		
60358678003	**BAT-11-CCR**	EPA 9056	698908		
60358678004	**ERB-01-CCR**	EPA 9056	698908		
60358678005	**BAT-12-CCR**	EPA 9056	698908		

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Sample Condition Upon Receipt

WO# : 60358678

60358678

Client Name: AECOM

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 9308 4768 4739 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 ☑ ZPLC

Thermometer Used: T-298 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.7°C **Corr. Factor** -0.2 **Corrected** 1.5°C

Date and initials of person examining contents: 1-8-21 KD

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# 603173	☑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: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A
Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B
Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	
Project Name:	PRPA Rawhide CCR
Project Number:	

Section C
Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location
STATE: CO

Section D
Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): 9056 Cl, F, SO4	6020 Total Metals*	6010 Total Metals**	7470 Total Mercury	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-10-CCR	WT	G	—	—	1/7/21	0840		3	2		1						✓	✓	✓	✓	✓		L0358678
2	DUP-02-CCR	WT	G	—	—	1/7/21	—		3	2		1						✓	✓	✓	✓	✓		
3	BAT-11-CCR	WT	G	—	—	1/7/21	1030		3	2		1						✓	✓	✓	✓	✓		
4	ERB-01-CCR	WT	G	—	—	1/7/21	1035		3	2		1						✓	✓	✓	✓	✓		
5	BAT-12-CCR	WT	G	—	—	1/7/21	1330		~~6~~ 7	~~2~~ 4		~~1~~ 3						✓	✓	✓	✓	✓		MS/MSD collected at BAT-12
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*Be, Cr, Co, As, Se, Mo, Cd, Sb, Ba, Tl, Pb	Jeff Dobkowski	1/7/21	16:30	SRwoodw/Pace	1/8/21	0900	1.5	Y	Y	Y
**B, Ca, Li										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jeff Dobkowski

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 1/7/21

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60358761
Sampling Event: January 7, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: February 22, 2021
Peer Reviewer: Katie Abbott — Date Completed: March 8, 2021

This report contains the final results of the data validation conducted for the water samples collected January 7th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540-R-2017-001 (January 2017).

General Overall Assessment:

_____ Data are usable without qualification.
__X__ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.	X		
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.	X		
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • The agreement between parent sample results and laboratory duplicate sample results were evaluated. The duplicate error ratios (DER) met the criterion of a DER ≤2.			X
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below: Parent Sample: BAT-10-CCR; Field Duplicate: DUP-02-CCR • The agreement between parent sample results and field duplicate sample results were evaluated. The DER met the criterion of a DER ≤2.	X		

<table>
<tr><th>Review Parameter</th><th>Criteria</th><th colspan="3">Criteria Met?</th></tr>
<tr><td>Sample-specific Parameters</td><td>For each “No” response, list qualified data and bias direction in Table 1 or explain no qualification in comments.</td><td>Yes</td><td>No</td><td>NA</td></tr>
<tr><td>Equipment Blanks</td><td>No target analytes reported in the associated equipment blank.</td><td>X</td><td></td><td></td></tr>
<tr><td>Detection Limits Mets</td><td>For radiochemical results if the associated uncertainty was greater than the reported result, the 2 sigma (σ) uncertainty multiplied by 1.65 was less than or equal to the specified detection limit.
<table>
<tr><th>Sample</th><th>Analyte</th><th>Result (pCi/L)</th><th>2 Sigma (σ) Uncertainty</th><th>MDC (pCi/L)</th></tr>
<tr><td>BAT-10-CCR</td><td>Ra-226</td><td>0.280</td><td>± 0.365</td><td>0.602</td></tr>
</table>
± – Plus or Minus
pCi/L – Picocuries Per Liter
MDC – Minimum Detectable Concentration
Ra – Radium</td><td></td><td>X[1]</td><td></td></tr>
<tr><td>Tracer and/or Carrier Recovery</td><td>The sample specific recoveries were within the laboratory limits.</td><td>X</td><td></td><td></td></tr>
<tr><td>Reporting</td><td>No reporting issues were found and further qualification was not considered necessary.</td><td>X</td><td></td><td></td></tr>
<tr><td>Package Completeness</td><td>No results were qualified as unusable and the data are 100% complete.</td><td>X</td><td></td><td></td></tr>
<tr><th colspan="5">Comments</th></tr>
<tr><td colspan="5">1 – For the radium-226 result for sample BAT-10-CCR, the 2 sigma (σ) uncertainty multiplied by 1.65 was greater than the reported minimum detectable concentration (MDC) and was qualified as estimated (J v) indicating the detection limit criteria was not met.</td></tr>
</table>

> – Greater Than
± – Plus or Minus/High or Low Bias
% – Percent
LCS – Laboratory Control Sample
MDC – Minimum Detectable Concentration
Ra – Radium

< – Less Than
σ – Sigma (Uncertainty)
DER – Duplicate Error Ratio
LCSD – Laboratory Control Sample Duplicate
MS/MSD – Matrix Spike/Matrix Spike Duplicate
RPD – Relative Percent Difference

≤ – Less Than or Equal To
pCi/L – Picocuries Per Liter
J – Estimated
MB – Method Blank
NA – Not Applicable
v – Compound Identification Issue

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

January 29, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on January 08, 2021. 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 Analytical Services - Greensburg

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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(913)599-5665

CERTIFICATIONS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60358761001	**BAT-10-CCR**	Water	01/07/21 08:40	01/08/21 09:30
60358761002	**DUP-02-CCR**	Water	01/07/21 08:00	01/08/21 09:30
60358761003	**BAT-11-CCR**	Water	01/07/21 10:30	01/08/21 09:30
60358761004	**ERB-01-CCR**	Water	01/07/21 10:35	01/08/21 09:30
60358761005	**BAT-12-CCR**	Water	01/07/21 13:30	01/08/21 09:30
60358761006	**BAT-12-CCR MS**	Water	01/07/21 13:30	01/08/21 09:30
60358761007	**BAT-12-CCR MSD**	Water	01/07/21 13:30	01/08/21 09:30

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SAMPLE ANALYTE COUNT

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60358761001	**BAT-10-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60358761002	**DUP-02-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60358761003	**BAT-11-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60358761004	**ERB-01-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60358761005	**BAT-12-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60358761006	**BAT-12-CCR MS**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
60358761007	**BAT-12-CCR MSD**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

Sample: BAT-10-CCR **Lab ID: 60358761001** Collected: 01/07/21 08:40 Received: 01/08/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.280 ± 0.365 (0.602) C:NA T:92%**	pCi/L	01/20/21 16:13	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.921 ± 0.459 (0.800) C:70% T:92%**	pCi/L	01/19/21 15:20	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.20 ± 0.824 (1.40)**	pCi/L	01/25/21 13:09	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

Sample: DUP-02-CCR **Lab ID: 60358761002** Collected: 01/07/21 08:00 Received: 01/08/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.0574 ± 0.373 (0.752) C:NA T:92%**	pCi/L	01/20/21 16:13	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.324 ± 0.450 (0.965) C:69% T:84%**	pCi/L	01/19/21 15:20	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.381 ± 0.823 (1.72)**	pCi/L	01/25/21 13:09	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

Sample: BAT-11-CCR **Lab ID: 60358761003** Collected: 01/07/21 10:30 Received: 01/08/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.161 ± 0.458 (0.849)** **C:NA T:95%**	pCi/L	01/20/21 16:13	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**-0.119 ± 0.512 (1.21)** **C:69% T:71%**	pCi/L	01/19/21 15:19	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.161 ± 0.970 (2.06)**	pCi/L	01/25/21 13:09	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

Sample: ERB-01-CCR **Lab ID: 60358761004** Collected: 01/07/21 10:35 Received: 01/08/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.211 ± 0.366 (0.922) C:NA T:81%**	pCi/L	01/20/21 16:13	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.182 ± 0.420 (0.933) C:71% T:82%**	pCi/L	01/19/21 15:19	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.182 ± 0.786 (1.86)**	pCi/L	01/25/21 13:09	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

Sample: BAT-12-CCR **Lab ID: 60358761005** Collected: 01/07/21 13:30 Received: 01/08/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.189 ± 0.346 (0.618) C:NA T:86%**	pCi/L	01/20/21 16:13	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.0225 ± 0.434 (1.00) C:71% T:82%**	pCi/L	01/19/21 15:21	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.212 ± 0.780 (1.62)**	pCi/L	01/25/21 13:09	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

Sample: BAT-12-CCR MS **Lab ID: 60358761006** Collected: 01/07/21 13:30 Received: 01/08/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**76.57 %REC ± NA (NA) C:NA T:NA%**	pCi/L	01/20/21 16:38	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**75.97 %REC ± NA (NA) C:NA T:NA**	pCi/L	01/19/21 15:21	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

Sample: BAT-12-CCR MSD **Lab ID: 60358761007** Collected: 01/07/21 13:30 Received: 01/08/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**99.08 %REC 25.64 RPD ± NA (NA) C:NA T:NA%**	pCi/L	01/20/21 16:38	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**91.30 %REC 18.32 RPD ± NA (NA) C:NA T:NA**	pCi/L	01/19/21 15:21	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

QC Batch: 430457 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60358761001, 60358761002, 60358761003, 60358761004, 60358761005, 60358761006, 60358761007

METHOD BLANK: 2079407 | Matrix: Water
Associated Lab Samples: 60358761001, 60358761002, 60358761003, 60358761004, 60358761005, 60358761006, 60358761007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.328 ± 0.344 (0.869) C:72% T:85%	pCi/L	01/19/21 15:19	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

QC Batch: 430454 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60358761001, 60358761002, 60358761003, 60358761004, 60358761005, 60358761006, 60358761007

METHOD BLANK: 2079404 | Matrix: Water
Associated Lab Samples: 60358761001, 60358761002, 60358761003, 60358761004, 60358761005, 60358761006, 60358761007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.140 ± 0.330 (0.612) C:NA T:91%	pCi/L	01/20/21 15:57	

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.

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QUALIFIERS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

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.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60358761

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60358761001	**BAT-10-CCR**	EPA 903.1	430454		
60358761002	**DUP-02-CCR**	EPA 903.1	430454		
60358761003	**BAT-11-CCR**	EPA 903.1	430454		
60358761004	**ERB-01-CCR**	EPA 903.1	430454		
60358761005	**BAT-12-CCR**	EPA 903.1	430454		
60358761006	**BAT-12-CCR MS**	EPA 903.1	430454		
60358761007	**BAT-12-CCR MSD**	EPA 903.1	430454		
60358761001	**BAT-10-CCR**	EPA 904.0	430457		
60358761002	**DUP-02-CCR**	EPA 904.0	430457		
60358761003	**BAT-11-CCR**	EPA 904.0	430457		
60358761004	**ERB-01-CCR**	EPA 904.0	430457		
60358761005	**BAT-12-CCR**	EPA 904.0	430457		
60358761006	**BAT-12-CCR MS**	EPA 904.0	430457		
60358761007	**BAT-12-CCR MSD**	EPA 904.0	430457		
60358761001	**BAT-10-CCR**	Total Radium Calculation	432239		
60358761002	**DUP-02-CCR**	Total Radium Calculation	432239		
60358761003	**BAT-11-CCR**	Total Radium Calculation	432239		
60358761004	**ERB-01-CCR**	Total Radium Calculation	432239		
60358761005	**BAT-12-CCR**	Total Radium Calculation	432239		

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	
Project Name:	rev
Project Number:	

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-10-CCR	WT	G	—	—	1/7/21	0840		2			2						✓	✓	✓		
2	DUP-02-CCR	WT	G	—	—	1/7/21	—		2			2						✓	✓	✓		
3	BAT-11-CCR	WT	G	—	—	1/7/21	1030		2			2						✓	✓	✓		
4	ERB-01-CCR	WT	G	—	—	1/7/21	1035		2			2						✓	✓	✓		
5	BAT-12-CCR	WT	G	—	—	1/7/21	1330		6			6						✓	✓	✓		MS/MSD collected at BAT-12
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Jeff Dobkowski	1/7/21	16:30	[signature]	1/8/21	0930	-	N	Y	Y

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Jeff Dobkowski					
SIGNATURE of SAMPLER:	[signature]	DATE Signed (MM/DD/YY): 1/7/21				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12 Oct 2007

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: AECOM Project # _____

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 930347688399

Label
LIMS Login

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used _____ Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 1001101	Date and Initials of person examining contents: OSM 1/9/21
Chain of Custody Present:	✓			1.	
Chain of Custody Filled Out:	✓			2.	
Chain of Custody Relinquished:	✓			3.	
Sampler Name & Signature on COC:	✓			4.	
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.	
Samples Arrived within Hold Time:	✓			6.	
Short Hold Time Analysis (<72hr remaining):		✓		7.	
Rush Turn Around Time Requested:		✓		8.	
Sufficient Volume:	✓			9.	
Correct Containers Used: -Pace Containers Used:	✓	✓		10.	
Containers Intact:	✓			11.	
Orthophosphate field filtered			✓	12.	
Hex Cr Aqueous sample field filtered			✓	13.	
Organic Samples checked for dechlorination:			✓	14.	
Filtered volume received for Dissolved tests			✓	15.	
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2	
All containers meet method preservation requirements.	✓			Initial when completed OSM	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			✓	17.	
Trip Blank Present:			✓	18.	
Trip Blank Custody Seals Present			✓		
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: OSM	Date: 1/9/21

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

J:\QAQC\Master\Document Management\Sample Mgt\Sample Condition Upon Receipt Pittsburgh (C056-9 5April2019)

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	MK1
Date:	1/12/2021
Batch ID:	58262
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2079404
MB concentration:	0.140
M/B Counting Uncertainty:	0.330
MB MDC:	0.612
MB Numerical Performance Indicator:	0.83
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS58262	LCSD58262
Count Date:	1/20/2021	
Spike I.D.:	20-032	
Spike Concentration (pCi/mL):	32.179	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.665	
Target Conc. (pCi/L, g, F):	4.837	
Uncertainty (Calculated):	0.227	
Result (pCi/L, g, F):	5.441	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	1.132	
Numerical Performance Indicator:	1.02	
Percent Recovery:	112.48%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	1/7/2021	1/5/2021
Sample I.D.	60358761005	30400414001
Sample MS I.D.	60358761006	30400414001MS
Sample MSD I.D.	60358761007	
Spike I.D.:	20-032	20-032
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.180	32.180
Spike Volume Used in MS (mL):	0.20	0.20
Spike Volume Used in MSD (mL):	0.20	
MS Aliquot (L, g, F):	0.661	0.665
MS Target Conc.(pCi/L, g, F):	9.733	9.672
MSD Aliquot (L, g, F):	0.665	
MSD Target Conc. (pCi/L, g, F):	9.675	
MS Spike Uncertainty (calculated):	0.457	0.455
MSD Spike Uncertainty (calculated):	0.455	
Sample Result:	0.189	0.104
Sample Result Counting Uncertainty (pCi/L, g, F):	0.346	0.249
Sample Matrix Spike Result:	7.641	9.924
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.269	1.449
Sample Matrix Spike Duplicate Result:	9.774	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	1.505	
MS Numerical Performance Indicator:	-3.210	0.188
MSD Numerical Performance Indicator:	-0.108	
MS Percent Recovery:	76.57%	101.53%
MSD Percent Recovery:	99.08%	
MS Status vs Numerical Indicator:	N/A	N/A
MSD Status vs Numerical Indicator:	N/A	
MS Status vs Recovery:	Pass	Pass
MSD Status vs Recovery:	Pass	
MS/MSD Upper % Recovery Limits:	136%	136%
MS/MSD Lower % Recovery Limits:	71%	71%

Duplicate Sample Assessment		
Sample I.D.:		Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.		
Sample Result (pCi/L, g, F):		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Duplicate Result (pCi/L, g, F):		
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:		
Duplicate RPD:		
Duplicate Status vs Numerical Indicator:		
Duplicate Status vs RPD:		
% RPD Limit:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.	60358761005	
Sample MS I.D.	60358761006	
Sample MSD I.D.	60358761007	
Sample Matrix Spike Result:	7.641	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.269	
Sample Matrix Spike Duplicate Result:	9.774	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	1.505	
Duplicate Numerical Performance Indicator:	-2.124	
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:	25.64%	
MS/ MSD Duplicate Status vs Numerical Indicator:	N/A	
MS/ MSD Duplicate Status vs RPD:	Pass	
% RPD Limit:	32%	

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

SLC 1/20/2021

CMZ 1/20/21

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	1/14/2021
Worklist:	58265
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2079407
MB concentration:	-0.328
M/B 2 Sigma CSU:	0.344
MB MDC:	0.869
MB Numerical Performance Indicator:	-1.87
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS58265	LCSD58265
Count Date:	1/19/2021	
Spike I.D.:	20-030	
Decay Corrected Spike Concentration (pCi/mL):	36.830	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.806	
Target Conc. (pCi/L, g, F):	4.567	
Uncertainty (Calculated):	0.224	
Result (pCi/L, g, F):	3.567	
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.006	
Numerical Performance Indicator:	-1.90	
Percent Recovery:	78.09%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	60%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	1/5/2021	1/7/2021
Sample I.D.	30400423001	60358761005
Sample MS I.D.	30400423001MS	60358761006
Sample MSD I.D.		60358761007
Spike I.D.:	20-030	20-030
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	36.999	36.999
Spike Volume Used in MS (mL):	0.20	0.20
Spike Volume Used in MSD (mL):		0.20
MS Aliquot (L, g, F):	0.801	0.801
MS Target Conc.(pCi/L, g, F):	9.233	9.235
MSD Aliquot (L, g, F):		0.803
MSD Target Conc. (pCi/L, g, F):		9.213
MS Spike Uncertainty (calculated):	0.452	0.453
MSD Spike Uncertainty (calculated):		0.451
Sample Result:	0.137	0.023
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.345	0.434
Sample Matrix Spike Result:	7.166	7.039
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.522	1.498
Sample Matrix Spike Duplicate Result:		8.433
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		1.815
MS Numerical Performance Indicator:	-2.660	-2.678
MSD Numerical Performance Indicator:		-0.818
MS Percent Recovery:	76.12%	75.97%
MSD Percent Recovery:		91.30%
MS Status vs Numerical Indicator:	Warning	Warning
MSD Status vs Numerical Indicator:		Pass
MS Status vs Recovery:	Pass	Pass
MSD Status vs Recovery:		Pass
MS/MSD Upper % Recovery Limits:	135%	135%
MS/MSD Lower % Recovery Limits:	60%	60%

Duplicate Sample Assessment		
Sample I.D.:		Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.		
Sample Result (pCi/L, g, F):		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Duplicate Result (pCi/L, g, F):		
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:		
Duplicate RPD:		
Duplicate Status vs Numerical Indicator:		
Duplicate Status vs RPD:		
% RPD Limit:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		60358761005
Sample MS I.D.		60358761006
Sample MSD I.D.		60358761007
Sample Matrix Spike Result:		7.039
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		1.498
Sample Matrix Spike Duplicate Result:		8.433
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		1.815
Duplicate Numerical Performance Indicator:		-1.161
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		18.32%
MS/ MSD Duplicate Status vs Numerical Indicator:		Pass
MS/ MSD Duplicate Status vs RPD:		Pass
% RPD Limit:		36%

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

April 2021

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60366523
Sampling Event: April 13, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: June 4, 2021
Peer Reviewer: Katie Abbott — Date Completed: June 25, 2021

This report contains the final results of the data validation conducted for the water samples collected April 13th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540-R-2017-001 (January 2017).

General Overall Assessment:

_____ Data are usable without qualification.
__X__ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.	X		
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.			X
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • When both the sample and duplicate values are >5x the reporting limit (RL), acceptable sampling and analytical precision is indicated by an relative percent difference (RPD) between the results of ≤20%. • Where the result for one or both analytes of the method duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the method duplicate results is <1xRL.			X
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below:		X[1]	

<table>
<tr><th>Review Parameter</th><th>Criteria</th><th colspan="3">Criteria Met?</th></tr>
<tr><td>Sample-specific Parameters</td><td>For each “No” response, list qualified data and bias direction in Table 1 or explain no qualification in comments.</td><td>Yes</td><td>No</td><td>NA</td></tr>
<tr><td></td><td>
<table>
<tr><th>Parent Sample</th><th>Field Duplicate</th></tr>
<tr><td>BAT-01-CCR</td><td>DUP-03-CCR</td></tr>
</table>

When both the sample and duplicate values are >5xRL acceptable sampling and analytical precision is indicated by a RPD between the results of ≤30%.
Where the result for one or both analytes of the field duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the field duplicate results is <2xRL.

<table>
<tr><th>Analyte</th><th>Parent Sample Result</th><th>Field Duplicate Result</th><th>Criteria not Met</th></tr>
<tr><td colspan="4">BAT-01-CCR/ DUP-03-CCR</td></tr>
<tr><td>Sulfate</td><td>427 mg/L</td><td>645 mg/L</td><td>RPD>30%</td></tr>
</table>
mg/L – Milligram per Liter
% – Percent
> – Greater Than
RPD – Relative Percent Difference
</td><td></td><td></td><td></td></tr>
<tr><td>Equipment Blanks</td><td>No target analytes reported in the associated equipment blank.
<table>
<tr><th>Analyte</th><th>Concentration</th></tr>
<tr><td colspan="2">60367013</td></tr>
<tr><td colspan="2">ERB-04-CCR</td></tr>
<tr><td>TDS</td><td>17.0 mg/L</td></tr>
</table>
mg/L – Milligrams per Liter
TDS – Total Dissolved Solids</td><td></td><td>X[2]</td><td></td></tr>
<tr><td>Reporting Limits Met</td><td>No samples performed at dilutions or reported as non-detect at elevated method detection limits/reporting limits.</td><td>X</td><td></td><td></td></tr>
<tr><td>Reporting</td><td>No reporting issues were found and further qualification was not considered necessary.</td><td>X</td><td></td><td></td></tr>
<tr><td>Package Completeness</td><td>No results were qualified as unusable and the data are 100% complete.</td><td>X</td><td></td><td></td></tr>
<tr><th colspan="5">Comments</th></tr>
<tr><td colspan="5">1 – As the applicable field duplicate criteria was not met, the associated results for samples BAT-01-CCR and DUP-03-CCR were qualified as estimated (J fd).

2 – As the TDS sample results were reported at concentrations >5x the concentration of the blank contamination, qualification was not considered necessary.</td></tr>
</table>

> – Greater Than
mg/L – Milligram per Liter
LCS – Laboratory Control Sample
MB – Method Blank
RL – Reporting Limit
< – Less Than
% – Percent
LCSD – Laboratory Control Sample Duplicate
MS/MSD – Matrix Spike/Matrix Spike Duplicate
RPD – Relative Percent Difference
≤ – Less Than or Equal To
fd – Field Duplicate RPDs
m – Matrix Spike Recovery
NA – Not Applicable
TDS – Total Dissolved Solids

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

May 07, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on April 14, 2021. 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 Analytical Services - Kansas City

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

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

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SAMPLE SUMMARY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60366523001	**BAT-05-CCR**	Water	04/13/21 09:30	04/14/21 08:30
60366523002	**BAT-06-CCR**	Water	04/13/21 12:15	04/14/21 08:30
60366523003	**BAT-01-CCR**	Water	04/13/21 14:00	04/14/21 08:30
60366523004	**DUP-03-CCR**	Water	04/13/21 08:00	04/14/21 08:30

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SAMPLE ANALYTE COUNT

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60366523001	**BAT-05-CCR**	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	VRP	3	PASI-K
60366523002	**BAT-06-CCR**	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	VRP	3	PASI-K
60366523003	**BAT-01-CCR**	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	VRP	3	PASI-K
60366523004	**DUP-03-CCR**	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	CRN2, VRP	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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

ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

Sample: BAT-05-CCR **Lab ID: 60366523001** Collected: 04/13/21 09:30 Received: 04/14/21 08:30 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							
Boron	**1240**	ug/L	100	1	04/23/21 14:45	05/07/21 01:55	7440-42-8	
Calcium	**472000**	ug/L	200	1	04/23/21 14:45	05/07/21 01:55	7440-70-2	
Lithium	**287**	ug/L	10.0	1	04/23/21 14:45	05/07/21 01:55	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:35	7440-36-0	
Arsenic	**13.3**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:35	7440-38-2	
Barium	**135**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:35	7440-39-3	
Beryllium	**1.6**	ug/L	0.50	1	04/23/21 14:45	05/04/21 16:35	7440-41-7	
Cadmium	**0.52**	ug/L	0.50	1	04/23/21 14:45	05/04/21 16:35	7440-43-9	
Chromium	**36.2**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:35	7440-47-3	
Cobalt	**35.0**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:35	7440-48-4	
Lead	**45.0**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:35	7439-92-1	
Molybdenum	**3.5**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:35	7439-98-7	
Selenium	**9.6**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:35	7782-49-2	
Thallium	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:35	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/03/21 17:35	05/05/21 10:08	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**3500**	mg/L	66.7	1		04/20/21 12:45		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**40.6**	mg/L	10.0	10		04/28/21 00:34	16887-00-6	
Fluoride	ND	mg/L	0.20	1		04/28/21 00:18	16984-48-8	
Sulfate	**2420**	mg/L	200	200		04/28/21 01:21	14808-79-8	

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

ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

Sample: BAT-06-CCR **Lab ID: 60366523002** Collected: 04/13/21 12:15 Received: 04/14/21 08:30 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							
Boron	**1960**	ug/L	100	1	04/23/21 14:45	05/07/21 02:06	7440-42-8	
Calcium	**132000**	ug/L	200	1	04/23/21 14:45	05/07/21 02:06	7440-70-2	
Lithium	**178**	ug/L	10.0	1	04/23/21 14:45	05/07/21 02:06	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:44	7440-36-0	
Arsenic	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:44	7440-38-2	
Barium	**12.8**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:44	7440-39-3	
Beryllium	ND	ug/L	0.50	1	04/23/21 14:45	05/04/21 16:44	7440-41-7	
Cadmium	ND	ug/L	0.50	1	04/23/21 14:45	05/04/21 16:44	7440-43-9	
Chromium	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:44	7440-47-3	
Cobalt	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:44	7440-48-4	
Lead	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:44	7439-92-1	
Molybdenum	**11.2**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:44	7439-98-7	
Selenium	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:44	7782-49-2	
Thallium	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:44	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/03/21 17:35	05/05/21 10:11	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**2410**	mg/L	40.0	1		04/20/21 12:45		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**10.8**	mg/L	1.0	1		04/28/21 01:37	16887-00-6	
Fluoride	ND	mg/L	0.20	1		04/28/21 01:37	16984-48-8	
Sulfate	**1580**	mg/L	100	100		04/28/21 01:53	14808-79-8	

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

Sample: BAT-01-CCR **Lab ID: 60366523003** Collected: 04/13/21 14:00 Received: 04/14/21 08:30 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							
Boron	**1620**	ug/L	100	1	04/23/21 14:45	05/07/21 02:08	7440-42-8	
Calcium	**65000**	ug/L	200	1	04/23/21 14:45	05/07/21 02:08	7440-70-2	
Lithium	**129**	ug/L	10.0	1	04/23/21 14:45	05/07/21 02:08	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:57	7440-36-0	
Arsenic	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:57	7440-38-2	
Barium	**45.4**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:57	7440-39-3	
Beryllium	ND	ug/L	0.50	1	04/23/21 14:45	05/04/21 16:57	7440-41-7	
Cadmium	ND	ug/L	0.50	1	04/23/21 14:45	05/04/21 16:57	7440-43-9	
Chromium	**2.3**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:57	7440-47-3	
Cobalt	**2.6**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:57	7440-48-4	
Lead	**1.2**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:57	7439-92-1	
Molybdenum	**7.5**	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:57	7439-98-7	
Selenium	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:57	7782-49-2	
Thallium	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 16:57	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/03/21 17:35	05/05/21 10:13	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**1320**	mg/L	20.0	1		04/20/21 12:45		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**222**	mg/L	50.0	50		04/28/21 02:25	16887-00-6	
Fluoride	**0.23**	mg/L	0.20	1		04/28/21 02:09	16984-48-8	
Sulfate	**427**	mg/L	50.0	50		04/28/21 02:25	14808-79-8	

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

Sample: DUP-03-CCR **Lab ID: 60366523004** Collected: 04/13/21 08:00 Received: 04/14/21 08:30 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							
Boron	**1710**	ug/L	100	1	04/23/21 14:45	05/07/21 02:11	7440-42-8	
Calcium	**62700**	ug/L	200	1	04/23/21 14:45	05/07/21 02:11	7440-70-2	
Lithium	**135**	ug/L	10.0	1	04/23/21 14:45	05/07/21 02:11	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 17:06	7440-36-0	
Arsenic	**1.1**	ug/L	1.0	1	04/23/21 14:45	05/04/21 17:06	7440-38-2	
Barium	**54.0**	ug/L	1.0	1	04/23/21 14:45	05/04/21 17:06	7440-39-3	
Beryllium	ND	ug/L	0.50	1	04/23/21 14:45	05/04/21 17:06	7440-41-7	
Cadmium	ND	ug/L	0.50	1	04/23/21 14:45	05/04/21 17:06	7440-43-9	
Chromium	**4.3**	ug/L	1.0	1	04/23/21 14:45	05/04/21 17:06	7440-47-3	
Cobalt	**3.0**	ug/L	1.0	1	04/23/21 14:45	05/04/21 17:06	7440-48-4	
Lead	**1.7**	ug/L	1.0	1	04/23/21 14:45	05/04/21 17:06	7439-92-1	
Molybdenum	**9.2**	ug/L	1.0	1	04/23/21 14:45	05/04/21 17:06	7439-98-7	
Selenium	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 17:06	7782-49-2	
Thallium	ND	ug/L	1.0	1	04/23/21 14:45	05/04/21 17:06	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/03/21 17:35	05/05/21 10:15	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**1300**	mg/L	20.0	1		04/20/21 12:46		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**227**	mg/L	20.0	20		04/28/21 02:57	16887-00-6	
Fluoride	**0.24**	mg/L	0.20	1		04/28/21 02:41	16984-48-8	
Sulfate	**645**	mg/L	50.0	50		04/28/21 12:14	14808-79-8	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

QC Batch: 717959
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

METHOD BLANK: 2887846
Matrix: Water
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	05/05/21 10:04	

LABORATORY CONTROL SAMPLE: 2887847

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2887848 2887849

Parameter	Units	60367221009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.000096 mg/L	5	5	5.1	5.0	101	99	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

QC Batch: 716488
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

METHOD BLANK: 2882381
Matrix: Water
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	05/07/21 00:40	
Calcium	ug/L	ND	200	05/07/21 00:40	
Lithium	ug/L	ND	10.0	05/07/21 00:40	

LABORATORY CONTROL SAMPLE: 2882382

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1050	105	80-120	
Calcium	ug/L	10000	10600	106	80-120	
Lithium	ug/L	1000	1070	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2882383 2882384

Parameter	Units	60366462001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	939	1000	1000	1950	1970	101	103	75-125	1	20	
Calcium	ug/L	450000	10000	10000	471000	465000	207	144	75-125	1	20	M1
Lithium	ug/L	307	1000	1000	1380	1370	108	106	75-125	1	20	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

QC Batch: 716490
QC Batch Method: EPA 3010
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

METHOD BLANK: 2882388
Matrix: Water
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	05/04/21 14:34	
Arsenic	ug/L	ND	1.0	05/04/21 14:34	
Barium	ug/L	ND	1.0	05/04/21 14:34	
Beryllium	ug/L	ND	0.50	05/04/21 14:34	
Cadmium	ug/L	ND	0.50	05/04/21 14:34	
Chromium	ug/L	ND	1.0	05/04/21 14:34	
Cobalt	ug/L	ND	1.0	05/04/21 14:34	
Lead	ug/L	ND	1.0	05/04/21 14:34	
Molybdenum	ug/L	ND	1.0	05/04/21 14:34	
Selenium	ug/L	ND	1.0	05/04/21 14:34	
Thallium	ug/L	ND	1.0	05/04/21 14:34	

LABORATORY CONTROL SAMPLE: 2882389

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	38.6	96	80-120	
Arsenic	ug/L	40	40.6	102	80-120	
Barium	ug/L	40	38.5	96	80-120	
Beryllium	ug/L	40	42.0	105	80-120	
Cadmium	ug/L	40	40.2	101	80-120	
Chromium	ug/L	40	40.8	102	80-120	
Cobalt	ug/L	40	40.4	101	80-120	
Lead	ug/L	40	40.0	100	80-120	
Molybdenum	ug/L	40	41.4	104	80-120	
Selenium	ug/L	40	40.6	102	80-120	
Thallium	ug/L	40	39.6	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2882390 2882391

Parameter	Units	60366462002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	38.4	37.8	96	94	75-125	2	20	
Arsenic	ug/L	ND	40	40	40.7	40.8	101	101	75-125	0	20	
Barium	ug/L	17.3	40	40	58.5	57.8	103	101	75-125	1	20	
Beryllium	ug/L	ND	40	40	32.9	33.0	82	82	75-125	0	20	
Cadmium	ug/L	ND	40	40	35.7	35.4	89	88	75-125	1	20	
Chromium	ug/L	ND	40	40	35.6	36.4	88	90	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2882390 2882391

Parameter	Units	60366462002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	41.7	41.1	104	103	75-125	1	20	
Lead	ug/L	ND	40	40	33.8	33.6	84	84	75-125	1	20	
Molybdenum	ug/L	8.0	40	40	52.2	51.1	111	108	75-125	2	20	
Selenium	ug/L	ND	40	40	38.6	39.0	97	97	75-125	1	20	
Thallium	ug/L	ND	40	40	35.4	35.2	89	88	75-125	1	20	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

QC Batch: 715644
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

METHOD BLANK: 2879026
Matrix: Water
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	04/20/21 12:43	

LABORATORY CONTROL SAMPLE: 2879027

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1000	100	80-120	

SAMPLE DUPLICATE: 2879028

Parameter	Units	60366429001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	638	662	4	10	

SAMPLE DUPLICATE: 2879029

Parameter	Units	60366512001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1420	1420	0	10	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

QC Batch: 716884
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

METHOD BLANK: 2884063 Matrix: Water
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/27/21 13:29	
Fluoride	mg/L	ND	0.20	04/27/21 13:29	
Sulfate	mg/L	ND	1.0	04/27/21 13:29	

METHOD BLANK: 2886236 Matrix: Water
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/28/21 09:21	
Fluoride	mg/L	ND	0.20	04/28/21 09:21	
Sulfate	mg/L	ND	1.0	04/28/21 09:21	

METHOD BLANK: 2887092 Matrix: Water
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/29/21 11:19	
Fluoride	mg/L	ND	0.20	04/29/21 11:19	
Sulfate	mg/L	ND	1.0	04/29/21 11:19	

METHOD BLANK: 2887138 Matrix: Water
Associated Lab Samples: 60366523001, 60366523002, 60366523003, 60366523004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/29/21 09:28	
Fluoride	mg/L	ND	0.20	04/29/21 09:28	
Sulfate	mg/L	ND	1.0	04/29/21 09:28	

LABORATORY CONTROL SAMPLE: 2884064

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	103	80-120	
Fluoride	mg/L	2.5	2.5	100	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

LABORATORY CONTROL SAMPLE: 2884064

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.0	99	80-120	

LABORATORY CONTROL SAMPLE: 2886237

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	99	80-120	
Fluoride	mg/L	2.5	2.5	98	80-120	
Sulfate	mg/L	5	5.0	99	80-120	

LABORATORY CONTROL SAMPLE: 2887093

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	80-120	
Fluoride	mg/L	2.5	2.6	104	80-120	
Sulfate	mg/L	5	5.0	99	80-120	

LABORATORY CONTROL SAMPLE: 2887139

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	99	80-120	
Fluoride	mg/L	2.5	2.4	95	80-120	
Sulfate	mg/L	5	4.9	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2884065 2884066

Parameter	Units	40225289007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	8.0	5	5	13.3	13.3	105	104	80-120	0	15	
Fluoride	mg/L	0.35	2.5	2.5	2.9	2.9	102	101	80-120	1	15	
Sulfate	mg/L	69.3	50	50	119	118	100	98	80-120	1	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2884068 2884069

Parameter	Units	60366283001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	254	100	100	366	357	111	102	80-120	3	15	
Fluoride	mg/L	ND	2.5	2.5	2.4	2.4	94	97	80-120	3	15	
Sulfate	mg/L	2590	1000	1000	3660	3870	107	128	80-120	6	15	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

SAMPLE DUPLICATE: 2884067

Parameter	Units	40225289007 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	8.0	8.0	0	15	
Fluoride	mg/L	0.35	0.36	2	15	
Sulfate	mg/L	69.3	68.7	1	15	

SAMPLE DUPLICATE: 2884070

Parameter	Units	60366283001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	254	244	4	15	
Fluoride	mg/L	ND	ND		15	
Sulfate	mg/L	2590	2570	1	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.

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QUALIFIERS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

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

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: 60630103.200.0 PRPA CCR
Pace Project No.: 60366523

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60366523001	**BAT-05-CCR**	EPA 3010	716488	EPA 6010	716532
60366523002	**BAT-06-CCR**	EPA 3010	716488	EPA 6010	716532
60366523003	**BAT-01-CCR**	EPA 3010	716488	EPA 6010	716532
60366523004	**DUP-03-CCR**	EPA 3010	716488	EPA 6010	716532
60366523001	**BAT-05-CCR**	EPA 3010	716490	EPA 6020	716533
60366523002	**BAT-06-CCR**	EPA 3010	716490	EPA 6020	716533
60366523003	**BAT-01-CCR**	EPA 3010	716490	EPA 6020	716533
60366523004	**DUP-03-CCR**	EPA 3010	716490	EPA 6020	716533
60366523001	**BAT-05-CCR**	EPA 7470	717959	EPA 7470	718337
60366523002	**BAT-06-CCR**	EPA 7470	717959	EPA 7470	718337
60366523003	**BAT-01-CCR**	EPA 7470	717959	EPA 7470	718337
60366523004	**DUP-03-CCR**	EPA 7470	717959	EPA 7470	718337
60366523001	**BAT-05-CCR**	SM 2540C	715644		
60366523002	**BAT-06-CCR**	SM 2540C	715644		
60366523003	**BAT-01-CCR**	SM 2540C	715644		
60366523004	**DUP-03-CCR**	SM 2540C	715644		
60366523001	**BAT-05-CCR**	EPA 9056	716884		
60366523002	**BAT-06-CCR**	EPA 9056	716884		
60366523003	**BAT-01-CCR**	EPA 9056	716884		
60366523004	**DUP-03-CCR**	EPA 9056	716884		

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Sample Condition Upon Receipt

WO# : 60366523

60366523

Client Name: AECOM

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 9308 4773 3925 1 3914 Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☑ 4/14/21 SR Foam ☐ None ☐ Other ☑ Zplc

Thermometer Used: T29X **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.1 **Corr. Factor** 0.0 **Corrected** 0.1

Temperature should be above freezing to 6°C 1.2 0.0 1.2

Date and initials of person examining contents: 4/14/21 SR

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	~~NOX~~ 4/14/21
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 4/14/21 SR	
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# L603173	☑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: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

CCR KS

Page: 1 of 1

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	
Project Name:	PRPA Rawhide CCR
Project Number:	

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/GRAB DATE	COLLECTED Composite End/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	9056 Cl, F, SO4	6020 Total Metals*	6010 Total Metals**	7470 Total Mercury	2540C TDS						Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60366523
1	BAT-05-CCR	WT	G	—		4/13/21	0930		3										✓	✓	✓	✓	✓							1-BPIN 1-BPIU 1-BPIU
2	BAT-06-CCR	WT	G	—		4/13/21	12:15		3										✓	✓	✓	✓	✓							
3	BAT-01-CCR	WT	G	—		4/13/21	14:00		3										✓	✓	✓	✓	✓							
4	DUP-03-CCR	WT	G	—		4/13/21	—		3										✓	✓	✓	✓	✓							
5																														
6																														
7																														
8																														
9																														
10																														
11																														
12																														

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*Be, Cr, Co, As, Se, Mo, Cd, Sb, Ba, Tl, Pb	C/ Oant / AECOM	4/13/21	1700	[illegible] / Pace	4/14/21	0830	0.1	Y	Y	Y
**B, Ca, Li							1.2	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Ahrendt

SIGNATURE of SAMPLER: C/ Oant

DATE Signed (MM/DD/YY): 4/13/2021

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60366704
Sampling Event: April 14, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: June 4, 2021
Peer Reviewer: Katie Abbott — Date Completed: June 25, 2021

This report contains the final results of the data validation conducted for the water samples collected April 14th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540-R-2017-001 (January 2017).

General Overall Assessment:

__X__ Data are usable without qualification.
_____ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.	X		
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.			X
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • When both the sample and duplicate values are >5x the reporting limit (RL), acceptable sampling and analytical precision is indicated by an relative percent difference (RPD) between the results of ≤20%. • Where the result for one or both analytes of the method duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the method duplicate results is <1xRL.			X

<table>
<tr><th>Review Parameter</th><th>Criteria</th><th colspan="3">Criteria Met?</th></tr>
<tr><td>Sample-specific Parameters</td><td>For each “No” response, list qualified data and bias direction in Table 1 or explain no qualification in comments.</td><td>Yes</td><td>No</td><td>NA</td></tr>
<tr><td>Field Duplicate</td><td>The field duplicate sample results satisfied the evaluation criteria below:
• When both the sample and duplicate values are >5xRL acceptable sampling and analytical precision is indicated by a RPD between the results of ≤30%.
• Where the result for one or both analytes of the field duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the field duplicate results is <2xRL.</td><td></td><td></td><td>X</td></tr>
<tr><td>Equipment Blanks</td><td>No target analytes reported in the associated equipment blank.
<table>
<tr><th>Analyte</th><th>Concentration</th></tr>
<tr><th colspan="2">60367013</th></tr>
<tr><td colspan="2">ERB-04-CCR</td></tr>
<tr><td>TDS</td><td>17.0 mg/L</td></tr>
</table>
mg/L – Milligrams per Liter
TDS – Total Dissolved Solids</td><td></td><td>X[1]</td><td></td></tr>
<tr><td>Reporting Limits Met</td><td>No samples performed at dilutions or reported as non-detect at elevated method detection limits/reporting limits.</td><td>X</td><td></td><td></td></tr>
<tr><td>Reporting</td><td>No reporting issues were found and further qualification was not considered necessary.</td><td>X</td><td></td><td></td></tr>
<tr><td>Package Completeness</td><td>No results were qualified as unusable and the data are 100% complete.</td><td>X</td><td></td><td></td></tr>
<tr><th colspan="5">Comments</th></tr>
<tr><td colspan="5">1 – As the TDS sample results were reported at concentrations >5x the concentration of the blank contamination, qualification was not considered necessary.</td></tr>
</table>

> – Greater Than
mg/L – Milligram per Liter
LCSD – Laboratory Control Sample Duplicate
MS/MSD – Matrix Spike/Matrix Spike Duplicate
RPD – Relative Percent Difference

< – Less Than
% – Percent
m – Matrix Spike Recovery
NA – Not Applicable
TDS – Total Dissolved Solids

≤ – Less Than or Equal To
LCS – Laboratory Control Sample
MB – Method Blank
RL – Reporting Limit

Pace Analytical Services, LLC
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May 07, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on April 15, 2021. 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 Analytical Services - Kansas City

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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CERTIFICATIONS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

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

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SAMPLE SUMMARY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60366704001	**BAT-03-CCR**	Water	04/14/21 09:25	04/15/21 08:40
60366704002	**BAT-02-CCR**	Water	04/14/21 11:00	04/15/21 08:40
60366704003	**BAT-08-CCR**	Water	04/14/21 12:30	04/15/21 08:40
60366704004	**BAT-09-CCR**	Water	04/14/21 14:10	04/15/21 08:40

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SAMPLE ANALYTE COUNT

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60366704001	**BAT-03-CCR**	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60366704002	**BAT-02-CCR**	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60366704003	**BAT-08-CCR**	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60366704004	**BAT-09-CCR**	EPA 6010	JLH	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	CRN2	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

Sample: BAT-03-CCR **Lab ID: 60366704001** Collected: 04/14/21 09:25 Received: 04/15/21 08:40 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							
Boron	**1040**	ug/L	100	1	04/26/21 10:30	05/07/21 00:11	7440-42-8	
Calcium	**328000**	ug/L	200	1	04/26/21 10:30	05/07/21 00:11	7440-70-2	
Lithium	**394**	ug/L	10.0	1	04/26/21 10:30	05/07/21 00:11	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:08	7440-36-0	
Arsenic	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:08	7440-38-2	
Barium	**103**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:08	7440-39-3	
Beryllium	ND	ug/L	0.50	1	04/26/21 10:30	05/05/21 16:08	7440-41-7	
Cadmium	ND	ug/L	0.50	1	04/26/21 10:30	05/05/21 16:08	7440-43-9	
Chromium	**1.4**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:08	7440-47-3	
Cobalt	**1.3**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:08	7440-48-4	
Lead	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:08	7439-92-1	
Molybdenum	**3.1**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:08	7439-98-7	
Selenium	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:08	7782-49-2	
Thallium	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:08	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/05/21 14:20	05/06/21 10:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**2630**	mg/L	66.7	1		04/20/21 12:55		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**63.6**	mg/L	5.0	5		04/30/21 14:02	16887-00-6	
Fluoride	ND	mg/L	0.20	1		04/29/21 16:20	16984-48-8	
Sulfate	**1610**	mg/L	200	200		04/29/21 16:34	14808-79-8	

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

Sample: BAT-02-CCR **Lab ID: 60366704002** Collected: 04/14/21 11:00 Received: 04/15/21 08:40 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							
Boron	**1220**	ug/L	100	1	04/26/21 10:30	05/07/21 00:14	7440-42-8	
Calcium	**252000**	ug/L	200	1	04/26/21 10:30	05/07/21 00:14	7440-70-2	
Lithium	**187**	ug/L	10.0	1	04/26/21 10:30	05/07/21 00:14	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:17	7440-36-0	
Arsenic	**1.2**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:17	7440-38-2	
Barium	**17.9**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:17	7440-39-3	
Beryllium	ND	ug/L	0.50	1	04/26/21 10:30	05/05/21 16:17	7440-41-7	
Cadmium	ND	ug/L	0.50	1	04/26/21 10:30	05/05/21 16:17	7440-43-9	
Chromium	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:17	7440-47-3	
Cobalt	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:17	7440-48-4	
Lead	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:17	7439-92-1	
Molybdenum	**6.5**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:17	7439-98-7	
Selenium	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:17	7782-49-2	
Thallium	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:17	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/05/21 14:20	05/06/21 10:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**2470**	mg/L	66.7	1		04/20/21 12:56		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**242**	mg/L	50.0	50		04/29/21 17:02	16887-00-6	
Fluoride	ND	mg/L	0.20	1		04/29/21 16:48	16984-48-8	
Sulfate	**1360**	mg/L	200	200		04/29/21 17:16	14808-79-8	

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

Sample: BAT-08-CCR **Lab ID: 60366704003** Collected: 04/14/21 12:30 Received: 04/15/21 08:40 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							
Boron	**2080**	ug/L	100	1	04/26/21 10:30	05/07/21 00:16	7440-42-8	
Calcium	**40200**	ug/L	200	1	04/26/21 10:30	05/07/21 00:16	7440-70-2	
Lithium	**102**	ug/L	10.0	1	04/26/21 10:30	05/07/21 00:16	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:37	7440-36-0	
Arsenic	**1.5**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:37	7440-38-2	
Barium	**76.0**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:37	7440-39-3	
Beryllium	ND	ug/L	0.50	1	04/26/21 10:30	05/05/21 16:37	7440-41-7	
Cadmium	ND	ug/L	0.50	1	04/26/21 10:30	05/05/21 16:37	7440-43-9	
Chromium	**3.7**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:37	7440-47-3	
Cobalt	**1.6**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:37	7440-48-4	
Lead	**2.7**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:37	7439-92-1	
Molybdenum	**20.1**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:37	7439-98-7	
Selenium	**1.3**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:37	7782-49-2	
Thallium	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:37	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/05/21 14:20	05/06/21 10:29	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**1260**	mg/L	20.0	1		04/20/21 12:56		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**20.7**	mg/L	2.0	2		04/30/21 14:16	16887-00-6	
Fluoride	ND	mg/L	0.20	1		04/29/21 17:31	16984-48-8	
Sulfate	**605**	mg/L	50.0	50		04/29/21 17:45	14808-79-8	

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

Sample: BAT-09-CCR **Lab ID: 60366704004** Collected: 04/14/21 14:10 Received: 04/15/21 08:40 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							
Boron	**2170**	ug/L	100	1	04/26/21 10:30	05/07/21 00:19	7440-42-8	
Calcium	**161000**	ug/L	200	1	04/26/21 10:30	05/07/21 00:19	7440-70-2	
Lithium	**197**	ug/L	10.0	1	04/26/21 10:30	05/07/21 00:19	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:46	7440-36-0	
Arsenic	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:46	7440-38-2	
Barium	**13.4**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:46	7440-39-3	
Beryllium	ND	ug/L	0.50	1	04/26/21 10:30	05/05/21 16:46	7440-41-7	
Cadmium	ND	ug/L	0.50	1	04/26/21 10:30	05/05/21 16:46	7440-43-9	
Chromium	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:46	7440-47-3	
Cobalt	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:46	7440-48-4	
Lead	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:46	7439-92-1	
Molybdenum	**5.4**	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:46	7439-98-7	
Selenium	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:46	7782-49-2	
Thallium	ND	ug/L	1.0	1	04/26/21 10:30	05/05/21 16:46	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/05/21 14:20	05/06/21 10:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**2650**	mg/L	66.7	1		04/20/21 12:56		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**168**	mg/L	10.0	10		04/29/21 18:43	16887-00-6	
Fluoride	ND	mg/L	0.20	1		04/29/21 18:00	16984-48-8	
Sulfate	ND	mg/L	1.0	1		04/29/21 18:00	14808-79-8	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

QC Batch: 718374
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366704001, 60366704002, 60366704003, 60366704004

METHOD BLANK: 2889377
Matrix: Water
Associated Lab Samples: 60366704001, 60366704002, 60366704003, 60366704004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	05/06/21 10:02	

LABORATORY CONTROL SAMPLE: 2889378

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2889379 2889380

Parameter	Units	60366701003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.2	5.0	102	99	75-125	3	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

QC Batch: 716675
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366704001, 60366704002, 60366704003, 60366704004

METHOD BLANK: 2883380
Matrix: Water
Associated Lab Samples: 60366704001, 60366704002, 60366704003, 60366704004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	05/06/21 23:03	
Calcium	ug/L	ND	200	05/06/21 23:03	
Lithium	ug/L	ND	10.0	05/06/21 23:03	

LABORATORY CONTROL SAMPLE: 2883381

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1020	102	80-120	
Calcium	ug/L	10000	10300	103	80-120	
Lithium	ug/L	1000	1040	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2883382 2883383

Parameter	Units	60366701001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	1130	1000	1000	2190	2220	106	109	75-125	1	20	
Calcium	ug/L	413000	10000	10000	436000	439000	234	259	75-125	1	20	M1
Lithium	ug/L	312	1000	1000	1360	1380	105	107	75-125	2	20	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

QC Batch: 716677
QC Batch Method: EPA 3010
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366704001, 60366704002, 60366704003, 60366704004

METHOD BLANK: 2883393
Matrix: Water
Associated Lab Samples: 60366704001, 60366704002, 60366704003, 60366704004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	05/05/21 13:12	
Arsenic	ug/L	ND	1.0	05/05/21 13:12	
Barium	ug/L	ND	1.0	05/05/21 13:12	
Beryllium	ug/L	ND	0.50	05/05/21 13:12	
Cadmium	ug/L	ND	0.50	05/05/21 13:12	
Chromium	ug/L	ND	1.0	05/05/21 13:12	
Cobalt	ug/L	ND	1.0	05/05/21 13:12	
Lead	ug/L	ND	1.0	05/05/21 13:12	
Molybdenum	ug/L	ND	1.0	05/05/21 13:12	
Selenium	ug/L	ND	1.0	05/05/21 13:12	
Thallium	ug/L	ND	1.0	05/05/21 13:12	

LABORATORY CONTROL SAMPLE: 2883394

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	38.9	97	80-120	
Arsenic	ug/L	40	41.4	104	80-120	
Barium	ug/L	40	39.5	99	80-120	
Beryllium	ug/L	40	41.3	103	80-120	
Cadmium	ug/L	40	40.1	100	80-120	
Chromium	ug/L	40	38.6	96	80-120	
Cobalt	ug/L	40	41.0	102	80-120	
Lead	ug/L	40	37.0	93	80-120	
Molybdenum	ug/L	40	41.1	103	80-120	
Selenium	ug/L	40	40.6	101	80-120	
Thallium	ug/L	40	37.4	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2883395 2883396

Parameter	Units	60366701002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	39.1	37.9	98	95	75-125	3	20	
Arsenic	ug/L	2.2	40	40	43.3	41.7	103	99	75-125	4	20	
Barium	ug/L	22.1	40	40	62.7	59.8	101	94	75-125	5	20	
Beryllium	ug/L	ND	40	40	35.5	34.9	89	87	75-125	2	20	
Cadmium	ug/L	ND	40	40	36.8	35.7	92	89	75-125	3	20	
Chromium	ug/L	ND	40	40	36.8	35.8	90	88	75-125	3	20	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2883395 2883396

Parameter	Units	60366701002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	1.4	40	40	42.1	40.4	102	97	75-125	4	20	
Lead	ug/L	ND	40	40	41.1	39.2	102	97	75-125	5	20	
Molybdenum	ug/L	6.8	40	40	50.9	49.2	110	106	75-125	4	20	
Selenium	ug/L	ND	40	40	39.3	38.0	98	95	75-125	4	20	
Thallium	ug/L	ND	40	40	41.8	39.1	104	98	75-125	7	20	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

QC Batch: 715653
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366704001, 60366704002, 60366704003, 60366704004

METHOD BLANK: 2879057
Matrix: Water
Associated Lab Samples: 60366704001, 60366704002, 60366704003, 60366704004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	04/20/21 12:51	

LABORATORY CONTROL SAMPLE: 2879058

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	985	98	80-120	

SAMPLE DUPLICATE: 2879059

Parameter	Units	60366724002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	311000	296000	5	10	

SAMPLE DUPLICATE: 2879060

Parameter	Units	60366689001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1580	1490	5	10	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

QC Batch: 716976
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366704001, 60366704002, 60366704003, 60366704004

METHOD BLANK: 2884364 Matrix: Water
Associated Lab Samples: 60366704001, 60366704002, 60366704003, 60366704004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/29/21 15:51	
Fluoride	mg/L	ND	0.20	04/29/21 15:51	
Sulfate	mg/L	ND	1.0	04/29/21 15:51	

METHOD BLANK: 2888392 Matrix: Water
Associated Lab Samples: 60366704001, 60366704002, 60366704003, 60366704004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/30/21 09:23	
Fluoride	mg/L	ND	0.20	04/30/21 09:23	
Sulfate	mg/L	ND	1.0	04/30/21 09:23	

LABORATORY CONTROL SAMPLE: 2884365

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	101	80-120	
Fluoride	mg/L	2.5	2.5	102	80-120	
Sulfate	mg/L	5	4.9	98	80-120	

LABORATORY CONTROL SAMPLE: 2888393

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	80-120	
Fluoride	mg/L	2.5	2.6	102	80-120	
Sulfate	mg/L	5	4.8	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2884366 2884367

Parameter	Units	60367013002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	60.0	50	50	131	126	141	133	80-120	3	15	M1
Fluoride	mg/L	ND	2.5	2.5	2.6	2.7	104	108	80-120	4	15	
Sulfate	mg/L	1930	1000	1000	2890	2880	96	95	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2884369 2884370

Parameter	Units	60367013003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	5	5	5.7	5.7	114	115	80-120	1	15	
Fluoride	mg/L	ND	2.5	2.5	2.9	2.9	116	117	80-120	1	15	
Sulfate	mg/L	ND	5	5	5.6	5.6	112	113	80-120	1	15	

SAMPLE DUPLICATE: 2884368

Parameter	Units	60367013002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	60.0	57.1	5	15	
Fluoride	mg/L	ND	ND		15	
Sulfate	mg/L	1930	1820	6	15	

SAMPLE DUPLICATE: 2884371

Parameter	Units	60367013003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	ND	ND		15	
Fluoride	mg/L	ND	ND		15	
Sulfate	mg/L	ND	ND		15	

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QUALIFIERS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

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

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: 60630103.200.0 PRPA CCR
Pace Project No.: 60366704

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60366704001	**BAT-03-CCR**	EPA 3010	716675	EPA 6010	716823
60366704002	**BAT-02-CCR**	EPA 3010	716675	EPA 6010	716823
60366704003	**BAT-08-CCR**	EPA 3010	716675	EPA 6010	716823
60366704004	**BAT-09-CCR**	EPA 3010	716675	EPA 6010	716823
60366704001	**BAT-03-CCR**	EPA 3010	716677	EPA 6020	716824
60366704002	**BAT-02-CCR**	EPA 3010	716677	EPA 6020	716824
60366704003	**BAT-08-CCR**	EPA 3010	716677	EPA 6020	716824
60366704004	**BAT-09-CCR**	EPA 3010	716677	EPA 6020	716824
60366704001	**BAT-03-CCR**	EPA 7470	718374	EPA 7470	718706
60366704002	**BAT-02-CCR**	EPA 7470	718374	EPA 7470	718706
60366704003	**BAT-08-CCR**	EPA 7470	718374	EPA 7470	718706
60366704004	**BAT-09-CCR**	EPA 7470	718374	EPA 7470	718706
60366704001	**BAT-03-CCR**	SM 2540C	715653		
60366704002	**BAT-02-CCR**	SM 2540C	715653		
60366704003	**BAT-08-CCR**	SM 2540C	715653		
60366704004	**BAT-09-CCR**	SM 2540C	715653		
60366704001	**BAT-03-CCR**	EPA 9056	716976		
60366704002	**BAT-02-CCR**	EPA 9056	716976		
60366704003	**BAT-08-CCR**	EPA 9056	716976		
60366704004	**BAT-09-CCR**	EPA 9056	716976		

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Sample Condition Upon Receipt

WO# : 60366704

60366704

Client Name: AECOM

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 9308 4773 3947 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 ☑ 2PLC

Thermometer Used: T-298 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.1 **Corr. Factor** 0.0 **Corrected** 0.1 °C

Date and initials of person examining contents: 4-15-21 KD

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# 603173	☑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: _____

Pace Analytical
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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

CCR-IKS

Page: 1 of 1

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	
Project Name:	PRPA Rawhide CCR
Project Number:	

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	9056 Cl, F, SO4	6020 Total Metals*	6010 Total Metals**	7470 Total Mercury	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-03-CCR	WT	G	—				4/14/21	0925		3	2		1							✓	✓	✓	✓	✓	N	60766704
2	BAT-02-CCR	WT	G	—				4/14/21	1100		3	2		1							✓	✓	✓	✓	✓	N	
3	BAT-08-CCR	WT	G	—				4/14/21	1230		3	2		1							✓	✓	✓	✓	✓	N	
4	BAT-09-CCR	WT	G	—				4/14/21	1410		3	2		1							✓	✓	✓	✓	✓	N	
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
*Be, Cr, Co, As, Se, Mo, Cd, Sb, Ba, Tl, Pb	Chris Ahrendt / AECOM	4/14/2021	1700				
**B, Ca, Li							

Dept: 6003
Customer : 793000
Phone : (913)599-5665
Dept: client services
Date : 26Mar21
Weight : 40 LBS
COD :
DV : 0.00
Shipping : 0.00
Special : 0.00
Handling : 0.00
Total : 0.00
Svcs: PRIORITY OVERNIGHT Master 9308 4773 3903
TRCK: 9308 4773 3947

4/15/21 1100

~~Davison/Pace 4/15/21 0840~~

	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	0.1	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Ahrendt

SIGNATURE of SAMPLER: Chris Ahrendt

DATE Signed (MM/DD/YY): 4/14/21

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60366891
Sampling Event: April 13-14, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: June 8, 2021
Peer Reviewer: Katie Abbott — Date Completed: June 25, 2021

This report contains the final results of the data validation conducted for the water samples collected April 13th and 14th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540-R-2017-001 (January 2017).

General Overall Assessment:

_____ Data are usable without qualification.
__X__ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.		X[1]	
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB. **Analyte** / **Concentration** **MB 2142870** Radium-228 — 0.968 ± 0.457 pCi/L ± – Plus or Minus pCi/L – Picocuries Per Liter MB – Method Blank		X[2]	
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.	X		
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • The agreement between parent sample results and laboratory duplicate sample results were evaluated. The duplicate error ratios (DER) met the criterion of a DER ≤2.			X
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below:	X		

<table>
<tr><th>Review Parameter</th><th>Criteria</th><th colspan="3">Criteria Met?</th></tr>
<tr><td>Sample-specific Parameters</td><td>For each “No” response, list qualified data and bias direction in Table 1 or explain no qualification in comments.</td><td>Yes</td><td>No</td><td>NA</td></tr>
<tr><td></td><td>
<table>
<tr><th>Parent Sample</th><th>Field Duplicate</th></tr>
<tr><td>BAT-01-CCR</td><td>DUP-03-CCR</td></tr>
</table>
• The agreement between parent sample results and field duplicate sample results were evaluated. The DER met the criterion of a DER ≤2.
</td><td></td><td></td><td></td></tr>
<tr><td>Equipment Blanks</td><td>No target analytes reported in the associated equipment blank.
<table>
<tr><th>Analyte</th><th>Concentration</th></tr>
<tr><td colspan="2">60366669</td></tr>
<tr><td colspan="2">ERB-01-CCR</td></tr>
<tr><td>Radium-228</td><td>1.18 ± 0.526 pCi/L</td></tr>
<tr><td>Total Radium</td><td>1.46 ± 1.29 pCi/L</td></tr>
</table>
pCi/L – Picocuries Per Liter</td><td></td><td>X[3]</td><td></td></tr>
<tr><td>Detection Limits Mets</td><td>For radiochemical results if the associated uncertainty was greater than the reported result, the 2 sigma (σ) uncertainty multiplied by 1.65 was less than or equal to the specified detection limit.
<table>
<tr><th>Sample</th><th>Analyte</th><th>Result (pCi/L)</th><th>2 Sigma (σ) Uncertainty</th><th>MDC (pCi/L)</th></tr>
<tr><td>BAT-05-CCR</td><td>Radium-226</td><td>0.506</td><td>± 0.528</td><td>0.843</td></tr>
<tr><td>DUP-03-CCR</td><td>Radium-226</td><td>0.423</td><td>± 0.500</td><td>0.786</td></tr>
<tr><td>BAT-02-CCR</td><td>Radium-226</td><td>0.286</td><td>± 0.298</td><td>0.443</td></tr>
</table>
± – Plus or Minus
pCi/L – Picocuries Per Liter
MDC – Minimum Detectable Concentration
Ra – Radium</td><td></td><td>X[4]</td><td></td></tr>
<tr><td>Tracer and/or Carrier Recovery</td><td>The sample specific recoveries were within the laboratory limits.</td><td>X</td><td></td><td></td></tr>
<tr><td>Reporting</td><td>No reporting issues were found and further qualification was not considered necessary.</td><td>X</td><td></td><td></td></tr>
<tr><td>Package Completeness</td><td>No results were qualified as unusable and the data are 100% complete.</td><td>X</td><td></td><td></td></tr>
</table>

Comments

1 – Samples were received intact; however, no cooler temperature was recorded upon receipt at the laboratory. Due to the stability of the radiological parameters, data qualification on the basis of temperature exceedance is not considered necessary.

2 – The associated radium-228 sample results reported at concentrations greater than the minimum detectable concentration (MDC) and reported at concentrations less than 5x the concentration of the blank contamination were qualified as estimated (J+ bl) to reflect the potential high bias indicated by the blank contamination.

3 – The associated radium-228 and total radium sample results reported at concentrations greater than the MDC and reported at concentrations less than 5x the concentration of the blank contamination were qualified as estimated (J+ be) to reflect the potential high bias indicated by the blank contamination.

4 – The associated results where the 2 sigma (σ) uncertainty multiplied by 1.65 was greater than the reported minimum detectable concentration (MDC) were qualified as estimated (J v) indicating the detection limit criteria was not met.

> – Greater Than
< – Less Than
≤ – Less Than or Equal To
± – Plus or Minus/High or Low Bias
σ – Sigma (Uncertainty)
pCi/L – Picocuries Per Liter
% – Percent
be – Equipment Blank Contamination
bl – Laboratory blank Contamination
DER – Duplicate Error Ratio
J – Estimated
LCS – Laboratory Control Sample
LCSD – Laboratory Control Sample Duplicate
MB – Method Blank
MDC – Minimum Detectable Concentration
MS/MSD – Matrix Spike/Matrix Spike Duplicate
NA – Not Applicable
RPD – Relative Percent Difference
v – Compound Identification Issue

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

May 11, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on April 15, 2021. 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 Analytical Services - Greensburg

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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CERTIFICATIONS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60366891001	**BAT-05-CCR**	Water	04/13/21 09:30	04/15/21 09:15
60366891002	**BAT-06-CCR**	Water	04/13/21 12:15	04/15/21 09:15
60366891003	**BAT-01-CCR**	Water	04/13/21 14:00	04/15/21 09:15
60366891004	**DUP-03-CCR**	Water	04/13/21 08:00	04/15/21 09:15
60366891005	**BAT-03-CCR**	Water	04/14/21 09:25	04/15/21 09:15
60366891006	**BAT-02-CCR**	Water	04/14/21 11:00	04/15/21 09:15
60366891007	**BAT-08-CCR**	Water	04/14/21 12:30	04/15/21 09:15
60366891008	**BAT-09-CCR**	Water	04/14/21 14:10	04/15/21 09:15

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SAMPLE ANALYTE COUNT

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60366891001	**BAT-05-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60366891002	**BAT-06-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60366891003	**BAT-01-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60366891004	**DUP-03-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60366891005	**BAT-03-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60366891006	**BAT-02-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60366891007	**BAT-08-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60366891008	**BAT-09-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Sample: BAT-05-CCR **Lab ID: 60366891001** Collected: 04/13/21 09:30 Received: 04/15/21 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.506 ± 0.528 (0.843) C:NA T:95%**	pCi/L	05/06/21 15:00	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.27 ± 0.553 (0.891) C:73% T:66%**	pCi/L	05/04/21 12:40	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.78 ± 1.08 (1.73)**	pCi/L	05/07/21 10:45	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Sample: BAT-06-CCR **Lab ID: 60366891002** Collected: 04/13/21 12:15 Received: 04/15/21 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.159 ± 0.344 (0.635)** **C:NA T:94%**	pCi/L	05/06/21 15:15	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.412 ± 0.324 (0.632)** **C:68% T:90%**	pCi/L	05/04/21 12:40	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.571 ± 0.668 (1.27)**	pCi/L	05/07/21 10:45	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Sample: BAT-01-CCR **Lab ID: 60366891003** Collected: 04/13/21 14:00 Received: 04/15/21 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.0550 ± 0.418 (0.826) C:NA T:92%**	pCi/L	05/06/21 15:15	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.384 ± 0.416 (0.865) C:63% T:81%**	pCi/L	05/04/21 12:40	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.439 ± 0.834 (1.69)**	pCi/L	05/07/21 10:45	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Sample: DUP-03-CCR **Lab ID: 60366891004** Collected: 04/13/21 08:00 Received: 04/15/21 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.423 ± 0.500 (0.786) C:NA T:86%**	pCi/L	05/10/21 13:27	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.218 ± 0.391 (0.855) C:69% T:79%**	pCi/L	05/04/21 12:40	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.641 ± 0.891 (1.64)**	pCi/L	05/10/21 17:02	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Sample: BAT-03-CCR **Lab ID: 60366891005** Collected: 04/14/21 09:25 Received: 04/15/21 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.360 ± 0.337 (0.478)** **C:NA T:95%**	pCi/L	05/06/21 15:15	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.609 ± 0.399 (0.758)** **C:72% T:84%**	pCi/L	05/04/21 12:21	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.969 ± 0.736 (1.24)**	pCi/L	05/07/21 10:45	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Sample: BAT-02-CCR **Lab ID: 60366891006** Collected: 04/14/21 11:00 Received: 04/15/21 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.286 ± 0.298 (0.443) C:NA T:98%**	pCi/L	05/06/21 15:15	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.893 ± 0.387 (0.608) C:72% T:89%**	pCi/L	05/04/21 12:21	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.18 ± 0.685 (1.05)**	pCi/L	05/07/21 10:45	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Sample: BAT-08-CCR **Lab ID: 60366891007** Collected: 04/14/21 12:30 Received: 04/15/21 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.0580 ± 0.265 (0.538) C:NA T:88%**	pCi/L	05/06/21 15:15	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.31 ± 0.712 (1.29) C:71% T:74%**	pCi/L	05/04/21 15:32	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.31 ± 0.977 (1.83)**	pCi/L	05/07/21 10:45	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Sample: BAT-09-CCR **Lab ID: 60366891008** Collected: 04/14/21 14:10 Received: 04/15/21 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.115 ± 0.320 (0.621)** **C:NA T:100%**	pCi/L	05/06/21 15:15	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.769 ± 0.617 (1.23)** **C:68% T:83%**	pCi/L	05/04/21 15:32	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.884 ± 0.937 (1.85)**	pCi/L	05/07/21 10:45	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

QC Batch: 443888 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60366891001, 60366891002, 60366891003, 60366891004, 60366891005, 60366891006, 60366891007, 60366891008

METHOD BLANK: 2142867 | Matrix: Water
Associated Lab Samples: 60366891001, 60366891002, 60366891003, 60366891004, 60366891005, 60366891006, 60366891007, 60366891008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0841 ± 0.192 (0.453) C:NA T:96%	pCi/L	05/05/21 15:44	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

QC Batch: 443889
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60366891001, 60366891002, 60366891003, 60366891004, 60366891005, 60366891006, 60366891007, 60366891008

METHOD BLANK: 2142870
Matrix: Water
Associated Lab Samples: 60366891001, 60366891002, 60366891003, 60366891004, 60366891005, 60366891006, 60366891007, 60366891008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.968 ± 0.457 (0.775) C:71% T:81%	pCi/L	05/04/21 12:20	

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.

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QUALIFIERS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

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.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60366891

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60366891001	**BAT-05-CCR**	EPA 903.1	443888		
60366891002	**BAT-06-CCR**	EPA 903.1	443888		
60366891003	**BAT-01-CCR**	EPA 903.1	443888		
60366891004	**DUP-03-CCR**	EPA 903.1	443888		
60366891005	**BAT-03-CCR**	EPA 903.1	443888		
60366891006	**BAT-02-CCR**	EPA 903.1	443888		
60366891007	**BAT-08-CCR**	EPA 903.1	443888		
60366891008	**BAT-09-CCR**	EPA 903.1	443888		
60366891001	**BAT-05-CCR**	EPA 904.0	443889		
60366891002	**BAT-06-CCR**	EPA 904.0	443889		
60366891003	**BAT-01-CCR**	EPA 904.0	443889		
60366891004	**DUP-03-CCR**	EPA 904.0	443889		
60366891005	**BAT-03-CCR**	EPA 904.0	443889		
60366891006	**BAT-02-CCR**	EPA 904.0	443889		
60366891007	**BAT-08-CCR**	EPA 904.0	443889		
60366891008	**BAT-09-CCR**	EPA 904.0	443889		
60366891001	**BAT-05-CCR**	Total Radium Calculation	446983		
60366891002	**BAT-06-CCR**	Total Radium Calculation	446983		
60366891003	**BAT-01-CCR**	Total Radium Calculation	446983		
60366891004	**DUP-03-CCR**	Total Radium Calculation	447359		
60366891005	**BAT-03-CCR**	Total Radium Calculation	446983		
60366891006	**BAT-02-CCR**	Total Radium Calculation	446983		
60366891007	**BAT-08-CCR**	Total Radium Calculation	446983		
60366891008	**BAT-09-CCR**	Total Radium Calculation	446983		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

CCR PA

Page: 1 of 1

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	
Project Name:	rev
Project Number:	

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N): Radium-226 N, Radium-228 N, Total Radium N

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-05-CCR	WT	G	—		4/13/21	0930		2			2						N	001
2	BAT-06-CCR	WT	G	—		4/13/21	1215		2			2						N	002
3	BAT-01-CCR	WT	G	—		4/13/21	1400		2			2						N	003
4	DUP-03-CCR	WT	G	—		4/13/21	—		2			2						N	004
5	BAT-03-CCR	WT	G	—		4/14/21	0925		2			2						N	005
6	BAT-02-CCR	WT	G	—		4/14/21	1100		2			2						N	006
7	BAT-08-CCR	WT	G	—		4/14/21	1230		2			2						N	007
8	BAT-09-CCR	WT	G	—		4/14/21	1410		2			2						N	008
9																			
10																			
11																			
12																			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Chris Ahlendt / AECOM	4/13/2021	1700	[signature]	4/15/21	0915	—	N	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Chris Ahlendt

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 4/13/2021

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: AECom Project #

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 9308 4773 7986

Label: R
LIMS Login

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Thermometer Used ~ Type of Ice: Wet Blue None

Cooler Temperature Observed Temp – °C Correction Factor: ~ °C Final Temp: – °C

Temp should be above freezing to 6°C

pH paper Lot# 10D1101 Date and Initials of person examining contents: PA 4-16-21

Comments:	Yes	No	N/A	
Chain of Custody Present:	–			1.
Chain of Custody Filled Out:	–			2.
Chain of Custody Relinquished:	–			3.
Sampler Name & Signature on COC:	–			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	–			5.
Samples Arrived within Hold Time:	–			6.
Short Hold Time Analysis (<72hr remaining):		–		7.
Rush Turn Around Time Requested:		–		8.
Sufficient Volume:	–			9.
Correct Containers Used: -Pace Containers Used:	– –			10.
Containers Intact:	–			11.
Orthophosphate field filtered			–	12.
Hex Cr Aqueous sample field filtered			–	13.
Organic Samples checked for dechlorination:			–	14.
Filtered volume received for Dissolved tests			–	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	–			16. pH<2
All containers meet method preservation requirements.	–			Initial when completed R; Date/time of preservation; Lot # of added preservative
Headspace in VOA Vials (>6mm):			–	17.
Trip Blank Present:			–	18.
Trip Blank Custody Seals Present			–	
Rad Samples Screened < 0.5 mrem/hr	–			Initial when completed: R; Date: 4-16-21; Survey Meter SN: 1SGJ

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Pace Analytical®

Pace Greensburg Lab -Sample Container Count

Client _____ Profile Number _____

Site _____ Notes _____

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1N	BP1U	BP2S	BP2U	BP3C	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	
1																													
2																													
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Container Codes

Glass

GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
AG5U	100mL amber glass unprserved	VG9U	40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosul
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	JGFU	4oz amber wide jar
AG1H	1L amber glass HCl	WGFU	4oz wide jar unpreserved
AG1T	1L amber glass Na Thiosulfate	BG2U	500mL clear glass unpreserved
BG1U	1L clear glass unpreserved	AG2U	500mL amber glass unpreserve
AG3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved		

Plastic / Misc.

GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250ml plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag

WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

Quality Control Sample Performance Assessment

Pace Analytical™
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Test:	Ra-226
Analyst:	MK1
Date:	4/28/2021
Batch ID:	60040
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2142867
MB concentration:	-0.084
M/B Counting Uncertainty:	0.165
MB MDC:	0.453
MB Numerical Performance Indicator:	-1.00
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS60040	LCSD60040
Count Date:	5/5/2021	
Spike I.D.:	20-032	
Spike Concentration (pCi/mL):	32.175	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.656	
Target Conc. (pCi/L, g, F):	4.905	
Uncertainty (Calculated):	0.231	
Result (pCi/L, g, F):	4.630	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.964	
Numerical Performance Indicator:	-0.54	
Percent Recovery:	94.39%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	4/8/2021	
Sample I.D.	60366669003	
Sample MS I.D.	60366669006	
Sample MSD I.D.	60366669007	
Spike I.D.:	20-032	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.176	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):	0.20	
MS Aliquot (L, g, F):	0.653	
MS Target Conc.(pCi/L, g, F):	9.853	
MSD Aliquot (L, g, F):	0.645	
MSD Target Conc. (pCi/L, g, F):	9.974	
MS Spike Uncertainty (calculated):	0.463	
MSD Spike Uncertainty (calculated):	0.469	
Sample Result:	0.320	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.411	
Sample Matrix Spike Result:	9.735	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.369	
Sample Matrix Spike Duplicate Result:	10.492	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	1.464	
MS Numerical Performance Indicator:	-0.571	
MSD Numerical Performance Indicator:	0.244	
MS Percent Recovery:	95.56%	
MSD Percent Recovery:	101.99%	
MS Status vs Numerical Indicator:	N/A	
MSD Status vs Numerical Indicator:	N/A	
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:	Pass	
MS/MSD Upper % Recovery Limits:	136%	
MS/MSD Lower % Recovery Limits:	71%	

Duplicate Sample Assessment		
Sample I.D.:		Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.		
Sample Result (pCi/L, g, F):		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Duplicate Result (pCi/L, g, F):		
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:		
Duplicate RPD:		
Duplicate Status vs Numerical Indicator:		
Duplicate Status vs RPD:		
% RPD Limit:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.	60366669003	
Sample MS I.D.	60366669006	
Sample MSD I.D.	60366669007	
Sample Matrix Spike Result:	9.735	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.369	
Sample Matrix Spike Duplicate Result:	10.492	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	1.464	
Duplicate Numerical Performance Indicator:	-0.740	
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:	6.50%	
MS/ MSD Duplicate Status vs Numerical Indicator:	N/A	
MS/ MSD Duplicate Status vs RPD:	Pass	
% RPD Limit:	32%	

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

MK 5/6/21

Quality Control Sample Performance Assessment

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Test:	Ra-228
Analyst:	VAL
Date:	4/28/2021
Worklist:	60041
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2142870
MB concentration:	0.968
M/B 2 Sigma CSU:	0.457
MB MDC:	0.775
MB Numerical Performance Indicator:	4.15
MB Status vs Numerical Indicator:	Fail*
MB Status vs. MDC:	See Comment*

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS60041	LCSD60041
Count Date:	5/4/2021	
Spike I.D.:	21-003	
Decay Corrected Spike Concentration (pCi/mL):	37.828	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.823	
Target Conc. (pCi/L, g, F):	4.596	
Uncertainty (Calculated):	0.225	
Result (pCi/L, g, F):	4.848	
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.092	
Numerical Performance Indicator:	0.44	
Percent Recovery:	105.49%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	60%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	4/8/2021	
Sample I.D.	60366669003	
Sample MS I.D.	60366669006	
Sample MSD I.D.	60366669007	
Spike I.D.:	21-003	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	38.155	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):	0.20	
MS Aliquot (L, g, F):	0.804	
MS Target Conc.(pCi/L, g, F):	9.487	
MSD Aliquot (L, g, F):	0.817	
MSD Target Conc. (pCi/L, g, F):	9.336	
MS Spike Uncertainty (calculated):	0.465	
MSD Spike Uncertainty (calculated):	0.457	
Sample Result:	0.724	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.432	
Sample Matrix Spike Result:	9.370	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.885	
Sample Matrix Spike Duplicate Result:	9.643	
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.936	
MS Numerical Performance Indicator:	-0.829	
MSD Numerical Performance Indicator:	-0.401	
MS Percent Recovery:	91.13%	
MSD Percent Recovery:	95.54%	
MS Status vs Numerical Indicator:	Pass	
MSD Status vs Numerical Indicator:	Pass	
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:	Pass	
MS/MSD Upper % Recovery Limits:	135%	
MS/MSD Lower % Recovery Limits:	60%	

Duplicate Sample Assessment		
Sample I.D.:		Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.		
Sample Result (pCi/L, g, F):		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Duplicate Result (pCi/L, g, F):		
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:		
Duplicate RPD:		
Duplicate Status vs Numerical Indicator:		
Duplicate Status vs RPD:		
% RPD Limit:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.	60366669003	
Sample MS I.D.	60366669006	
Sample MSD I.D.	60366669007	
Sample Matrix Spike Result:	9.370	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.885	
Sample Matrix Spike Duplicate Result:	9.643	
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.936	
Duplicate Numerical Performance Indicator:	-0.198	
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:	4.72%	
MS/ MSD Duplicate Status vs Numerical Indicator:	Pass	
MS/ MSD Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:
*The method blank result is below the reporting limit for this analysis and is acceptable.

05/5/21

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60367013
Sampling Event: April 15, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: June 4, 2021
Peer Reviewer: Katie Abbott — Date Completed: June 25, 2021

This report contains the final results of the data validation conducted for the water samples collected April 15th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540-R-2017-001 (January 2017).

General Overall Assessment:

_____ Data are usable without qualification.
__X__ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.	X		
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges. Results in the native sample greater than four times the concentration of the spike added during digestions/extractions are not considered to be a representative measure of accuracy. Further action with respect to spike recovery evaluation or qualification of data was not considered necessary.		X[1]	

Analyte	MS/MSD (%)	Limits (%)	RPD (%)	Limits (%)
BAT-04R-CCR				
Chloride	**141/133**	80-120	3	15
BAT-12-CCR				
Fluoride	87/**79**	80-120	9	15

% – Percent
MS/MSD – Matrix Spike/ Matrix Spike Duplicate
RPD – Relative Percent Difference
Bold indicates a value that is outside of acceptance limits

<table>
<tr><th>Review Parameter</th><th>Criteria</th><th colspan="3">Criteria Met?</th></tr>
<tr><td>Sample-specific Parameters</td><td>For each “No” response, list qualified data and bias direction in Table 1 or explain no qualification in comments.</td><td>Yes</td><td>No</td><td>NA</td></tr>
<tr><td>Laboratory Duplicate</td><td>The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates:
• When both the sample and duplicate values are >5x the reporting limit (RL), acceptable sampling and analytical precision is indicated by an relative percent difference (RPD) between the results of ≤20%.
• Where the result for one or both analytes of the method duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the method duplicate results is <1xRL.
<table>
<tr><th>Analyte</th><th>Parent Sample Result</th><th>Duplicate Sample Result</th><th>Criteria not Met</th></tr>
<tr><td colspan="4">BAT-12-CCR</td></tr>
<tr><td>Fluoride</td><td>0.33 µg/L</td><td>0.59 µg/L</td><td>Difference>1xRL</td></tr>
</table>
µg/L – Microgram per Liter   > – Greater Than
% – Percent   RL – Reporting Limit</td><td></td><td>X[2]</td><td></td></tr>
<tr><td>Field Duplicate</td><td>The field duplicate sample results satisfied the evaluation criteria below:
• When both the sample and duplicate values are >5xRL acceptable sampling and analytical precision is indicated by a RPD between the results of ≤30%.
• Where the result for one or both analytes of the field duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the field duplicate results is <2xRL.</td><td></td><td></td><td>X</td></tr>
<tr><td>Equipment Blanks</td><td>No target analytes reported in the associated equipment blank.
<table>
<tr><th>Analyte</th><th>Concentration</th></tr>
<tr><td colspan="2">60367013</td></tr>
<tr><td colspan="2">ERB-04-CCR</td></tr>
<tr><td>TDS</td><td>17.0 mg/L</td></tr>
</table>
mg/L – Milligrams per Liter
TDS – Total Dissolved Solids</td><td></td><td>X[3]</td><td></td></tr>
<tr><td>Reporting Limits Met</td><td>No samples performed at dilutions or reported as non-detect at elevated method detection limits/reporting limits.</td><td>X</td><td></td><td></td></tr>
<tr><td>Reporting</td><td>No reporting issues were found and further qualification was not considered necessary.</td><td>X</td><td></td><td></td></tr>
<tr><td>Package Completeness</td><td>No results were qualified as unusable and the data are 100% complete.</td><td>X</td><td></td><td></td></tr>
<tr><th colspan="5">Comments</th></tr>
<tr><td colspan="5">1 – As the potential bias was considered to be high, the associated detected chloride result for sample BAT-04R-CCR was qualified as estimated (J+ m).
As the potential bias was considered to be low, the fluoride result for sample BAT-12-CCR was qualified as estimated (J- m).
2 – As the laboratory duplicate was outside the criterion listed above, the associated fluoride result for sample BAT-12-CCR was qualified as estimated (J ld).</td></tr>
</table>

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
3 – As the TDS result for sample ASH-05-CCR was reported at a concentration >5x the concentration of the blank contamination, qualification was not considered necessary.				

> – Greater Than
mg/L – Milligram per Liter
J – Estimated
ld – Laboratory Duplicate RPDs
MS/MSD – Matrix Spike/Matrix Spike Duplicate
RPD – Relative Percent Difference
< – Less Than
% – Percent
LCS – Laboratory Control Sample
m – Matrix Spike Recovery
NA – Not Applicable
TDS – Total Dissolved Solids
≤ – Less Than or Equal To
± – Plus or Minus/High or Low Bias
LCSD – Laboratory Control Sample Duplicate
MB – Method Blank
RL – Reporting Limit

Pace Analytical Services, LLC
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May 11, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on April 17, 2021. 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 Analytical Services - Kansas City

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

Sincerely,

Heather M. Wilson

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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CERTIFICATIONS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

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

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SAMPLE SUMMARY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60367013001	**BAT-12-CCR**	Water	04/15/21 09:40	04/17/21 08:55
60367013002	**BAT-04R-CCR**	Water	04/15/21 12:30	04/17/21 08:55
60367013003	**ERB-04-CCR**	Water	04/15/21 14:16	04/17/21 08:55

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SAMPLE ANALYTE COUNT

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60367013001	**BAT-12-CCR**	EPA 6010	JLH	3	PASI-K
		EPA 6020	JDE	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	AJS	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60367013002	**BAT-04R-CCR**	EPA 6010	JLH	3	PASI-K
		EPA 6020	JDE	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	AJS	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60367013003	**ERB-04-CCR**	EPA 6010	JLH	3	PASI-K
		EPA 6020	JDE	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	AJS	1	PASI-K
		EPA 9056	CRN2	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

Sample: BAT-12-CCR **Lab ID: 60367013001** Collected: 04/15/21 09:40 Received: 04/17/21 08:55 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							
Boron	**249**	ug/L	100	1	04/28/21 15:45	05/10/21 17:41	7440-42-8	
Calcium	**91400**	ug/L	200	1	04/28/21 15:45	05/10/21 17:41	7440-70-2	
Lithium	**84.6**	ug/L	10.0	1	04/28/21 15:45	05/10/21 17:41	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 18:57	7440-36-0	
Arsenic	**1.3**	ug/L	1.0	1	04/28/21 15:45	05/10/21 18:57	7440-38-2	
Barium	**34.6**	ug/L	1.0	1	04/28/21 15:45	05/10/21 18:57	7440-39-3	
Beryllium	ND	ug/L	0.50	1	04/28/21 15:45	05/10/21 18:57	7440-41-7	
Cadmium	ND	ug/L	0.50	1	04/28/21 15:45	05/10/21 18:57	7440-43-9	
Chromium	**1.2**	ug/L	1.0	1	04/28/21 15:45	05/10/21 18:57	7440-47-3	
Cobalt	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 18:57	7440-48-4	
Lead	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 18:57	7439-92-1	
Molybdenum	**7.7**	ug/L	1.0	1	04/28/21 15:45	05/10/21 18:57	7439-98-7	
Selenium	**2.7**	ug/L	1.0	1	04/28/21 15:45	05/10/21 18:57	7782-49-2	
Thallium	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 18:57	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/07/21 19:24	05/10/21 15:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**934**	mg/L	10.0	1		04/22/21 13:01		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**150**	mg/L	10.0	10		05/04/21 20:20	16887-00-6	
Fluoride	**0.33**	mg/L	0.20	1		05/04/21 20:06	16984-48-8	D6,M1
Sulfate	**329**	mg/L	50.0	50		05/04/21 21:17	14808-79-8	

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

Sample: BAT-04R-CCR **Lab ID: 60367013002** Collected: 04/15/21 12:30 Received: 04/17/21 08:55 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							
Boron	**832**	ug/L	100	1	04/28/21 15:45	05/10/21 17:49	7440-42-8	
Calcium	**419000**	ug/L	200	1	04/28/21 15:45	05/10/21 17:49	7440-70-2	M1
Lithium	**158**	ug/L	10.0	1	04/28/21 15:45	05/10/21 17:49	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 19:29	7440-36-0	
Arsenic	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 19:29	7440-38-2	
Barium	**25.0**	ug/L	1.0	1	04/28/21 15:45	05/10/21 19:29	7440-39-3	
Beryllium	ND	ug/L	0.50	1	04/28/21 15:45	05/10/21 19:29	7440-41-7	
Cadmium	ND	ug/L	0.50	1	04/28/21 15:45	05/10/21 19:29	7440-43-9	
Chromium	**1.4**	ug/L	1.0	1	04/28/21 15:45	05/10/21 19:29	7440-47-3	
Cobalt	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 19:29	7440-48-4	
Lead	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 19:29	7439-92-1	
Molybdenum	**1.6**	ug/L	1.0	1	04/28/21 15:45	05/10/21 19:29	7439-98-7	
Selenium	**28.6**	ug/L	1.0	1	04/28/21 15:45	05/10/21 19:29	7782-49-2	
Thallium	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 19:29	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/07/21 19:24	05/10/21 15:51	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**3370**	mg/L	66.7	1		04/22/21 13:01		D6
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**60.0**	mg/L	10.0	10		04/29/21 22:46	16887-00-6	M1
Fluoride	ND	mg/L	0.20	1		04/29/21 21:49	16984-48-8	
Sulfate	**1930**	mg/L	200	200		04/29/21 23:44	14808-79-8	

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

Sample: ERB-04-CCR **Lab ID: 60367013003** Collected: 04/15/21 14:16 Received: 04/17/21 08:55 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							
Boron	ND	ug/L	100	1	04/28/21 15:45	05/10/21 18:05	7440-42-8	
Calcium	ND	ug/L	200	1	04/28/21 15:45	05/10/21 18:05	7440-70-2	
Lithium	ND	ug/L	10.0	1	04/28/21 15:45	05/10/21 18:05	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 20:04	7440-36-0	
Arsenic	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 20:04	7440-38-2	
Barium	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 20:04	7440-39-3	
Beryllium	ND	ug/L	0.50	1	04/28/21 15:45	05/10/21 20:04	7440-41-7	
Cadmium	ND	ug/L	0.50	1	04/28/21 15:45	05/10/21 20:04	7440-43-9	
Chromium	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 20:04	7440-47-3	
Cobalt	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 20:04	7440-48-4	
Lead	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 20:04	7439-92-1	
Molybdenum	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 20:04	7439-98-7	
Selenium	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 20:04	7782-49-2	
Thallium	ND	ug/L	1.0	1	04/28/21 15:45	05/10/21 20:04	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/07/21 19:24	05/10/21 16:09	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**17.0**	mg/L	5.0	1		04/22/21 13:04		D6
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	ND	mg/L	1.0	1		04/30/21 01:10	16887-00-6	
Fluoride	ND	mg/L	0.20	1		04/30/21 01:10	16984-48-8	
Sulfate	ND	mg/L	1.0	1		04/30/21 01:10	14808-79-8	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

QC Batch: 718980
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60367013001, 60367013002, 60367013003

METHOD BLANK: 2891573
Matrix: Water
Associated Lab Samples: 60367013001, 60367013002, 60367013003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	05/10/21 15:16	

LABORATORY CONTROL SAMPLE: 2891574

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2891577 2891578

Parameter	Units	60367012001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.9	4.7	97	95	75-125	3	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2891579 2891580

Parameter	Units	60367013001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.7	4.8	95	96	75-125	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2891581 2891582

Parameter	Units	60367013002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	4.8	97	95	75-125	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2891583 2891584

Parameter	Units	60367013003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.7	4.8	94	96	75-125	2	20	

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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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

QC Batch: 717314
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60367013001, 60367013002, 60367013003

METHOD BLANK: 2885374
Matrix: Water
Associated Lab Samples: 60367013001, 60367013002, 60367013003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	05/10/21 15:56	
Calcium	ug/L	ND	200	05/10/21 15:56	
Lithium	ug/L	ND	10.0	05/10/21 15:56	

LABORATORY CONTROL SAMPLE: 2885375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1030	103	80-120	
Calcium	ug/L	10000	10000	100	80-120	
Lithium	ug/L	1000	1050	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2885376 2885377

Parameter	Units	60367012001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	247	1000	1000	1400	1380	115	113	75-125	1	20	
Calcium	ug/L	91200	10000	10000	105000	105000	136	138	75-125	0	20	M1
Lithium	ug/L	84.6	1000	1000	1190	1180	110	110	75-125	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2885378 2885379

Parameter	Units	60367013001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	249	1000	1000	1300	1320	105	108	75-125	2	20	
Calcium	ug/L	91400	10000	10000	100000	101000	89	94	75-125	0	20	
Lithium	ug/L	84.6	1000	1000	1110	1130	103	105	75-125	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2885380 2885381

Parameter	Units	60367013002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	832	1000	1000	1880	1890	104	106	75-125	1	20	
Calcium	ug/L	419000	10000	10000	406000	412000	-133	-70	75-125	2	20	M1
Lithium	ug/L	158	1000	1000	1200	1210	104	105	75-125	1	20	

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

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2885382 2885383

Parameter	Units	60367013003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	ND	1000	1000	1080	1090	108	109	75-125	1	20	
Calcium	ug/L	ND	10000	10000	10300	10500	103	105	75-125	2	20	
Lithium	ug/L	ND	1000	1000	1060	1090	106	109	75-125	3	20	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

QC Batch: 717315
QC Batch Method: EPA 3010
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60367013001, 60367013002, 60367013003

METHOD BLANK: 2885384
Matrix: Water
Associated Lab Samples: 60367013001, 60367013002, 60367013003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	05/10/21 17:27	
Arsenic	ug/L	ND	1.0	05/10/21 17:27	
Barium	ug/L	ND	1.0	05/10/21 17:27	
Beryllium	ug/L	ND	0.50	05/10/21 17:27	
Cadmium	ug/L	ND	0.50	05/10/21 17:27	
Chromium	ug/L	ND	1.0	05/10/21 17:27	
Cobalt	ug/L	ND	1.0	05/10/21 17:27	
Lead	ug/L	ND	1.0	05/10/21 17:27	
Molybdenum	ug/L	ND	1.0	05/10/21 17:27	
Selenium	ug/L	ND	1.0	05/10/21 17:27	
Thallium	ug/L	ND	1.0	05/10/21 17:27	

LABORATORY CONTROL SAMPLE: 2885385

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	38.9	97	80-120	
Arsenic	ug/L	40	39.7	99	80-120	
Barium	ug/L	40	39.5	99	80-120	
Beryllium	ug/L	40	43.1	108	80-120	
Cadmium	ug/L	40	39.3	98	80-120	
Chromium	ug/L	40	40.5	101	80-120	
Cobalt	ug/L	40	38.5	96	80-120	
Lead	ug/L	40	42.4	106	80-120	
Molybdenum	ug/L	40	40.0	100	80-120	
Selenium	ug/L	40	39.8	99	80-120	
Thallium	ug/L	40	38.7	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2885386 2885387

Parameter	Units	60367012001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	38.3	38.9	96	97	75-125	1	20	
Arsenic	ug/L	1.2	40	40	40.6	41.2	99	100	75-125	1	20	
Barium	ug/L	31.4	40	40	70.8	73.0	98	104	75-125	3	20	
Beryllium	ug/L	ND	40	40	39.1	40.7	98	102	75-125	4	20	
Cadmium	ug/L	ND	40	40	36.1	37.0	90	92	75-125	2	20	
Chromium	ug/L	ND	40	40	39.1	39.8	95	97	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2885386 2885387

Parameter	Units	60367012001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	37.2	37.7	92	94	75-125	2	20	
Lead	ug/L	ND	40	40	35.2	36.2	88	90	75-125	3	20	
Molybdenum	ug/L	7.2	40	40	49.8	51.1	106	110	75-125	3	20	
Selenium	ug/L	2.3	40	40	40.0	40.6	94	96	75-125	1	20	
Thallium	ug/L	ND	40	40	35.5	36.4	89	91	75-125	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2885388 2885389

Parameter	Units	60367013001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	39.4	39.4	98	98	75-125	0	20	
Arsenic	ug/L	1.3	40	40	41.6	41.2	101	100	75-125	1	20	
Barium	ug/L	34.6	40	40	74.6	73.2	100	97	75-125	2	20	
Beryllium	ug/L	ND	40	40	39.9	40.3	100	101	75-125	1	20	
Cadmium	ug/L	ND	40	40	37.2	37.2	93	93	75-125	0	20	
Chromium	ug/L	1.2	40	40	40.4	40.1	98	97	75-125	1	20	
Cobalt	ug/L	ND	40	40	38.1	37.5	95	93	75-125	2	20	
Lead	ug/L	ND	40	40	36.3	36.4	90	91	75-125	0	20	
Molybdenum	ug/L	7.7	40	40	51.6	50.8	110	108	75-125	2	20	
Selenium	ug/L	2.7	40	40	40.9	41.1	95	96	75-125	1	20	
Thallium	ug/L	ND	40	40	36.7	36.7	92	92	75-125	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2885390 2885391

Parameter	Units	60367013002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	37.7	37.9	94	95	75-125	1	20	
Arsenic	ug/L	ND	40	40	40.1	40.5	99	100	75-125	1	20	
Barium	ug/L	25.0	40	40	63.2	63.9	96	97	75-125	1	20	
Beryllium	ug/L	ND	40	40	35.4	35.2	88	88	75-125	1	20	
Cadmium	ug/L	ND	40	40	34.4	34.6	86	86	75-125	0	20	
Chromium	ug/L	1.4	40	40	37.7	38.3	91	92	75-125	2	20	
Cobalt	ug/L	ND	40	40	36.7	37.0	90	91	75-125	1	20	
Lead	ug/L	ND	40	40	34.5	34.8	85	86	75-125	1	20	
Molybdenum	ug/L	1.6	40	40	44.5	44.9	107	108	75-125	1	20	
Selenium	ug/L	28.6	40	40	65.4	67.1	92	96	75-125	3	20	
Thallium	ug/L	ND	40	40	35.5	35.6	89	89	75-125	0	20	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2885392 2885393

Parameter	Units	60367013003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	38.9	38.9	97	97	75-125	0	20	
Arsenic	ug/L	ND	40	40	39.1	39.1	98	98	75-125	0	20	
Barium	ug/L	ND	40	40	39.8	39.7	99	99	75-125	0	20	
Beryllium	ug/L	ND	40	40	42.0	42.9	105	107	75-125	2	20	
Cadmium	ug/L	ND	40	40	38.7	38.9	97	97	75-125	0	20	
Chromium	ug/L	ND	40	40	41.7	41.8	103	103	75-125	0	20	
Cobalt	ug/L	ND	40	40	38.3	38.3	96	96	75-125	0	20	
Lead	ug/L	ND	40	40	39.4	39.8	98	99	75-125	1	20	
Molybdenum	ug/L	ND	40	40	41.0	40.7	102	102	75-125	1	20	
Selenium	ug/L	ND	40	40	38.7	39.1	97	98	75-125	1	20	
Thallium	ug/L	ND	40	40	39.1	39.4	98	98	75-125	1	20	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

QC Batch: 716209
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60367013001, 60367013002

METHOD BLANK: 2881071
Matrix: Water
Associated Lab Samples: 60367013001, 60367013002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	04/22/21 13:01	

LABORATORY CONTROL SAMPLE: 2881072

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1020	102	80-120	

SAMPLE DUPLICATE: 2881074

Parameter	Units	60367013001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	934	917	2	10	

SAMPLE DUPLICATE: 2881075

Parameter	Units	60367013002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3370	2960	13	10	D6

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

QC Batch: 716210
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60367013003

METHOD BLANK: 2881078 Matrix: Water
Associated Lab Samples: 60367013003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	04/22/21 13:02	

LABORATORY CONTROL SAMPLE: 2881079

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1050	105	80-120	

SAMPLE DUPLICATE: 2881080

Parameter	Units	60367012001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	899	907	1	10	

SAMPLE DUPLICATE: 2881081

Parameter	Units	60367013003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	17.0	13.5	23	10	D6

SAMPLE DUPLICATE: 2881082

Parameter	Units	60367051001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	825	836	1	10	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

QC Batch: 716976
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60367013002, 60367013003

METHOD BLANK: 2884364 Matrix: Water
Associated Lab Samples: 60367013002, 60367013003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/29/21 15:51	
Fluoride	mg/L	ND	0.20	04/29/21 15:51	
Sulfate	mg/L	ND	1.0	04/29/21 15:51	

METHOD BLANK: 2888392 Matrix: Water
Associated Lab Samples: 60367013002, 60367013003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/30/21 09:23	
Fluoride	mg/L	ND	0.20	04/30/21 09:23	
Sulfate	mg/L	ND	1.0	04/30/21 09:23	

LABORATORY CONTROL SAMPLE: 2884365

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	101	80-120	
Fluoride	mg/L	2.5	2.5	102	80-120	
Sulfate	mg/L	5	4.9	98	80-120	

LABORATORY CONTROL SAMPLE: 2888393

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	80-120	
Fluoride	mg/L	2.5	2.6	102	80-120	
Sulfate	mg/L	5	4.8	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2884366 2884367

Parameter	Units	60367013002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	60.0	50	50	131	126	141	133	80-120	3	15	M1
Fluoride	mg/L	ND	2.5	2.5	2.6	2.7	104	108	80-120	4	15	
Sulfate	mg/L	1930	1000	1000	2890	2880	96	95	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2884369 2884370

Parameter	Units	60367013003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	5	5	5.7	5.7	114	115	80-120	1	15	
Fluoride	mg/L	ND	2.5	2.5	2.9	2.9	116	117	80-120	1	15	
Sulfate	mg/L	ND	5	5	5.6	5.6	112	113	80-120	1	15	

SAMPLE DUPLICATE: 2884368

Parameter	Units	60367013002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	60.0	57.1	5	15	
Fluoride	mg/L	ND	ND		15	
Sulfate	mg/L	1930	1820	6	15	

SAMPLE DUPLICATE: 2884371

Parameter	Units	60367013003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	ND	ND		15	
Fluoride	mg/L	ND	ND		15	
Sulfate	mg/L	ND	ND		15	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

QC Batch: 718187
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60367013001

METHOD BLANK: 2888595 Matrix: Water
Associated Lab Samples: 60367013001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	05/04/21 17:42	
Fluoride	mg/L	ND	0.20	05/04/21 17:42	
Sulfate	mg/L	ND	1.0	05/04/21 17:42	

METHOD BLANK: 2891189 Matrix: Water
Associated Lab Samples: 60367013001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	05/05/21 09:05	
Fluoride	mg/L	ND	0.20	05/05/21 09:05	
Sulfate	mg/L	ND	1.0	05/05/21 09:05	

LABORATORY CONTROL SAMPLE: 2888596

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	103	80-120	
Fluoride	mg/L	2.5	2.5	101	80-120	
Sulfate	mg/L	5	4.9	98	80-120	

LABORATORY CONTROL SAMPLE: 2891190

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	80-120	
Fluoride	mg/L	2.5	2.4	94	80-120	
Sulfate	mg/L	5	4.8	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2888597 2888598

Parameter	Units	60367013001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	150	50	50	201	199	102	98	80-120	1	15	E
Fluoride	mg/L	0.33	5	5	4.7	4.3	87	79	80-120	9	15	M1
Sulfate	mg/L	329	250	250	567	570	95	96	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

SAMPLE DUPLICATE: 2888599

Parameter	Units	60367013001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	150	143	5	15	
Fluoride	mg/L	0.33	0.59	56	15	D6
Sulfate	mg/L	329	321	2	15	

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QUALIFIERS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

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

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
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: 60630103.200.0 PRPA CCR
Pace Project No.: 60367013

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60367013001	**BAT-12-CCR**	EPA 3010	717314	EPA 6010	717428
60367013002	**BAT-04R-CCR**	EPA 3010	717314	EPA 6010	717428
60367013003	**ERB-04-CCR**	EPA 3010	717314	EPA 6010	717428
60367013001	**BAT-12-CCR**	EPA 3010	717315	EPA 6020	717429
60367013002	**BAT-04R-CCR**	EPA 3010	717315	EPA 6020	717429
60367013003	**ERB-04-CCR**	EPA 3010	717315	EPA 6020	717429
60367013001	**BAT-12-CCR**	EPA 7470	718980	EPA 7470	719364
60367013002	**BAT-04R-CCR**	EPA 7470	718980	EPA 7470	719364
60367013003	**ERB-04-CCR**	EPA 7470	718980	EPA 7470	719364
60367013001	**BAT-12-CCR**	SM 2540C	716209		
60367013002	**BAT-04R-CCR**	SM 2540C	716209		
60367013003	**ERB-04-CCR**	SM 2540C	716210		
60367013001	**BAT-12-CCR**	EPA 9056	718187		
60367013002	**BAT-04R-CCR**	EPA 9056	716976		
60367013003	**ERB-04-CCR**	EPA 9056	716976		

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Sample Condition Upon Receipt

WO# : 60367013

60367013

Client Name: AEcom

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 9308 4773 3969 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: T-298 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.4 **Corr. Factor** 0.0 **Corrected** 1.4

Date and initials of person examining contents: 04/19/21

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# 603173	☑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: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately. 5 ms/msd 3 reg

CCR KS

Page: 1 of 1

Section A
Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B
Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	
Project Name:	PRPA Rawhide CCR
Project Number:	

Section C
Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D
Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start Date	Composite Start Time	Composite End/Grab Date	Composite End/Grab Time	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	9056 Cl, F, SO4	6020 Total Metals*	6010 Total Metals**	7470 Total Mercury	2540C TDS							Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																			N	N	N	N	N									
1	BAT-12-CCR	WT	G	—		4/15/21	0940	5	3		2								✓	✓	✓	✓	✓	2BP3U	BP1U					N	2BP1N
2	BAT-04R-CCR	WT	G	—		4/15/21	1230	3	2		1								✓	✓	✓	✓	✓	BP3U	↓					N	BP1N
3	ERB-04-CCR	WT	G	—		4/15/21	1416	3	2		1								✓	✓	✓	✓	✓	↓		↓				N	↓
4																																
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

Cy Ault

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*Be, Cr, Co, As, Se, Mo, Cd, Sb, Ba, Tl, Pb	Cy Ault / AECOM	4/15/21	~~0940~~ 1700	[illegible]	4/17	0855	1.4	Y	Y	Y
**B, Ca, Li										
MS/MSD collected at BAT-12-CCR										

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Cy Ault					
SIGNATURE of SAMPLER:	Chris Ahrendt	DATE Signed (MM/DD/YY): 4/15/2021				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60367522
Sampling Event: April 21, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: June 7, 2021
Peer Reviewer: Katie Abbott — Date Completed: June 25, 2021

This report contains the final results of the data validation conducted for the water samples collected April 21st, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540-R-2017-001 (January 2017).

General Overall Assessment:

__X__ Data are usable without qualification.
_____ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.	X		
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.			X
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • When both the sample and duplicate values are >5x the reporting limit (RL), acceptable sampling and analytical precision is indicated by an relative percent difference (RPD) between the results of ≤20%. • Where the result for one or both analytes of the method duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the method duplicate results is <1xRL.			X

<table>
<tr><th>Review Parameter</th><th>Criteria</th><th colspan="3">Criteria Met?</th></tr>
<tr><td>Sample-specific Parameters</td><td>For each “No” response, list qualified data and bias direction in Table 1 or explain no qualification in comments.</td><td>Yes</td><td>No</td><td>NA</td></tr>
<tr><td>Field Duplicate</td><td>The field duplicate sample results satisfied the evaluation criteria below:
• When both the sample and duplicate values are >5xRL acceptable sampling and analytical precision is indicated by a RPD between the results of ≤30%.
• Where the result for one or both analytes of the field duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the field duplicate results is <2xRL.</td><td></td><td></td><td>X</td></tr>
<tr><td>Equipment Blanks</td><td>No target analytes reported in the associated equipment blank.
<table>
<tr><th>Analyte</th><th>Concentration</th></tr>
<tr><th colspan="2">60367013</th></tr>
<tr><td colspan="2">ERB-04-CCR</td></tr>
<tr><td>TDS</td><td>17.0 mg/L</td></tr>
</table>
mg/L – Milligrams per Liter
TDS – Total Dissolved Solids</td><td></td><td>X[1]</td><td></td></tr>
<tr><td>Reporting Limits Met</td><td>No samples performed at dilutions or reported as non-detect at elevated method detection limits/reporting limits.</td><td>X</td><td></td><td></td></tr>
<tr><td>Reporting</td><td>No reporting issues were found and further qualification was not considered necessary.</td><td>X</td><td></td><td></td></tr>
<tr><td>Package Completeness</td><td>No results were qualified as unusable and the data are 100% complete.</td><td>X</td><td></td><td></td></tr>
<tr><th colspan="5">Comments</th></tr>
<tr><td colspan="5">1 – As the TDS sample results were reported at concentrations >5x the concentration of the blank contamination, qualification was not considered necessary.</td></tr>
</table>

> – Greater Than
mg/L – Milligram per Liter
LCSD – Laboratory Control Sample Duplicate
NA – Not Applicable
TDS – Total Dissolved Solids

< – Less Than
% – Percent
MB – Method Blank
RL – Reporting Limit

≤ – Less Than or Equal To
LCS – Laboratory Control Sample
MS/MSD – Matrix Spike/Matrix Spike Duplicate
RPD – Relative Percent Difference

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

May 14, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on April 22, 2021. 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 Analytical Services - Kansas City

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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CERTIFICATIONS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

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

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SAMPLE SUMMARY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60367522001	**BAT-10-CCR**	Water	04/21/21 09:20	04/22/21 07:50
60367522003	**BAT-11-CCR**	Water	04/21/21 12:45	04/22/21 07:50

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SAMPLE ANALYTE COUNT

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60367522001	**BAT-10-CCR**	EPA 6010	KSK	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	LDB	1	PASI-K
		EPA 9056	CRN2	3	PASI-K
60367522003	**BAT-11-CCR**	EPA 6010	KSK	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	OMT	1	PASI-K
		SM 2540C	LDB	1	PASI-K
		EPA 9056	CRN2	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

Sample: BAT-10-CCR **Lab ID: 60367522001** Collected: 04/21/21 09:20 Received: 04/22/21 07:50 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							
Boron	**798**	ug/L	100	1	05/07/21 13:48	05/12/21 13:09	7440-42-8	
Calcium	**396000**	ug/L	200	1	05/07/21 13:48	05/12/21 13:09	7440-70-2	
Lithium	**212**	ug/L	10.0	1	05/07/21 13:48	05/12/21 13:09	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:20	7440-36-0	
Arsenic	ND	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:20	7440-38-2	
Barium	**18.8**	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:20	7440-39-3	
Beryllium	ND	ug/L	0.50	1	05/07/21 13:48	05/14/21 12:20	7440-41-7	
Cadmium	ND	ug/L	0.50	1	05/07/21 13:48	05/14/21 12:20	7440-43-9	
Chromium	ND	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:20	7440-47-3	
Cobalt	ND	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:20	7440-48-4	
Lead	ND	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:20	7439-92-1	
Molybdenum	**8.2**	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:20	7439-98-7	
Selenium	**150**	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:20	7782-49-2	
Thallium	ND	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:20	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/11/21 07:28	05/12/21 11:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**3810**	mg/L	66.7	1		04/28/21 11:29		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**22.8**	mg/L	2.0	2		04/30/21 02:22	16887-00-6	
Fluoride	ND	mg/L	0.20	1		04/30/21 02:07	16984-48-8	
Sulfate	**14.8**	mg/L	1.0	1		04/30/21 02:07	14808-79-8	

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ANALYTICAL RESULTS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

Sample: BAT-11-CCR **Lab ID: 60367522003** Collected: 04/21/21 12:45 Received: 04/22/21 07:50 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							
Boron	**316**	ug/L	100	1	05/07/21 13:48	05/12/21 13:15	7440-42-8	
Calcium	**88200**	ug/L	1000	5	05/07/21 13:48	05/13/21 14:15	7440-70-2	
Lithium	**40.2**	ug/L	10.0	1	05/07/21 13:48	05/12/21 13:15	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:49	7440-36-0	
Arsenic	ND	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:49	7440-38-2	
Barium	**65.2**	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:49	7440-39-3	
Beryllium	ND	ug/L	0.50	1	05/07/21 13:48	05/14/21 12:49	7440-41-7	
Cadmium	ND	ug/L	0.50	1	05/07/21 13:48	05/14/21 12:49	7440-43-9	
Chromium	**1.2**	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:49	7440-47-3	
Cobalt	ND	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:49	7440-48-4	
Lead	ND	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:49	7439-92-1	
Molybdenum	**8.4**	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:49	7439-98-7	
Selenium	**7.3**	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:49	7782-49-2	
Thallium	ND	ug/L	1.0	1	05/07/21 13:48	05/14/21 12:49	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	05/11/21 07:28	05/12/21 11:52	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**1000**	mg/L	10.0	1		04/28/21 11:30		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**5.3**	mg/L	1.0	1		04/30/21 03:33	16887-00-6	
Fluoride	ND	mg/L	0.20	1		04/30/21 03:33	16984-48-8	
Sulfate	**166**	mg/L	50.0	50		04/30/21 03:48	14808-79-8	

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

QC Batch: 719272
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60367522001, 60367522003

METHOD BLANK: 2892541 Matrix: Water
Associated Lab Samples: 60367522001, 60367522003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	05/11/21 16:48	

LABORATORY CONTROL SAMPLE: 2892542

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.4	88	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2892543 2892544

Parameter	Units	60367195003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.1	3.9	83	77	75-125	6	20	

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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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

QC Batch: 719160
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60367522001, 60367522003

METHOD BLANK: 2892294
Matrix: Water
Associated Lab Samples: 60367522001, 60367522003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	05/12/21 12:15	
Calcium	ug/L	ND	200	05/12/21 12:15	
Lithium	ug/L	ND	10.0	05/12/21 12:15	

LABORATORY CONTROL SAMPLE: 2892295

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	945	94	80-120	
Calcium	ug/L	10000	9620	96	80-120	
Lithium	ug/L	1000	1030	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2892296 2892297

Parameter	Units	60367195001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	438	1000	1000	1380	1370	94	93	75-125	1	20	
Calcium	ug/L	57500	10000	10000	65600	64300	81	68	75-125	2	20	M1
Lithium	ug/L	108	1000	1000	1090	1070	98	96	75-125	1	20	

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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Lenexa, KS 66219
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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

QC Batch: 719161
QC Batch Method: EPA 3010
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60367522001, 60367522003

METHOD BLANK: 2892300
Matrix: Water
Associated Lab Samples: 60367522001, 60367522003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	05/14/21 12:11	
Arsenic	ug/L	ND	1.0	05/14/21 12:11	
Barium	ug/L	ND	1.0	05/14/21 12:11	
Beryllium	ug/L	ND	0.50	05/14/21 12:11	
Cadmium	ug/L	ND	0.50	05/14/21 12:11	
Chromium	ug/L	ND	1.0	05/14/21 12:11	
Cobalt	ug/L	ND	1.0	05/14/21 12:11	
Lead	ug/L	ND	1.0	05/14/21 12:11	
Molybdenum	ug/L	ND	1.0	05/14/21 12:11	
Selenium	ug/L	ND	1.0	05/14/21 12:11	
Thallium	ug/L	ND	1.0	05/14/21 12:11	

LABORATORY CONTROL SAMPLE: 2892301

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.9	100	80-120	
Arsenic	ug/L	40	40.4	101	80-120	
Barium	ug/L	40	38.4	96	80-120	
Beryllium	ug/L	40	42.1	105	80-120	
Cadmium	ug/L	40	40.4	101	80-120	
Chromium	ug/L	40	40.1	100	80-120	
Cobalt	ug/L	40	39.2	98	80-120	
Lead	ug/L	40	39.7	99	80-120	
Molybdenum	ug/L	40	40.2	100	80-120	
Selenium	ug/L	40	40.6	101	80-120	
Thallium	ug/L	40	38.9	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2892302 2892303

Parameter	Units	60367195002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	37.9	37.5	93	92	75-125	1	20	
Arsenic	ug/L	ND	40	40	39.6	39.5	97	97	75-125	0	20	
Barium	ug/L	27.5	40	40	64.7	65.4	93	95	75-125	1	20	
Beryllium	ug/L	ND	40	40	35.1	34.8	88	87	75-125	1	20	
Cadmium	ug/L	ND	40	40	36.9	36.6	92	91	75-125	1	20	
Chromium	ug/L	1.4	40	40	39.9	37.7	96	91	75-125	6	20	

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: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2892302 2892303

Parameter	Units	60367195002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	38.0	37.5	92	91	75-125	1	20	
Lead	ug/L	ND	40	40	36.0	35.7	88	88	75-125	1	20	
Molybdenum	ug/L	9.7	40	40	51.8	51.7	105	105	75-125	0	20	
Selenium	ug/L	ND	40	40	37.8	37.4	92	91	75-125	1	20	
Thallium	ug/L	ND	40	40	36.3	36.1	91	90	75-125	0	20	

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.

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

QC Batch: 717177
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60367522001, 60367522003

METHOD BLANK: 2884914 Matrix: Water
Associated Lab Samples: 60367522001, 60367522003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	04/28/21 11:26	

LABORATORY CONTROL SAMPLE: 2884915

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1020	102	80-120	

SAMPLE DUPLICATE: 2884916

Parameter	Units	60367347001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3990	3980	0	10	

SAMPLE DUPLICATE: 2884917

Parameter	Units	60367522002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3250	3270	0	10	

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.

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QUALITY CONTROL DATA

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

QC Batch: 716976
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60367522001, 60367522003

METHOD BLANK: 2884364 Matrix: Water
Associated Lab Samples: 60367522001, 60367522003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/29/21 15:51	
Fluoride	mg/L	ND	0.20	04/29/21 15:51	
Sulfate	mg/L	ND	1.0	04/29/21 15:51	

METHOD BLANK: 2888392 Matrix: Water
Associated Lab Samples: 60367522001, 60367522003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	04/30/21 09:23	
Fluoride	mg/L	ND	0.20	04/30/21 09:23	
Sulfate	mg/L	ND	1.0	04/30/21 09:23	

LABORATORY CONTROL SAMPLE: 2884365

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	101	80-120	
Fluoride	mg/L	2.5	2.5	102	80-120	
Sulfate	mg/L	5	4.9	98	80-120	

LABORATORY CONTROL SAMPLE: 2888393

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	80-120	
Fluoride	mg/L	2.5	2.6	102	80-120	
Sulfate	mg/L	5	4.8	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2884366 2884367

Parameter	Units	60367013002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	60.0	50	50	131	126	141	133	80-120	3	15	M1
Fluoride	mg/L	ND	2.5	2.5	2.6	2.7	104	108	80-120	4	15	
Sulfate	mg/L	1930	1000	1000	2890	2880	96	95	80-120	0	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: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2884369 2884370

Parameter	Units	60367013003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	5	5	5.7	5.7	114	115	80-120	1	15	
Fluoride	mg/L	ND	2.5	2.5	2.9	2.9	116	117	80-120	1	15	
Sulfate	mg/L	ND	5	5	5.6	5.6	112	113	80-120	1	15	

SAMPLE DUPLICATE: 2884368

Parameter	Units	60367013002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	60.0	57.1	5	15	
Fluoride	mg/L	ND	ND		15	
Sulfate	mg/L	1930	1820	6	15	

SAMPLE DUPLICATE: 2884371

Parameter	Units	60367013003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	ND	ND		15	
Fluoride	mg/L	ND	ND		15	
Sulfate	mg/L	ND	ND		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.

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Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

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

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

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367522

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60367522001	**BAT-10-CCR**	EPA 3010	719160	EPA 6010	719233
60367522003	**BAT-11-CCR**	EPA 3010	719160	EPA 6010	719233
60367522001	**BAT-10-CCR**	EPA 3010	719161	EPA 6020	719235
60367522003	**BAT-11-CCR**	EPA 3010	719161	EPA 6020	719235
60367522001	**BAT-10-CCR**	EPA 7470	719272	EPA 7470	719693
60367522003	**BAT-11-CCR**	EPA 7470	719272	EPA 7470	719693
60367522001	**BAT-10-CCR**	SM 2540C	717177		
60367522003	**BAT-11-CCR**	SM 2540C	717177		
60367522001	**BAT-10-CCR**	EPA 9056	716976		
60367522003	**BAT-11-CCR**	EPA 9056	716976		

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Sample Condition Upon Receipt

WO# : 60367522

60367522

Client Name: AECOM

Courier: FedEx ☒ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 9358 4773 3638 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 ☒ Zplc

Thermometer Used: T298 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.0 **Corr. Factor** 0.0 **Corrected** 1.0

Date and initials of person examining contents: 4/23/21 SP

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# LED3173	☒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: _____

CCR-KS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: ~~2~~ JL 1 of 2 ~~2~~ JL

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	
Project Name:	PRPA Rawhide CCR
Project Number:	

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start Date	Composite Start Time	Composite End/Grab Date	Composite End/Grab Time	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): 9056 Cl, F, SO4	6020 Total Metals*	6010 Total Metals**	7470 Total Mercury	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60367522
1	BAT-10-CCR	WT	G	—		4/21/21	0920		3	2		1						✓	✓	✓	✓	✓	N	001
2	MW-1 (ASH-01)-CCR	WT	G	—		4/21/21	1045		3	2		1						✓	✓	✓	✓	✓	N	002
3	BAT-11-CCR	WT	G	—		4/21/21	1245		3	2		1						✓	✓	✓	✓	✓	N	003
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

JL

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*Be, Cr, Co, As, Se, Mo, Cd, Sb, Ba, Tl, Pb	Jack Levy AECOM	4/21/21	1700	Moniter Pace	4/22/21	0750	1.0	Y	Y	Y
**B, Ca, Li										

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:					
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY):				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

CCR-KS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: JL 1 of 2 JL

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	
Project Name:	PRPA Rawhide CCR
Project Number:	

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): 9056 Cl, F, SO4	6020 Total Metals*	6010 Total Metals**	7470 Total Mercury	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60367522
1	BAT-10-CCR	WT	G	—		4/21/21	0920		3	2		1						✓	✓	✓	✓	✓	N	001
2				—																				
3	BAT-11-CCR	WT	G	—		4/21/21	1245		3	2		1						✓	✓	✓	✓	✓	N	003
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

JL

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*Be, Cr, Co, As, Se, Mo, Cd, Sb, Ba, Tl, Pb	Jack Levy AECOM	4/21/21	1700	Mariner Pace	4/22/21	0750	1.0	Y	Y	Y
**B, Ca, Li	Brian Rothmeyer	04/29/21								

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:					
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY):				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60367643
Sampling Event: April 15 and 21, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: June 8, 2021
Peer Reviewer: Katie Abbott — Date Completed: June 25, 2021

This report contains the final results of the data validation conducted for the water samples collected April 15th and 21st, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540-R-2017-001 (January 2017).

General Overall Assessment:

__X__ Data are usable without qualification.
_____ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.		X[1]	
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.	X		
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • The agreement between parent sample results and laboratory duplicate sample results were evaluated. The duplicate error ratios (DER) met the criterion of a DER ≤2.			X
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below: • The agreement between parent sample results and field duplicate sample results were evaluated. The DER met the criterion of a DER ≤2.	X		

<table>
<tr><th>Review Parameter</th><th>Criteria</th><th colspan="3">Criteria Met?</th></tr>
<tr><td>Sample-specific Parameters</td><td>For each “No” response, list qualified data and bias direction in Table 1 or explain no qualification in comments.</td><td>Yes</td><td>No</td><td>NA</td></tr>
<tr><td>Equipment Blanks</td><td>No target analytes reported in the associated equipment blank.
<table>
<tr><th>Analyte</th><th>Concentration</th></tr>
<tr><th colspan="2">60366669</th></tr>
<tr><td colspan="2">ERB-01-CCR</td></tr>
<tr><td>Radium-228</td><td>1.18 ± 0.526 pCi/L</td></tr>
<tr><td>Total Radium</td><td>1.46 ± 1.29 pCi/L</td></tr>
</table>
pCi/L – Picocuries Per Liter</td><td></td><td>X[2]</td><td></td></tr>
<tr><td>Detection Limits Mets</td><td>For radiochemical results if the associated uncertainty was greater than the reported result, the 2 sigma (σ) uncertainty multiplied by 1.65 was less than or equal to the specified detection limit.</td><td>X</td><td></td><td></td></tr>
<tr><td>Tracer and/or Carrier Recovery</td><td>The sample specific recoveries were within the laboratory limits.</td><td>X</td><td></td><td></td></tr>
<tr><td>Reporting</td><td>No reporting issues were found and further qualification was not considered necessary.</td><td>X</td><td></td><td></td></tr>
<tr><td>Package Completeness</td><td>No results were qualified as unusable and the data are 100% complete.</td><td>X</td><td></td><td></td></tr>
<tr><th colspan="5">Comments</th></tr>
<tr><td colspan="5">1 – Samples were received intact; however, no cooler temperature was recorded upon receipt at the laboratory. Due to the stability of the radiological parameters, data qualification on the basis of temperature exceedance is not considered necessary.

2 – As the associated radium-228 and total radium sample results were reported at concentrations less than the MDC, qualification was not considered necessary.</td></tr>
</table>

> – Greater Than
< – Less Than
≤ – Less Than or Equal To
± – Plus or Minus/High or Low Bias
σ – Sigma (Uncertainty)
pCi/L – Picocuries Per Liter
% – Percent
DER – Duplicate Error Ratio
LCS – Laboratory Control Sample
LCSD – Laboratory Control Sample Duplicate
MB – Method Blank
MDC – Minimum Detectable Concentration
MS/MSD – Matrix Spike/Matrix Spike Duplicate
NA – Not Applicable
Ra – Radium
RPD – Relative Percent Difference

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

May 14, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on April 22, 2021. 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 Analytical Services - Greensburg

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

Sincerely,

Heather M. Wilson

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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

CERTIFICATIONS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60367643001	**BAT-12-CCR**	Water	04/15/21 09:40	04/22/21 09:45
60367643002	**BAT-12-CCR MS**	Water	04/15/21 09:40	04/22/21 09:45
60367643003	**BAT-12-CCR MSD**	Water	04/15/21 09:40	04/22/21 09:45
60367643004	**BAT-04R-CCR**	Water	04/15/21 12:30	04/22/21 09:45
60367643005	**ERB-04-CCR**	Water	04/15/21 14:16	04/22/21 09:45
60367643006	**BAT-10-CCR**	Water	04/21/21 09:20	04/22/21 09:45
60367643008	**BAT-11-CCR**	Water	04/21/21 12:45	04/22/21 09:45

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(913)599-5665

SAMPLE ANALYTE COUNT

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60367643001	**BAT-12-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60367643002	**BAT-12-CCR MS**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
60367643003	**BAT-12-CCR MSD**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
60367643004	**BAT-04R-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60367643005	**ERB-04-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60367643006	**BAT-10-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60367643008	**BAT-11-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

Sample: BAT-12-CCR **Lab ID: 60367643001** Collected: 04/15/21 09:40 Received: 04/22/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.154 ± 0.363 (0.673)** **C:NA T:94%**	pCi/L	05/13/21 15:38	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.552 ± 0.526 (1.09)** **C:76% T:79%**	pCi/L	05/13/21 12:56	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.706 ± 0.889 (1.76)**	pCi/L	05/14/21 13:50	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

Sample: BAT-12-CCR MS **Lab ID: 60367643002** Collected: 04/15/21 09:40 Received: 04/22/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**110.87 %REC ± NA (NA) C:NA T:NA%**	pCi/L	05/13/21 15:38	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**101.85 %REC ± NA (NA) C:NA T:NA**	pCi/L	05/13/21 12:56	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

Sample: BAT-12-CCR MSD **Lab ID: 60367643003** Collected: 04/15/21 09:40 Received: 04/22/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**83.56 %REC 28.10 RPD ± NA (NA) C:NA T:NA%**	pCi/L	05/13/21 15:38	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**82.96 %REC 20.44 RPD ± NA (NA) C:NA T:NA**	pCi/L	05/13/21 12:56	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

Sample: BAT-04R-CCR **Lab ID: 60367643004** Collected: 04/15/21 12:30 Received: 04/22/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.378 ± 0.575 (0.990) C:NA T:90%**	pCi/L	05/13/21 15:38	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.143 ± 0.437 (0.976) C:74% T:89%**	pCi/L	05/13/21 12:56	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.521 ± 1.01 (1.97)**	pCi/L	05/14/21 13:50	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

Sample: ERB-04-CCR **Lab ID: 60367643005** Collected: 04/15/21 14:16 Received: 04/22/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.311 ± 0.530 (0.935) C:NA T:84%**	pCi/L	05/13/21 15:38	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.50 ± 0.871 (1.66) C:73% T:80%**	pCi/L	05/13/21 16:24	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.81 ± 1.40 (2.60)**	pCi/L	05/14/21 13:50	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

Sample: BAT-10-CCR **Lab ID: 60367643006** Collected: 04/21/21 09:20 Received: 04/22/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.507 ± 0.500 (0.761)** **C:NA T:89%**	pCi/L	05/13/21 15:38	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.42 ± 0.771 (1.43)** **C:73% T:81%**	pCi/L	05/13/21 16:24	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.93 ± 1.27 (2.19)**	pCi/L	05/14/21 13:50	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

Sample: BAT-11-CCR **Lab ID: 60367643008** Collected: 04/21/21 12:45 Received: 04/22/21 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.389 ± 0.510 (0.850) C:NA T:89%**	pCi/L	05/13/21 16:06	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.867 ± 0.733 (1.50) C:77% T:82%**	pCi/L	05/13/21 16:24	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.26 ± 1.24 (2.35)**	pCi/L	05/14/21 13:50	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

QC Batch: 446068 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60367643001, 60367643002, 60367643003, 60367643004, 60367643005, 60367643006, 60367643008

METHOD BLANK: 2153104 | Matrix: Water
Associated Lab Samples: 60367643001, 60367643002, 60367643003, 60367643004, 60367643005, 60367643006, 60367643008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.242 ± 0.252 (0.681) C:NA T:96%	pCi/L	05/13/21 15:38	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

QC Batch: 446070 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60367643001, 60367643002, 60367643003, 60367643004, 60367643005, 60367643006, 60367643008

METHOD BLANK: 2153106 | Matrix: Water
Associated Lab Samples: 60367643001, 60367643002, 60367643003, 60367643004, 60367643005, 60367643006, 60367643008

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.202 ± 0.256 (0.642) C:80% T:89%	pCi/L	05/13/21 12:52	

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.

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QUALIFIERS

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

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.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60630103.200.0 PRPA CCR
Pace Project No.: 60367643

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60367643001	**BAT-12-CCR**	EPA 903.1	446068		
60367643002	**BAT-12-CCR MS**	EPA 903.1	446068		
60367643003	**BAT-12-CCR MSD**	EPA 903.1	446068		
60367643004	**BAT-04R-CCR**	EPA 903.1	446068		
60367643005	**ERB-04-CCR**	EPA 903.1	446068		
60367643006	**BAT-10-CCR**	EPA 903.1	446068		
60367643008	**BAT-11-CCR**	EPA 903.1	446068		
60367643001	**BAT-12-CCR**	EPA 904.0	446070		
60367643002	**BAT-12-CCR MS**	EPA 904.0	446070		
60367643003	**BAT-12-CCR MSD**	EPA 904.0	446070		
60367643004	**BAT-04R-CCR**	EPA 904.0	446070		
60367643005	**ERB-04-CCR**	EPA 904.0	446070		
60367643006	**BAT-10-CCR**	EPA 904.0	446070		
60367643008	**BAT-11-CCR**	EPA 904.0	446070		
60367643001	**BAT-12-CCR**	Total Radium Calculation	448083		
60367643004	**BAT-04R-CCR**	Total Radium Calculation	448083		
60367643005	**ERB-04-CCR**	Total Radium Calculation	448083		
60367643006	**BAT-10-CCR**	Total Radium Calculation	448083		
60367643008	**BAT-11-CCR**	Total Radium Calculation	448083		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

CCR-PTA

2 nec
1 ms/msd

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	
Project Name:	rev
Project Number:	

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-12-CCR	WT	G	—		4/15/21	0940		6			6							✓	✓	✓	N	
2	BAT-04R-CCR	WT	G	—		4/15/21	1230		2			2							✓	✓	✓	N	
3	EPB-04-CCR	WT	G	—		4/15/21	1416		2			2							✓	✓	✓	N	
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
MS/MSD collected at	CY Ocult / AECOM	4/15/2021		Danny Cabrera	4-22-21	09:45	—	N	Y	Y
BAT-12-CCR	Jack Lay AECOM	4/21/21	1700							

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Dept: 6003 Date : 27Mar21 Shipping : 0.00
Customer : 793010 Weight : 40 LBS Special : 0.00
Phone : (317)875-5894 COD : Handling : 0.00
Dept: client services DV : 0.00 Total : 0.00

Svcs: PRIORITY OVERNIGHT Master 9308 4773 4656
TRCK: 9308 4773 4689

SIGNATURE of SAMPLER: CY Ocult

DATE Signed (MM/DD/YY): 4/15/2021

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

CCR-~~RS~~PA

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kaliuri
Copy To:	Brian Rothmeyer
Purchase Order No.:	
Project Name:	rev
Project Number:	

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-10-CCR	WT	G	—		4/21/21	0920		2			2						✓	✓	✓	N	
2	MW-1(ASH-01)-CCR	WT	G	—		4/21/21	1045		2			2						✓	✓	✓	N	
3	BAT-11-CCR	WT	G	—		4/21/21	1245		2			2						✓	✓	✓	N	
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

JL

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Jack Levy AECOM	4/21/21	1700	Jimmy Cabrera	4-22-2	09:15	—	N	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Aecom Project # _____

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 9308 4773 4689

Label
LIMS Login

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used — Type of Ice: Wet Blue None

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 10D1101 Date and Initials of person examining contents: 4-26-21 JA

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH <2
All containers meet method preservation requirements.	✓			Initial when completed JA Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JA Date: 4-26-21 Survey Meter SN: 1563

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

CCR-PTA

2 neg
1 ms/msd

Page: 1 of 2

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	
Project Name:	rev
Project Number:	

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-12-CCR	WT	G	—		4/15/21	0940		6			6							✓	✓	✓	N	
2	BAT-04R-CCR	WT	G	—		4/15/21	1230		2			2							✓	✓	✓	N	
3	EB-04-CCR	WT	G	—		4/15/21	1416		2			2							✓	✓	✓	N	
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
MS/MSD collected at	Cy Ocult / AECOM	4/15/2021		Danny Cabrera	4-22-21	09:45	—	N	Y	Y
BAT-12-CCR	Jack Lay AECOM	4/21/21	1700							

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Dept: 6003 Date : 27Mar21 Shipping : 0.00
Customer : 793010 Weight : 40 LBS Special : 0.00
Phone : (317)875-5894 COD : Handling : 0.00
Dept: client services DV : 0.00 Total : 0.00

Svcs: PRIORITY OVERNIGHT Master 9308 4773 4656
TRCK: 9308 4773 4689

SIGNATURE of SAMPLER: Chris Ahrendt / Cy Ocult

DATE Signed (MM/DD/YY): 4/15/2021

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

CCR-~~RSPA~~

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 2 of 2

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	AECOM	Report To:	Vasanta Kalluri	Attention:	Accounts Payable
Address:	6200 South Quebec St	Copy To:	Brian Rothmeyer	Company Name:	AECOM
	Greenwood Village, CO 80111			Address:	Same as Section A
Email To:	brian.rothmeyer@aecom.com	Purchase Order No.:		Pace Quote Reference:	42700
Phone:	(303) 740-2614 Fax:	Project Name:	rev	Pace Project Manager:	Heather Wilson
Requested Due Date/TAT:		Project Number:		Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: CO

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-10-CCR	WT	G	—		4/21/21	0920		2			2						✓	✓	✓	N	
2				—																		
3	BAT-11-CCR	WT	G	—		4/21/21	1245		2			2						✓	✓	✓	N	
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

JL

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Jack Levy AECOM	4/21/21	1700	Jonny Cabrera	4-22-2	09:15	—	N	Y	Y
	Brian Rothmeyer	04/26/21								

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Quality Control Sample Performance Assessment

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Test:	Ra-226
Analyst:	MK1
Date:	5/7/2021
Batch ID:	60275
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2153104
MB concentration:	-0.242
M/B Counting Uncertainty:	0.251
MB MDC:	0.681
MB Numerical Performance Indicator:	-1.89
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS60275	LCSD60275
Count Date:	5/13/2021	
Spike I.D.:	20-032	
Spike Concentration (pCi/mL):	32.175	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.674	
Target Conc. (pCi/L, g, F):	4.775	
Uncertainty (Calculated):	0.224	
Result (pCi/L, g, F):	5.945	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	1.160	
Numerical Performance Indicator:	1.94	
Percent Recovery:	124.51%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	4/15/2021	4/22/2021
Sample I.D.	60367643001	35628086001
Sample MS I.D.	60367643002	35628086001MS
Sample MSD I.D.	60367643003	
Spike I.D.:	20-032	20-032
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.176	32.176
Spike Volume Used in MS (mL):	0.20	0.20
Spike Volume Used in MSD (mL):	0.20	
MS Aliquot (L, g, F):	0.654	0.674
MS Target Conc.(pCi/L, g, F):	9.837	9.544
MSD Aliquot (L, g, F):	0.648	
MSD Target Conc. (pCi/L, g, F):	9.936	
MS Spike Uncertainty (calculated):	0.462	0.449
MSD Spike Uncertainty (calculated):	0.467	
Sample Result:	0.154	2.371
Sample Result Counting Uncertainty (pCi/L, g, F):	0.363	0.747
Sample Matrix Spike Result:	11.060	13.339
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.581	1.855
Sample Matrix Spike Duplicate Result:	8.457	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	1.400	
MS Numerical Performance Indicator:	1.243	1.362
MSD Numerical Performance Indicator:	-2.107	
MS Percent Recovery:	110.87%	114.92%
MSD Percent Recovery:	83.56%	
MS Status vs Numerical Indicator:	N/A	N/A
MSD Status vs Numerical Indicator:	N/A	
MS Status vs Recovery:	Pass	Pass
MSD Status vs Recovery:	Pass	
MS/MSD Upper % Recovery Limits:	136%	136%
MS/MSD Lower % Recovery Limits:	71%	71%

Duplicate Sample Assessment		
Sample I.D.:		Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.		
Sample Result (pCi/L, g, F):		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Duplicate Result (pCi/L, g, F):		
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:		
Duplicate RPD:		
Duplicate Status vs Numerical Indicator:		
Duplicate Status vs RPD:		
% RPD Limit:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.	60367643001	
Sample MS I.D.	60367643002	
Sample MSD I.D.	60367643003	
Sample Matrix Spike Result:	11.060	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.581	
Sample Matrix Spike Duplicate Result:	8.457	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	1.400	
Duplicate Numerical Performance Indicator:	2.416	
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:	28.10%	
MS/ MSD Duplicate Status vs Numerical Indicator:	N/A	
MS/ MSD Duplicate Status vs RPD:	Pass	
% RPD Limit:	32%	

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

SLC 5/13/2021

CMZ 5/13/21

Quality Control Sample Performance Assessment

Pace Analytical™
www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	5/10/2021
Worklist:	60277
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2153106
MB concentration:	-0.202
M/B 2 Sigma CSU:	0.256
MB MDC:	0.642
MB Numerical Performance Indicator:	-1.55
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS60277	LCSD60277
Count Date:	5/13/2021	
Spike I.D.:	21-003	
Decay Corrected Spike Concentration (pCi/mL):	37.716	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.809	
Target Conc. (pCi/L, g, F):	4.660	
Uncertainty (Calculated):	0.228	
Result (pCi/L, g, F):	4.441	
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.013	
Numerical Performance Indicator:	-0.41	
Percent Recovery:	95.30%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	60%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	4/22/2021	4/15/2021
Sample I.D.	35628084001	60367643001
Sample MS I.D.	35628084001MS	60367643002
Sample MSD I.D.		60367643003
Spike I.D.:	21-003	21-003
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	37.981	37.981
Spike Volume Used in MS (mL):	0.20	0.20
Spike Volume Used in MSD (mL):		0.20
MS Aliquot (L, g, F):	0.808	0.816
MS Target Conc.(pCi/L, g, F):	9.404	9.306
MSD Aliquot (L, g, F):		0.806
MSD Target Conc. (pCi/L, g, F):		9.419
MS Spike Uncertainty (calculated):	0.461	0.456
MSD Spike Uncertainty (calculated):		0.462
Sample Result:	0.508	0.552
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.398	0.526
Sample Matrix Spike Result:	8.484	10.030
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.723	1.966
Sample Matrix Spike Duplicate Result:		8.366
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		1.708
MS Numerical Performance Indicator:	-1.532	0.162
MSD Numerical Performance Indicator:		-1.704
MS Percent Recovery:	84.81%	101.85%
MSD Percent Recovery:		82.96%
MS Status vs Numerical Indicator:	Pass	Pass
MSD Status vs Numerical Indicator:		Pass
MS Status vs Recovery:	Pass	Pass
MSD Status vs Recovery:		Pass
MS/MSD Upper % Recovery Limits:	135%	135%
MS/MSD Lower % Recovery Limits:	60%	60%

Duplicate Sample Assessment		
Sample I.D.:		Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.		
Sample Result (pCi/L, g, F):		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Duplicate Result (pCi/L, g, F):		
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:		
Duplicate RPD:		
Duplicate Status vs Numerical Indicator:		
Duplicate Status vs RPD:		
% RPD Limit:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		60367643001
Sample MS I.D.		60367643002
Sample MSD I.D.		60367643003
Sample Matrix Spike Result:		10.030
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		1.966
Sample Matrix Spike Duplicate Result:		8.366
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		1.708
Duplicate Numerical Performance Indicator:		1.252
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		20.44%
MS/ MSD Duplicate Status vs Numerical Indicator:		Pass
MS/ MSD Duplicate Status vs RPD:		Pass
% RPD Limit:		36%

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

JM 5/13/21

October 2021

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60383003
Sampling Event: October 12, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: December 16, 2021
Peer Reviewer: Katie Abbott — Date Completed: January 6, 2022

This report contains the final results of the data validation conducted for the water samples collected October 12th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006 (November 2020).

General Overall Assessment:

__X__ Data are usable without qualification.
_____ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.		X[1]	
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.			X
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • The agreement between parent sample results and laboratory duplicate sample results were evaluated. The duplicate error ratios (DER) met the criterion of a DER ≤2.			X
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below: • The agreement between parent sample results and field duplicate sample results were evaluated. The DER met the criterion of a DER ≤2.			X

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Equipment Blanks	No target analytes reported in the associated equipment blank.	X		
Detection Limits Mets	For radiochemical results if the associated uncertainty was greater than the reported result, the 2 sigma (σ) uncertainty multiplied by 1.65 was less than or equal to the specified detection limit.	X		
Tracer and/or Carrier Recovery	The sample specific recoveries were within the laboratory limits.	X		
Reporting	No reporting issues were found and further qualification was not considered necessary.	X		
Package Completeness	No results were qualified as unusable and the data are 100% complete.	X		
Comments				
1 – Samples were received intact; however, no cooler temperature was recorded upon receipt at the laboratory. Due to the stability of the radiological parameters, data qualification on the basis of temperature exceedance is not considered necessary.				

> – Greater Than
< – Less Than
≤ – Less Than or Equal To
σ – Sigma (Uncertainty)
% – Percent
DER – Duplicate Error Ratio
LCS – Laboratory Control Sample
LCSD – Laboratory Control Sample Duplicate
MB – Method Blank
MDC – Minimum Detectable Concentration
MS/MSD – Matrix Spike/Matrix Spike Duplicate
NA – Not Applicable
RPD – Relative Percent Difference

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

December 10, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60659991 PRPA CCR
Pace Project No.: 60383003

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on October 13, 2021. 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 Analytical Services - Greensburg

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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

CERTIFICATIONS

Project: 60659991 PRPA CCR
Pace Project No.: 60383003

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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

SAMPLE SUMMARY

Project: 60659991 PRPA CCR
Pace Project No.: 60383003

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60383003001	**BAT-11-CCR**	Water	10/12/21 13:15	10/13/21 10:00
60383003002	**ERB-01-CCR**	Water	10/12/21 15:30	10/13/21 10:00

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

SAMPLE ANALYTE COUNT

Project: 60659991 PRPA CCR
Pace Project No.: 60383003

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60383003001	**BAT-11-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60383003002	**ERB-01-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383003

Sample: BAT-11-CCR **Lab ID: 60383003001** Collected: 10/12/21 13:15 Received: 10/13/21 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.000 ± 0.416 (0.842) C:NA T:101%**	pCi/L	11/04/21 13:15	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.192 ± 0.357 (0.784) C:73% T:88%**	pCi/L	11/01/21 14:36	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.192 ± 0.773 (1.63)**	pCi/L	11/04/21 16:08	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383003

Sample: ERB-01-CCR **Lab ID: 60383003002** Collected: 10/12/21 15:30 Received: 10/13/21 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.220 ± 0.405 (0.917) C:NA T:103%**	pCi/L	11/04/21 13:15	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.00882 ± 0.321 (0.744) C:79% T:88%**	pCi/L	11/01/21 14:36	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.00882 ± 0.726 (1.66)**	pCi/L	11/04/21 16:08	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383003

QC Batch: 469271
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60383003001, 60383003002

METHOD BLANK: 2266071
Matrix: Water
Associated Lab Samples: 60383003001, 60383003002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.117 ± 0.330 (0.741) C:74% T:86%	pCi/L	11/01/21 14:32	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383003

QC Batch: 469270
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60383003001, 60383003002

METHOD BLANK: 2266070
Matrix: Water
Associated Lab Samples: 60383003001, 60383003002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.277 ± 0.385 (0.650) C:NA T:93%	pCi/L	11/04/21 13:15	

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.

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QUALIFIERS

Project: 60659991 PRPA CCR
Pace Project No.: 60383003

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60659991 PRPA CCR
Pace Project No.: 60383003

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60383003001	**BAT-11-CCR**	EPA 903.1	469270		
60383003002	**ERB-01-CCR**	EPA 903.1	469270		
60383003001	**BAT-11-CCR**	EPA 904.0	469271		
60383003002	**ERB-01-CCR**	EPA 904.0	469271		
60383003001	**BAT-11-CCR**	Total Radium Calculation	471302		
60383003002	**ERB-01-CCR**	Total Radium Calculation	471302		

Internal Transfer Chain of Custody

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☐ Samples Pre-Logged into eCOC.

State Of Origin: CO
Cert. Needed: [X] Yes ☐ No
Owner Received Date: 10/13/2021 **Results Requested By:** 11/3/2021

Workorder: 60383003 **Workorder Name:** 60659991 PRPA CCR

Report To

Heather Wilson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1407

Subcontract To

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

WO# : 30446231

30446231

Requested Analysis

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Radium-226	Radium-228	Total Sum Radium	LAB USE ONLY
1	BAT-11-CCR	PS	10/12/2021 13:15	60383003001	Water	1	X	X	X	001
2	ERB-01-CCR	PS	10/12/2021 15:30	60383003002	Water	1	X	X	X	002
3										
4										
5										

Transfers	Released By	Date/Time	Received By	Date/Time
1			[signature]	10-13-21 10:00
2				
3				

Comments

IR30- Radium QC Sheets Required

Cooler Temperature on Receipt — °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.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace Kansas Project # _____

Label 2a
LIMS Login AO

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 5333 8753 3858

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used _____ Type of Ice: Wet Blue None

Cooler Temperature Observed Temp ___ °C Correction Factor: ___ °C Final Temp: ___ °C

Temp should be above freezing to 6°C

WO#: 30446231
PM: MS1 Due Date: 11/03/21
CLIENT: PACE_60_LEKS

pH paper Lot# 10D0411

Date and Initials of person examining contents: 10-19-21 2a

Comments:	Yes	No	N/A		
Chain of Custody Present:	✓			1.	
Chain of Custody Filled Out:	✓			2.	
Chain of Custody Relinquished:		✓		3.	
Sampler Name & Signature on COC:		✓		4.	
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.	
Samples Arrived within Hold Time:	✓			6.	
Short Hold Time Analysis (<72hr remaining):		✓		7.	
Rush Turn Around Time Requested:		✓		8.	
Sufficient Volume:	✓			9.	
Correct Containers Used:	✓			10.	
-Pace Containers Used:	✓				
Containers Intact:	✓			11.	
Orthophosphate field filtered			✓	12.	
Hex Cr Aqueous sample field filtered			✓	13.	
Organic Samples checked for dechlorination:			✓	14.	
Filtered volume received for Dissolved tests			✓	15.	
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH <2	
All containers meet method preservation requirements.	✓			Initial when completed 2a	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			✓	17.	
Trip Blank Present:			✓	18.	
Trip Blank Custody Seals Present			✓		
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: 2a	Date: 10-15-21 / Survey Meter SN: 1563

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

CCR-PA

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	136205
Project Name:	60659991 PRPA CCR
Project Number:	60659991

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	~~ASH-06-CCR~~ JL	~~WT~~	~~G~~	~~—~~		~~10/11/21~~	~~1310~~		~~2~~			~~2~~							~~✓~~	~~✓~~	~~✓~~	~~N~~	
2	BAT-11-CCR	WT	G	—		10-12-21	1315		2			2							✓	✓	✓	N	
3	ERB-01-CCR	WT	G	—		10-12-21	1530		2			2							✓	✓	✓	N	
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

JL

WO#: 30446231
PM: MS1 Due Date: 11/03/21
CLIENT: PACE_60_LEKS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Jack Levy AECOM	10-12-21	1706				

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Jack Levy
SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 10-12-21

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Quality Control Sample Performance Assessment

Pace Analytical™
www.pacelabs.com

Test:	Ra-226
Analyst:	MK1
Date:	10/27/2021
Batch ID:	63294
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2266070
MB concentration:	0.277
M/B Counting Uncertainty:	0.384
MB MDC:	0.650
MB Numerical Performance Indicator:	1.41
MB Status vs Numerical Indicator:	~~N/A~~
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS63294	LCSD63294
Count Date:	11/4/2021	
Spike I.D.:	20-032	
Spike Concentration (pCi/mL):	32.168	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.652	
Target Conc. (pCi/L, g, F):	4.936	
Uncertainty (Calculated):	0.232	
Result (pCi/L, g, F):	4.194	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.909	
Numerical Performance Indicator:	-1.55	
Percent Recovery:	84.97%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	10/11/2021	
Sample I.D.	35670447001	
Sample MS I.D.	35670447001MS	
Sample MSD I.D.		
Spike I.D.:	20-032	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.169	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.653	
MS Target Conc.(pCi/L, g, F):	9.854	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.463	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.462	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.339	
Sample Matrix Spike Result:	9.535	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.404	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:	-1.009	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	92.08%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	N/A	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	136%	
MS/MSD Lower % Recovery Limits:	71%	

Duplicate Sample Assessment		
Sample I.D.:	35670447002	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	35670447002DUP	
Sample Result (pCi/L, g, F):	0.054	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.278	
Sample Duplicate Result (pCi/L, g, F):	0.517	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.379	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-1.929	35670447002
Duplicate RPD:	162.33%	35670447002DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
~~% RPD Limit:~~	~~32%~~	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

***Batch must be re-prepped due to unacceptable precision.

11/4/21

Quality Control Sample Performance Assessment

Pace Analytical™
www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	10/29/2021
Worklist:	63295
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2266071
MB concentration:	0.117
M/B 2 Sigma CSU:	0.330
MB MDC:	0.741
MB Numerical Performance Indicator:	0.69
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS63295	LCSD63295
Count Date:	11/1/2021	
Spike I.D.:	21-029	
Decay Corrected Spike Concentration (pCi/mL):	37.623	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.806	
Target Conc. (pCi/L, g, F):	4.667	
Uncertainty (Calculated):	0.229	
Result (pCi/L, g, F):	4.751	
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.072	
Numerical Performance Indicator:	0.15	
Percent Recovery:	101.81%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	60%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	10/12/2021	
Sample I.D.	35670659002	
Sample MS I.D.	35670659002MS	
Sample MSD I.D.		
Spike I.D.:	21-029	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	37.874	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.807	
MS Target Conc.(pCi/L, g, F):	9.389	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.460	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.217	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.359	
Sample Matrix Spike Result:	10.486	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	2.106	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:	0.790	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	109.38%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	Pass	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	135%	
MS/MSD Lower % Recovery Limits:	60%	

Duplicate Sample Assessment		
Sample I.D.:	35670659001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	35670659001DUP	
Sample Result (pCi/L, g, F):	-0.063	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.280	
Sample Duplicate Result (pCi/L, g, F):	0.189	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.339	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-1.122	35670659001
Duplicate RPD:	401.79%	35670659001DUP
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

11/2/21

11/2/21

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60383339
Sampling Event: October 12, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: December 16, 2021
Peer Reviewer: Katie Abbott — Date Completed: January 6, 2022

This report contains the final results of the data validation conducted for the water samples collected October 12th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006 (November 2020).

General Overall Assessment:

__X__ Data are usable without qualification.
_____ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.	X		
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.	X		
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • When both the sample and duplicate values are >5x the reporting limit (RL), acceptable sampling and analytical precision is indicated by an relative percent difference (RPD) between the results of ≤20%. • Where the result for one or both analytes of the method duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the method duplicate results is <1xRL.			X

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below: • When both the sample and duplicate values are >5xRL acceptable sampling and analytical precision is indicated by a RPD between the results of ≤30%. • Where the result for one or both analytes of the field duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the field duplicate results is <2xRL.			X
Equipment Blanks	No target analytes reported in the associated equipment blank.	X		
Reporting Limits Met	No samples performed at dilutions or reported as non-detect at elevated method detection limits/reporting limits.		X[1]	
Reporting	No reporting issues were found and further qualification was not considered necessary.	X		
Package Completeness	No results were qualified as unusable and the data are 100% complete.	X		
Comments				
1 – For sample BAT-11-CCR, boron was reported as non-detect at an elevated reporting limit. This non-detect result will need to be evaluated by the end user of the data with respect to project objectives.				

> – Greater Than
% – Percent
MB – Method Blank
RL – Reporting Limit
< – Less Than
LCS – Laboratory Control Sample
MS/MSD – Matrix Spike/Matrix Spike Duplicate
RPD – Relative Percent Difference
≤ – Less Than or Equal To
LCSD – Laboratory Control Sample Duplicate
NA – Not Applicable

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

November 04, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60659991 PRPA CCR
Pace Project No.: 60383339

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on October 13, 2021. 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 Analytical Services - Kansas City

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

Pace Analytical Services, LLC
9608 Loiret Blvd.
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CERTIFICATIONS

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

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 #: 2000302021-3
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

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SAMPLE SUMMARY

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60383339001	**BAT-11-CCR**	Water	10/12/21 13:15	10/13/21 09:15
60383339002	**ERB-01-CCR**	Water	10/12/21 15:30	10/13/21 09:15

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SAMPLE ANALYTE COUNT

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60383339001	**BAT-11-CCR**	EPA 6010	MA1	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60383339002	**ERB-01-CCR**	EPA 6010	MRV	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

Sample: BAT-11-CCR **Lab ID: 60383339001** Collected: 10/12/21 13:15 Received: 10/13/21 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							
Boron	ND	ug/L	500	5	10/28/21 17:09	11/03/21 00:28	7440-42-8	
Calcium	**100000**	ug/L	1000	5	10/28/21 17:09	11/03/21 00:28	7440-70-2	
Lithium	**56.1**	ug/L	50.0	5	10/28/21 17:09	11/03/21 00:28	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:18	7440-36-0	
Arsenic	ND	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:18	7440-38-2	
Barium	**46.6**	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:18	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/01/21 11:21	11/03/21 12:47	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/01/21 11:21	11/02/21 12:18	7440-43-9	
Chromium	**1.7**	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:18	7440-47-3	
Cobalt	ND	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:18	7440-48-4	
Lead	ND	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:18	7439-92-1	
Molybdenum	**6.8**	ug/L	1.0	1	11/01/21 11:21	11/03/21 12:47	7439-98-7	
Selenium	**8.1**	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:18	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/01/21 11:21	11/03/21 12:47	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	10/27/21 11:51	10/28/21 10:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**638**	mg/L	10.0	1		10/18/21 10:23		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**6.5**	mg/L	1.0	1		10/28/21 13:10	16887-00-6	
Fluoride	**0.25**	mg/L	0.20	1		10/28/21 13:10	16984-48-8	
Sulfate	**170**	mg/L	50.0	50		10/28/21 13:23	14808-79-8	

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

Sample: ERB-01-CCR **Lab ID: 60383339002** Collected: 10/12/21 15:30 Received: 10/13/21 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							
Boron	ND	ug/L	100	1	11/02/21 11:00	11/03/21 18:56	7440-42-8	
Calcium	ND	ug/L	200	1	11/02/21 11:00	11/03/21 18:56	7440-70-2	
Lithium	ND	ug/L	10.0	1	11/02/21 11:00	11/03/21 18:56	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:34	7440-36-0	
Arsenic	ND	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:34	7440-38-2	
Barium	ND	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:34	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/01/21 11:21	11/03/21 12:50	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/01/21 11:21	11/02/21 12:34	7440-43-9	
Chromium	ND	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:34	7440-47-3	
Cobalt	ND	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:34	7440-48-4	
Lead	ND	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:34	7439-92-1	
Molybdenum	ND	ug/L	1.0	1	11/01/21 11:21	11/03/21 12:50	7439-98-7	
Selenium	ND	ug/L	1.0	1	11/01/21 11:21	11/02/21 12:34	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/01/21 11:21	11/03/21 12:50	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	10/27/21 11:51	10/28/21 10:52	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	ND	mg/L	5.0	1		10/18/21 10:24		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	ND	mg/L	1.0	1		10/28/21 13:36	16887-00-6	
Fluoride	ND	mg/L	0.20	1		10/28/21 13:36	16984-48-8	
Sulfate	ND	mg/L	1.0	1		10/28/21 13:36	14808-79-8	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

QC Batch: 752326
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383339001, 60383339002

METHOD BLANK: 3011569
Matrix: Water
Associated Lab Samples: 60383339001, 60383339002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	10/28/21 10:40	

LABORATORY CONTROL SAMPLE: 3011570

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3011571 3011572

Parameter	Units	60383351001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	4.6	96	92	75-125	5	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

QC Batch: 752867
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383339001

METHOD BLANK: 3013354
Matrix: Water
Associated Lab Samples: 60383339001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	11/02/21 23:37	
Calcium	ug/L	ND	200	11/02/21 23:37	
Lithium	ug/L	ND	10.0	11/02/21 23:37	

LABORATORY CONTROL SAMPLE: 3013355

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	973	97	80-120	
Calcium	ug/L	10000	10100	101	80-120	
Lithium	ug/L	1000	932	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3013356 3013357

Parameter	Units	60382988001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	ND	1000	1000	1320	1350	98	101	75-125	2	20	
Calcium	ug/L	166000	10000	10000	173000	175000	77	98	75-125	1	20	
Lithium	ug/L	161	1000	1000	1150	1180	99	102	75-125	2	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

QC Batch: 753091
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383339002

METHOD BLANK: 3014296
Matrix: Water
Associated Lab Samples: 60383339002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	11/03/21 18:51	
Calcium	ug/L	ND	200	11/03/21 18:51	
Lithium	ug/L	ND	10.0	11/03/21 18:51	

LABORATORY CONTROL SAMPLE: 3014297

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	995	99	80-120	
Calcium	ug/L	10000	9950	100	80-120	
Lithium	ug/L	1000	858	86	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3014298 3014299

Parameter	Units	60383339002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	ND	1000	1000	985	997	98	99	75-125	1	20	
Calcium	ug/L	ND	10000	10000	9850	9960	98	99	75-125	1	20	
Lithium	ug/L	ND	1000	1000	865	871	86	87	75-125	1	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

QC Batch: 753039
QC Batch Method: EPA 3010
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383339001, 60383339002

METHOD BLANK: 3014110
Matrix: Water
Associated Lab Samples: 60383339001, 60383339002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	11/02/21 10:29	
Arsenic	ug/L	ND	1.0	11/02/21 10:29	
Barium	ug/L	ND	1.0	11/02/21 10:29	
Beryllium	ug/L	ND	0.50	11/03/21 12:27	
Cadmium	ug/L	ND	0.50	11/02/21 10:29	
Chromium	ug/L	ND	1.0	11/02/21 10:29	
Cobalt	ug/L	ND	1.0	11/02/21 10:29	
Lead	ug/L	ND	1.0	11/02/21 10:29	
Molybdenum	ug/L	ND	1.0	11/03/21 12:27	
Selenium	ug/L	ND	1.0	11/02/21 10:29	
Thallium	ug/L	ND	1.0	11/03/21 12:27	

LABORATORY CONTROL SAMPLE: 3014111

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	41.3	103	80-120	
Arsenic	ug/L	40	40.6	102	80-120	
Barium	ug/L	40	40.7	102	80-120	
Beryllium	ug/L	40	42.4	106	80-120	
Cadmium	ug/L	40	42.1	105	80-120	
Chromium	ug/L	40	41.5	104	80-120	
Cobalt	ug/L	40	40.3	101	80-120	
Lead	ug/L	40	40.0	100	80-120	
Molybdenum	ug/L	40	41.5	104	80-120	
Selenium	ug/L	40	39.0	97	80-120	
Thallium	ug/L	40	38.0	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3014112 3014113

Parameter	Units	60382988001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	38.7	37.9	95	93	75-125	2	20	
Arsenic	ug/L	1.0	40	40	37.4	37.1	91	90	75-125	1	20	
Barium	ug/L	32.4	40	40	73.5	70.8	103	96	75-125	4	20	
Beryllium	ug/L	ND	40	40	36.6	36.3	91	91	75-125	1	20	
Cadmium	ug/L	ND	40	40	35.6	34.8	89	87	75-125	2	20	
Chromium	ug/L	2.8	40	40	38.5	37.7	89	87	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3014112 3014113

Parameter	Units	60382988001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	1.7	40	40	34.2	33.4	81	79	75-125	2	20	
Lead	ug/L	1.3	40	40	34.5	32.7	83	79	75-125	5	20	
Molybdenum	ug/L	10.5	40	40	53.6	53.1	108	106	75-125	1	20	
Selenium	ug/L	1.6	40	40	38.7	37.9	93	91	75-125	2	20	
Thallium	ug/L	ND	40	40	40.2	39.4	100	98	75-125	2	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

QC Batch: 750066
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383339001, 60383339002

METHOD BLANK: 3003621
Matrix: Water
Associated Lab Samples: 60383339001, 60383339002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	10/18/21 10:22	

LABORATORY CONTROL SAMPLE: 3003622

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	992	99	80-120	

SAMPLE DUPLICATE: 3003623

Parameter	Units	60382972003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1470	1420	3	10	

SAMPLE DUPLICATE: 3003624

Parameter	Units	60383351001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3500	3430	2	10	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

QC Batch: 752449
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383339001, 60383339002

METHOD BLANK: 3012010
Matrix: Water
Associated Lab Samples: 60383339001, 60383339002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	10/28/21 08:16	
Fluoride	mg/L	ND	0.20	10/28/21 08:16	
Sulfate	mg/L	ND	1.0	10/28/21 08:16	

LABORATORY CONTROL SAMPLE: 3012011

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	80-120	
Fluoride	mg/L	2.5	2.6	105	80-120	
Sulfate	mg/L	5	5.1	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3012048 3012049

Parameter	Units	60383725024 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	37.2	5	5	42.3	42.4	103	104	80-120	0	15	E
Fluoride	mg/L	ND	2.5	2.5	2.8	2.9	107	108	80-120	1	15	
Sulfate	mg/L	ND	5	5	5.0	5.1	90	92	80-120	2	15	

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QUALIFIERS

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60659991 PRPA CCR
Pace Project No.: 60383339

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60383339001	**BAT-11-CCR**	EPA 3010	752867	EPA 6010	752939
60383339002	**ERB-01-CCR**	EPA 3010	753091	EPA 6010	753601
60383339001	**BAT-11-CCR**	EPA 3010	753039	EPA 6020	753471
60383339002	**ERB-01-CCR**	EPA 3010	753039	EPA 6020	753471
60383339001	**BAT-11-CCR**	EPA 7470	752326	EPA 7470	752469
60383339002	**ERB-01-CCR**	EPA 7470	752326	EPA 7470	752469
60383339001	**BAT-11-CCR**	SM 2540C	750066		
60383339002	**ERB-01-CCR**	SM 2540C	750066		
60383339001	**BAT-11-CCR**	EPA 9056	752449		
60383339002	**ERB-01-CCR**	EPA 9056	752449		

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Sample Condition Upon Receipt

WO# : 60383339

60383339

Client Name: AECOM

Courier: FedEx ☐ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 533387534052 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 ☑ SPC

Thermometer Used: T296 **Type of Ice** (Wet) Blue None

Cooler Temperature (°C): **As-read** 2.4 **Corr. Factor** 0.3 **Corrected** 2.1°C

Date and initials of person examining contents: SR 10/15/21

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	TDS 10/19/21
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# C003173	☑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: _____

F-KS-C-003-Rev.11, February 28, 2018

CCR - KS

Pace Analytical
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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A
Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B
Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	136205
Project Name:	60659991 PRPA CCR
Project Number:	60659991

Section C
Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	No RLI - 11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D
Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	9056 Cl, F, SO4	6020 Total Metals*	6010 Total Metals**	7470 Total Mercury	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-11-CCR	WT	G	—		10-12-21	1315		3	2		1							✓	✓	✓	✓	✓	N	60383339
2	ERB-01-CCR	WT	G	—		10-12-21	1530		3	2		1							✓	✓	✓	✓	✓	N	
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, Tl	Jack Lay AECOM	10-12-21	1700	MWW/Pace	10/13/21	0915	2.1	Y	Y	Y
**B, Ca, Li										

Dept: 6003 Date : 01Oct21
Customer : 861078 Weight : 50 LBS
Phone : (913)599-5665 COD :
Dept: client services DV : 0.00

Shipping : 0.00
Special : 0.00
Handling : 0.00
Total : 0.00

Sync PRIORITY OVERNIGHT Master 5333 8753 4019
TRCK: 5333 8753 4052

SAMPLE:

PRINT Name of SAMPLER: Jack Lay

SIGNATURE of SAMPLER: Jack Lay

DATE Signed (MM/DD/YY): 10-12-21

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

COC PAGE 1 of 1

SBS
DI
MeOH (only)
BK
Kit

Client: AECOM

Site: 60605991 PRPA CCR

Sample Container Count

Profile # NO RGT 41033;3

Notes

COC Line Item	Matrix	R	VG9H	DG9H	DG9Q	VG9U	DG9U	BG1U	AG1H	AG1U	AG2U	AG3S	AG4U	AG5U	BP1U	BP2U	BP3U	BP1N	BP3N	BP3F	BP3S	BP3C	BP3Z	JGFU	WGKU	ZPLC	DG9M	DG9B				
1															1		1	1														
2															1		1	1														
3																																
4																																
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

Container Codes

Glass			
DG9B	40mL bisulfate clear vial	WGKU	8oz clear soil jar
DG9H	40mL HCl amber voa vial	WGFU	4oz clear soil jar
DG9M	40mL MeOH clear vial	WG2U	2oz clear soil jar
DG9Q	40mL TSP amber vial	JGFU	4oz unpreserved amber wide
DG9S	40mL H2SO4 amber vial	AG0U	100mL unores amber glass
DG9T	40mL Na Thio amber vial	AG1H	1L HCl amber glass
DG9U	40mL amber unpreserved	AG1S	1L H2SO4 amber glass
VG9H	40mL HCl clear vial	AG1T	1L Na Thiosulfate clear/amber glass
VG9T	40mL Na Thio. clear vial	AG1U	1liter unpres amber glass
VG9U	40mL unpreserved clear vial	AG2N	500mL HNO3 amber glass
BG1S	1liter H2SO4 clear glass	AG2S	500mL H2SO4 amber glass
BG1U	1liter unpres glass	AG3S	250mL H2SO4 amber glass
BG3H	250mL HCL Clear glass	AG2U	500mL unpres amber glass
BG3U	250mL Unpres Clear glass	AG3U	250mL unpres amber glass
		AG4U	125mL unpres amber glass
		AG5U	100mL unpres amber glass

Plastic	
BP1C	1L NAOH plastic
BP1N	1L HNO3 plastic
BP1S	1L H2SO4 plastic
BP1U	1L unpreserved plastic
BP1Z	1L NaOH, Zn Acetate
BP2C	500mL NAOH plastic
BP2N	500mL HNO3 plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Acetate
BP3C	250mL NaOH plastic
BP3F	250mL HNO3 plastic - field filtered
BP3N	250mL HNO3 plastic
BP3U	250mL unpreserved plastic
BP3S	250mL H2SO4 plastic
BP3Z	250mL NaOH, Zn Acetate
BP4U	125mL unpreserved plastic
BP4N	125mL HNO3 plastic
BP4S	125mL H2SO4 plastic

Misc.	
I	Wipe/Swab
SP5T	120mL Coliform Na Thiosulfate
ZPLC	Ziploc Bag
AF	Air Filter
C	Air Cassettes
R	Terracore Kit
U	Summa Can

Matrix	
WT	Water
SL	Solid
NAL	Non-aqueous Liquid
OL	OIL
WP	Wipe
DW	Drinking Water

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60383573
Sampling Event: October 18, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: December 16, 2021
Peer Reviewer: Katie Abbott — Date Completed: January 6, 2022

This report contains the final results of the data validation conducted for the water samples collected October 18th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006 (November 2020).

General Overall Assessment:

__X__ Data are usable without qualification.
_____ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.	X		
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.	X		
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • When both the sample and duplicate values are >5x the reporting limit (RL), acceptable sampling and analytical precision is indicated by an relative percent difference (RPD) between the results of ≤20%. • Where the result for one or both analytes of the method duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the method duplicate results is <1xRL.			X

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below: • When both the sample and duplicate values are >5xRL acceptable sampling and analytical precision is indicated by a RPD between the results of ≤30%. • Where the result for one or both analytes of the field duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the field duplicate results is <2xRL.			X
Equipment Blanks	No target analytes reported in the associated equipment blank.	X		
Reporting Limits Met	No samples performed at dilutions or reported as non-detect at elevated method detection limits/reporting limits.	X		
Reporting	No reporting issues were found and further qualification was not considered necessary.	X		
Package Completeness	No results were qualified as unusable and the data are 100% complete.	X		

> – Greater Than
% – Percent
MB – Method Blank
RL – Reporting Limit
< – Less Than
LCS – Laboratory Control Sample
MS/MSD – Matrix Spike/Matrix Spike Duplicate
RPD – Relative Percent Difference
≤ – Less Than or Equal To
LCSD – Laboratory Control Sample Duplicate
NA – Not Applicable

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

November 09, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60659991 PRPA CCR
Pace Project No.: 60383573

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on October 19, 2021. 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 Analytical Services - Kansas City

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

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 #: 2000302021-3
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

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SAMPLE SUMMARY

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60383573001	**BAT-10-CCR**	Water	10/18/21 09:30	10/19/21 09:00
60383573002	**BAT-08-CCR**	Water	10/18/21 11:30	10/19/21 09:00

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SAMPLE ANALYTE COUNT

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60383573001	**BAT-10-CCR**	EPA 6010	MA1	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60383573002	**BAT-08-CCR**	EPA 6010	MA1	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

Sample: BAT-10-CCR **Lab ID: 60383573001** Collected: 10/18/21 09:30 Received: 10/19/21 09:00 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							
Boron	**689**	ug/L	100	1	11/04/21 11:30	11/07/21 14:28	7440-42-8	
Calcium	**431000**	ug/L	1000	5	11/04/21 11:30	11/07/21 14:52	7440-70-2	
Lithium	**197**	ug/L	50.0	5	11/04/21 11:30	11/07/21 14:52	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/04/21 11:30	11/09/21 13:48	7440-36-0	
Arsenic	ND	ug/L	1.0	1	11/04/21 11:30	11/09/21 13:48	7440-38-2	
Barium	**24.6**	ug/L	1.0	1	11/04/21 11:30	11/09/21 13:48	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/04/21 11:30	11/09/21 13:48	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/04/21 11:30	11/09/21 13:48	7440-43-9	
Chromium	**1.1**	ug/L	1.0	1	11/04/21 11:30	11/09/21 13:48	7440-47-3	
Cobalt	ND	ug/L	1.0	1	11/04/21 11:30	11/09/21 13:48	7440-48-4	
Lead	ND	ug/L	1.0	1	11/04/21 11:30	11/09/21 13:48	7439-92-1	
Molybdenum	**6.4**	ug/L	1.0	1	11/04/21 11:30	11/09/21 13:48	7439-98-7	
Selenium	**213**	ug/L	1.0	1	11/04/21 11:30	11/09/21 13:48	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/04/21 11:30	11/09/21 13:48	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/05/21 15:55	11/08/21 11:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**3950**	mg/L	66.7	1		10/21/21 12:15		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**24.5**	mg/L	2.0	2		11/01/21 22:52	16887-00-6	
Fluoride	ND	mg/L	0.20	1		10/29/21 22:43	16984-48-8	
Sulfate	**2330**	mg/L	200	200		10/29/21 22:55	14808-79-8	

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

Sample: BAT-08-CCR **Lab ID: 60383573002** Collected: 10/18/21 11:30 Received: 10/19/21 09:00 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							
Boron	**1950**	ug/L	100	1	11/04/21 11:30	11/07/21 14:30	7440-42-8	
Calcium	**43700**	ug/L	200	1	11/04/21 11:30	11/07/21 14:30	7440-70-2	
Lithium	**117**	ug/L	10.0	1	11/04/21 11:30	11/07/21 14:30	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/04/21 11:30	11/09/21 14:00	7440-36-0	
Arsenic	**1.3**	ug/L	1.0	1	11/04/21 11:30	11/09/21 14:00	7440-38-2	
Barium	**83.6**	ug/L	1.0	1	11/04/21 11:30	11/09/21 14:00	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/04/21 11:30	11/09/21 14:00	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/04/21 11:30	11/09/21 14:00	7440-43-9	
Chromium	**3.0**	ug/L	1.0	1	11/04/21 11:30	11/09/21 14:00	7440-47-3	
Cobalt	**1.3**	ug/L	1.0	1	11/04/21 11:30	11/09/21 14:00	7440-48-4	
Lead	**1.6**	ug/L	1.0	1	11/04/21 11:30	11/09/21 14:00	7439-92-1	
Molybdenum	**20.0**	ug/L	1.0	1	11/04/21 11:30	11/09/21 14:00	7439-98-7	
Selenium	ND	ug/L	1.0	1	11/04/21 11:30	11/09/21 14:00	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/04/21 11:30	11/09/21 14:00	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/05/21 15:55	11/08/21 11:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**1290**	mg/L	13.3	1		10/21/21 12:15		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**18.9**	mg/L	1.0	1		11/05/21 21:44	16887-00-6	
Fluoride	ND	mg/L	0.20	1		11/05/21 21:44	16984-48-8	
Sulfate	**626**	mg/L	50.0	50		11/05/21 21:08	14808-79-8	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

QC Batch: 754472
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383573001, 60383573002

METHOD BLANK: 3019809
Matrix: Water
Associated Lab Samples: 60383573001, 60383573002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	11/08/21 11:06	

LABORATORY CONTROL SAMPLE: 3019810

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	10	9.7	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3019811 3019812

Parameter	Units	60383570001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	10	10	8.3	8.3	83	83	75-125	0	20	

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: 60659991 PRPA CCR
Pace Project No.: 60383573

QC Batch: 754088
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383573001, 60383573002

METHOD BLANK: 3018243
Matrix: Water
Associated Lab Samples: 60383573001, 60383573002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	11/07/21 14:15	
Calcium	ug/L	ND	200	11/07/21 14:15	
Lithium	ug/L	ND	10.0	11/07/21 14:15	

LABORATORY CONTROL SAMPLE: 3018244

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	956	96	80-120	
Calcium	ug/L	10000	10100	101	80-120	
Lithium	ug/L	1000	937	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018245 3018246

Parameter	Units	60383570001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	1130	1000	1000	2070	2080	94	95	75-125	0	20	
Calcium	ug/L	52700	10000	10000	61200	62100	84	94	75-125	2	20	
Lithium	ug/L	116	1000	1000	1260	1240	114	113	75-125	1	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

QC Batch: 754089
QC Batch Method: EPA 3010
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383573001, 60383573002

METHOD BLANK: 3018248
Matrix: Water
Associated Lab Samples: 60383573001, 60383573002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	11/09/21 12:30	
Arsenic	ug/L	ND	1.0	11/09/21 12:30	
Barium	ug/L	ND	1.0	11/09/21 12:30	
Beryllium	ug/L	ND	0.50	11/09/21 12:30	
Cadmium	ug/L	ND	0.50	11/09/21 12:30	
Chromium	ug/L	ND	1.0	11/09/21 12:30	
Cobalt	ug/L	ND	1.0	11/09/21 12:30	
Lead	ug/L	ND	1.0	11/09/21 12:30	
Molybdenum	ug/L	ND	1.0	11/09/21 12:30	
Selenium	ug/L	ND	1.0	11/09/21 12:30	
Thallium	ug/L	ND	1.0	11/09/21 12:30	

LABORATORY CONTROL SAMPLE: 3018249

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.1	100	80-120	
Arsenic	ug/L	40	39.9	100	80-120	
Barium	ug/L	40	39.4	98	80-120	
Beryllium	ug/L	40	41.1	103	80-120	
Cadmium	ug/L	40	40.3	101	80-120	
Chromium	ug/L	40	39.5	99	80-120	
Cobalt	ug/L	40	38.4	96	80-120	
Lead	ug/L	40	39.8	99	80-120	
Molybdenum	ug/L	40	40.5	101	80-120	
Selenium	ug/L	40	39.7	99	80-120	
Thallium	ug/L	40	38.1	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018250 3018251

Parameter	Units	60383570002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	37.5	38.4	93	95	75-125	2	20	
Arsenic	ug/L	5.4	40	40	41.2	41.4	89	90	75-125	0	20	
Barium	ug/L	32.5	40	40	71.2	73.4	97	102	75-125	3	20	
Beryllium	ug/L	ND	40	40	36.4	36.9	91	92	75-125	1	20	
Cadmium	ug/L	ND	40	40	28.9	28.9	72	72	75-125	0	20	M1
Chromium	ug/L	ND	40	40	39.5	40.7	97	100	75-125	3	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018250 3018251

Parameter	Units	60383570002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	38.2	38.9	94	96	75-125	2	20	
Lead	ug/L	ND	40	40	35.5	35.6	88	88	75-125	0	20	
Molybdenum	ug/L	2.3	40	40	44.0	43.9	104	104	75-125	0	20	
Selenium	ug/L	13.0	40	40	53.4	53.9	101	102	75-125	1	20	
Thallium	ug/L	ND	40	40	35.8	35.9	89	90	75-125	0	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

QC Batch: 750981
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383573001, 60383573002

METHOD BLANK: 3006939
Matrix: Water
Associated Lab Samples: 60383573001, 60383573002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	10/21/21 12:13	

LABORATORY CONTROL SAMPLE: 3006940

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1030	103	80-120	

SAMPLE DUPLICATE: 3006941

Parameter	Units	60383644001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3290	3260	1	10	

SAMPLE DUPLICATE: 3006942

Parameter	Units	60383602001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	403	388	4	10	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

QC Batch: 752861
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383573001

METHOD BLANK: 3013341 Matrix: Water
Associated Lab Samples: 60383573001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	10/29/21 16:00	
Fluoride	mg/L	ND	0.20	10/29/21 16:00	
Sulfate	mg/L	ND	1.0	10/29/21 16:00	

METHOD BLANK: 3016261 Matrix: Water
Associated Lab Samples: 60383573001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/01/21 10:05	
Fluoride	mg/L	ND	0.20	11/01/21 10:05	
Sulfate	mg/L	ND	1.0	11/01/21 10:05	

LABORATORY CONTROL SAMPLE: 3013342

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	80-120	
Fluoride	mg/L	2.5	2.5	102	80-120	
Sulfate	mg/L	5	4.8	96	80-120	

LABORATORY CONTROL SAMPLE: 3016262

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	80-120	
Fluoride	mg/L	2.5	2.7	106	80-120	
Sulfate	mg/L	5	5.3	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3013378 3013379

Parameter	Units	60383644003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	187	50	50	239	239	105	105	80-120	0	15	E
Fluoride	mg/L	ND	2.5	2.5	1.9	1.9	75	75	80-120	0	15	M1
Sulfate	mg/L	3870	2500	2500	6300	6250	97	95	80-120	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

SAMPLE DUPLICATE: 3013343

Parameter	Units	60383644003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	187	209	11	15	
Fluoride	mg/L	ND	0.25		15	
Sulfate	mg/L	3870	2950	27	15	D6

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

QC Batch: 754241
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383573002

METHOD BLANK: 3018848 Matrix: Water
Associated Lab Samples: 60383573002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/05/21 20:44	
Fluoride	mg/L	ND	0.20	11/05/21 20:44	
Sulfate	mg/L	ND	1.0	11/05/21 20:44	

METHOD BLANK: 3021929 Matrix: Water
Associated Lab Samples: 60383573002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/08/21 08:38	
Fluoride	mg/L	ND	0.20	11/08/21 08:38	
Sulfate	mg/L	ND	1.0	11/08/21 08:38	

LABORATORY CONTROL SAMPLE: 3018849

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	80-120	
Fluoride	mg/L	2.5	2.5	101	80-120	
Sulfate	mg/L	5	4.8	96	80-120	

LABORATORY CONTROL SAMPLE: 3021930

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	80-120	
Fluoride	mg/L	2.5	2.6	104	80-120	
Sulfate	mg/L	5	5.3	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018850 3018851

Parameter	Units	60383573002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	18.9	5	5	24.8	24.9	118	120	80-120	0	15	E
Fluoride	mg/L	ND	2.5	2.5	2.7	2.8	101	103	80-120	2	15	
Sulfate	mg/L	626	250	250	876	870	100	98	80-120	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

SAMPLE DUPLICATE: 3018852

Parameter	Units	60384069001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	ND	.51J		15	
Fluoride	mg/L	ND	ND		15	
Sulfate	mg/L	ND	ND		15	

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QUALIFIERS

Project: 60659991 PRPA CCR
Pace Project No.: 60383573

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
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: 60659991 PRPA CCR
Pace Project No.: 60383573

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60383573001	**BAT-10-CCR**	EPA 3010	754088	EPA 6010	754250
60383573002	**BAT-08-CCR**	EPA 3010	754088	EPA 6010	754250
60383573001	**BAT-10-CCR**	EPA 3010	754089	EPA 6020	754251
60383573002	**BAT-08-CCR**	EPA 3010	754089	EPA 6020	754251
60383573001	**BAT-10-CCR**	EPA 7470	754472	EPA 7470	754518
60383573002	**BAT-08-CCR**	EPA 7470	754472	EPA 7470	754518
60383573001	**BAT-10-CCR**	SM 2540C	750981		
60383573002	**BAT-08-CCR**	SM 2540C	750981		
60383573001	**BAT-10-CCR**	EPA 9056	752861		
60383573002	**BAT-08-CCR**	EPA 9056	754241		

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Sample Condition Upon Receipt

WO#: 60383573

60383573

Client Name: AECom

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 5333 8753 4041 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: T-296 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 0.6 **Corr. Factor** -0.3 **Corrected** 0.3

Temperature should be above freezing to 6°C

Date and initials of person examining contents: 10/19/21

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# 603173	☑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: _____

CCR - KS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A
Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B
Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	136205
Project Name:	60659991 PRPA CCR
Project Number:	60659991

Section C
Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	No RLI - 11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D
Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): 9056 Cl, F, SO4	6020 Total Metals*	6010 Total Metals**	7470 Total Mercury	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60383573
1	BAT-10-CCR	WT	G	–		10-18-21	0930		3	2		1						✓	✓	✓	✓	✓	N	BP3U
2	BAT-08-CCR	WT	G	–		10-18-21	1130		3	2		1						✓	✓	✓	✓	✓	N	BP1U
3																								BP1N
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

JR

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, Tl	Jack Ley AECOM	10-18-21	1700	[signature]	10/19/21	0900	0.3	Y	Y	Y
**B, Ca, Li										
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jack Ley

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 10/18/21

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60383575
Sampling Event: October 15, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: December 17, 2021
Peer Reviewer: Katie Abbott — Date Completed: January 6, 2022

This report contains the final results of the data validation conducted for the water samples collected October 15th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006 (November 2020).

General Overall Assessment:

_____ Data are usable without qualification.
__X__ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.		X[1]	
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.			X
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • The agreement between parent sample results and laboratory duplicate sample results were evaluated. The duplicate error ratios (DER) met the criterion of a DER ≤2.			X
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below: Parent Sample: BAT-12-CCR; Field Duplicate: DUP-02-CCR		X[2]	

<table>
<tr><th>Review Parameter</th><th>Criteria</th><th colspan="3">Criteria Met?</th></tr>
<tr><td>Sample-specific Parameters</td><td>For each “No” response, list qualified data and bias direction in Table 1 or explain no qualification in comments.</td><td>Yes</td><td>No</td><td>NA</td></tr>
<tr><td></td><td>• The agreement between parent sample results and field duplicate sample results were evaluated. The DER met the criterion of a DER ≤2.
<table>
<tr><th>Analyte</th><th>Parent Sample Result (pCi/L)</th><th>Field Duplicate Result (pCi/L)</th><th>Criteria not Met</th></tr>
<tr><td colspan="4">BAT-12-CCR/ DUP-02-CCR</td></tr>
<tr><td>Radium-228</td><td>3.24 ± 0.775</td><td>0.479 ± 0.362</td><td>DER>2</td></tr>
</table>
± – Plus or Minus
> – Greater Than
pCi/L – Picocuries Per Liter
DER – Duplicate Error Ratio</td><td></td><td></td><td></td></tr>
<tr><td>Equipment Blanks</td><td>No target analytes reported in the associated equipment blank.</td><td>X</td><td></td><td></td></tr>
<tr><td>Detection Limits Mets</td><td>For radiochemical results if the associated uncertainty was greater than the reported result, the 2 sigma (σ) uncertainty multiplied by 1.65 was less than or equal to the specified detection limit.</td><td>X</td><td></td><td></td></tr>
<tr><td>Tracer and/or Carrier Recovery</td><td>The sample specific recoveries were within the laboratory limits.</td><td>X</td><td></td><td></td></tr>
<tr><td>Reporting</td><td>No reporting issues were found and further qualification was not considered necessary.</td><td>X</td><td></td><td></td></tr>
<tr><td>Package Completeness</td><td>No results were qualified as unusable and the data are 100% complete.</td><td>X</td><td></td><td></td></tr>
</table>

Comments

1 – Samples were received intact; however, no cooler temperature was recorded upon receipt at the laboratory. Due to the stability of the radiological parameters, data qualification on the basis of temperature exceedance is not considered necessary.

2 – As the applicable field duplicate criteria was not met, the associated radium-228 results for samples BAT-12-CCR and DUP-02-CCR were qualified as estimated (J fd).

> – Greater Than
± – Plus or Minus/High or Low Bias
% – Percent
J – Estimated
MB – Method Blank
NA – Not Applicable
< – Less Than
σ – Sigma (Uncertainty)
DER – Duplicate Error Ratio
LCS – Laboratory Control Sample
MDC – Minimum Detectable Concentration
RPD – Relative Percent Difference
≤ – Less Than or Equal To
pCi/L – Picocuries Per Liter
fd – Field Duplicate RPDs
LCSD – Laboratory Control Sample Duplicate
MS/MSD – Matrix Spike/Matrix Spike Duplicate

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

December 02, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60659991 PRPA CCR
Pace Project No.: 60383575

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on October 16, 2021. 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 Analytical Services - Greensburg

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: 60659991 PRPA CCR
Pace Project No.: 60383575

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 60659991 PRPA CCR
Pace Project No.: 60383575

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60383575001	**ASH-04-CCR**	Water	10/15/21 09:20	10/16/21 11:30
60383575002	**ASH-05-CCR**	Water	10/15/21 10:30	10/16/21 11:30
60383575003	**BAT-12-CCR**	Water	10/15/21 12:15	10/16/21 11:30
60383575004	**BAT-09-CCR**	Water	10/15/21 14:15	10/16/21 11:30
60383575005	**DUP-02-CCR**	Water	10/15/21 08:00	10/16/21 11:30

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SAMPLE ANALYTE COUNT

Project: 60659991 PRPA CCR
Pace Project No.: 60383575

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60383575001	**ASH-04-CCR**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60383575002	**ASH-05-CCR**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60383575003	**BAT-12-CCR**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60383575004	**BAT-09-CCR**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60383575005	**DUP-02-CCR**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383575

Sample: ASH-04-CCR **Lab ID: 60383575001** Collected: 10/15/21 09:20 Received: 10/16/21 11:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.890 ± 0.543 (0.686) C:NA T:102%**	pCi/L	11/04/21 15:24	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**2.74 ± 0.724 (0.782) C:71% T:88%**	pCi/L	11/02/21 11:12	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**3.63 ± 1.27 (1.47)**	pCi/L	11/08/21 17:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383575

Sample: ASH-05-CCR **Lab ID: 60383575002** Collected: 10/15/21 10:30 Received: 10/16/21 11:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.0561 ± 0.291 (0.604) C:NA T:96%**	pCi/L	11/04/21 15:24	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**3.77 ± 0.882 (0.732) C:72% T:92%**	pCi/L	11/02/21 11:12	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**3.83 ± 1.17 (1.34)**	pCi/L	11/08/21 17:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383575

Sample: BAT-12-CCR **Lab ID: 60383575003** Collected: 10/15/21 12:15 Received: 10/16/21 11:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.305 ± 0.523 (0.916) C:NA T:98%**	pCi/L	11/04/21 15:24	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**3.24 ± 0.775 (0.661) C:72% T:94%**	pCi/L	11/02/21 11:12	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**3.55 ± 1.30 (1.58)**	pCi/L	11/08/21 17:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383575

Sample: BAT-09-CCR **Lab ID: 60383575004** Collected: 10/15/21 14:15 Received: 10/16/21 11:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.578 ± 0.430 (0.566) C:NA T:104%**	pCi/L	11/04/21 15:24	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**2.23 ± 0.659 (0.824) C:67% T:89%**	pCi/L	11/02/21 11:12	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**2.81 ± 1.09 (1.39)**	pCi/L	11/08/21 17:16	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383575

Sample: DUP-02-CCR **Lab ID: 60383575005** Collected: 10/15/21 08:00 Received: 10/16/21 11:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.000 ± 0.287 (0.585)** **C:NA T:100%**	pCi/L	11/04/21 15:24	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.479 ± 0.362 (0.711)** **C:68% T:90%**	pCi/L	11/02/21 11:12	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.479 ± 0.649 (1.30)**	pCi/L	11/08/21 17:16	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383575

QC Batch: 469278
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60383575001, 60383575002, 60383575003, 60383575004, 60383575005

METHOD BLANK: 2266076
Matrix: Water
Associated Lab Samples: 60383575001, 60383575002, 60383575003, 60383575004, 60383575005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.385 ± 0.380 (0.578) C:NA T:93%	pCi/L	11/04/21 15:24	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383575

QC Batch: 469280
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60383575001, 60383575002, 60383575003, 60383575004, 60383575005

METHOD BLANK: 2266077
Matrix: Water
Associated Lab Samples: 60383575001, 60383575002, 60383575003, 60383575004, 60383575005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.113 ± 0.226 (0.556) C:73% T:99%	pCi/L	11/02/21 11:12	

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.

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QUALIFIERS

Project: 60659991 PRPA CCR
Pace Project No.: 60383575

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60659991 PRPA CCR
Pace Project No.: 60383575

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60383575001	**ASH-04-CCR**	EPA 903.1	469278		
60383575002	**ASH-05-CCR**	EPA 903.1	469278		
60383575003	**BAT-12-CCR**	EPA 903.1	469278		
60383575004	**BAT-09-CCR**	EPA 903.1	469278		
60383575005	**DUP-02-CCR**	EPA 903.1	469278		
60383575001	**ASH-04-CCR**	EPA 904.0	469280		
60383575002	**ASH-05-CCR**	EPA 904.0	469280		
60383575003	**BAT-12-CCR**	EPA 904.0	469280		
60383575004	**BAT-09-CCR**	EPA 904.0	469280		
60383575005	**DUP-02-CCR**	EPA 904.0	469280		
60383575001	**ASH-04-CCR**	Total Radium Calculation	471678		
60383575002	**ASH-05-CCR**	Total Radium Calculation	471678		
60383575003	**BAT-12-CCR**	Total Radium Calculation	471678		
60383575004	**BAT-09-CCR**	Total Radium Calculation	471678		
60383575005	**DUP-02-CCR**	Total Radium Calculation	471678		

Internal Transfer Chain of Custody

☐ Samples Pre-Logged into eCOC.

State Of Origin: CO
Cert. Needed: [X] Yes ☐ No

Pace Analytical®
www.pacelabs.com

Workorder: 60383575 **Workorder Name:** 60659991 PRPA CCR
Owner Received Date: 10/16/2021 **Results Requested By:** 11/8/2021

Report To

Heather Wilson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1407

Subcontract To

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

WO# : 30446233
30446233

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other						Requested Analysis: Total Radium-226 & Total Sum Radium	Total Radium-228										LAB USE ONLY
1	ASH-04-CCR	PS	10/15/2021 09:20	60383575001	Water	1						X	X										001
2	ASH-05-CCR	PS	10/15/2021 10:30	60383575002	Water	1						X	X										002
3	BAT-12-CCR	PS	10/15/2021 12:15	60383575003	Water	1						X	X										003
4	BAT-09-CCR	PS	10/15/2021 14:15	60383575004	Water	1						X	X										004
5	DUP-02-CCR	PS	10/15/2021 08:00	60383575005	Water	1						X	X										005

Transfers	Released By	Date/Time	Received By	Date/Time
1			[signature]	10-16-21 11:30
2				
3				

Comments

IR30- Radium QC Sheets Required

Cooler Temperature on Receipt — °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.*

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace Kansas Project # _____

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label 2a
LIMS Login AC

Tracking #: 9308 4773 4792

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used — Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

WO#: 30446233
PM: MS1 Due Date: 11/08/21
CLIENT: PACE_60_LEKS

Comments:	Yes	No	N/A		
				pH paper Lot# 10D0411	Date and Initials of person examining contents: 10-19-21 2a
Chain of Custody Present:	✓			1.	
Chain of Custody Filled Out:	✓			2.	
Chain of Custody Relinquished:		✓		3.	
Sampler Name & Signature on COC:		✓		4.	
Sample Labels match COC: -Includes date/time/ID Matrix: WT		✓		5. Time on samples DUP-02-CCR -	
Samples Arrived within Hold Time:	✓			6.	
Short Hold Time Analysis (<72hr remaining):		✓		7.	
Rush Turn Around Time Requested:		✓		8.	
Sufficient Volume:	✓			9.	
Correct Containers Used:	✓			10.	
-Pace Containers Used:	✓				
Containers Intact:	✓			11.	
Orthophosphate field filtered			✓	12.	
Hex Cr Aqueous sample field filtered			✓	13.	
Organic Samples checked for dechlorination:			✓	14.	
Filtered volume received for Dissolved tests			✓	15.	
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2	
All containers meet method preservation requirements.	✓			Initial when completed 2a	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			✓	17.	
Trip Blank Present:			✓	18.	
Trip Blank Custody Seals Present			✓		
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: 2a	Date: 10-19-21 / Survey Meter SN: 1563

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

CCR-~~15~~ PA

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	136205
Project Name:	60659991 PRPA CCR
Project Number:	60659991

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	ASH-04-CCR	WT	G	–		10-15-21	0920		2			2							✓	✓	✓	N	
2	ASH-05-CCR	WT	G	–		10-15-21	1030		2			2							✓	✓	✓	N	
3	BAT-12-CCR	WT	G	–		10-15-21	1215		2			2							✓	✓	✓	N	
4	BAT-09-CCR	WT	G	–		10-15-21	1415		2			2							✓	✓	✓	N	
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12	DUP-02-CCR	WT	G	–		10-15-21	–		2			2							✓	✓	✓	N	

JL

WO#: 30446233
PM: MS1 Due Date: 11/08/21
CLIENT: PACE_60_LEKS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Jack Lay AECOM	10-15-21	1700				

ept: 6003 Date : 27Mar21 Shipping : 0.00
ustomer : 793003 Weight : 40 LBS Special : 0.00
hone : (317)875-5894 COD : Handling : 0.00
ept: client services DV : 0.00 Total : 0.00
Svcs: PRIORITY OVERNIGHT Master 9308 4773 4781
TRCK: 9308 4773 4792

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jack Lay

SIGNATURE of SAMPLER: Jack Lay DATE Signed (MM/DD/YY): 10/15/21

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Quality Control Sample Performance Assessment

Pace Analytical
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Test:	Ra-226
Analyst:	SLC
Date:	10/27/2021
Batch ID:	63300
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2266076
MB concentration:	0.385
M/B Counting Uncertainty:	0.377
MB MDC:	0.578
MB Numerical Performance Indicator:	2.00
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS63300	LCSD63300
Count Date:	11/4/2021	
Spike I.D.:	20-032	
Spike Concentration (pCi/mL):	32.168	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.653	
Target Conc. (pCi/L, g, F):	4.928	
Uncertainty (Calculated):	0.232	
Result (pCi/L, g, F):	5.476	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	1.023	
Numerical Performance Indicator:	1.02	
Percent Recovery:	111.12%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	10/18/2021	
Sample I.D.	30445955001	
Sample MS I.D.	30445955001MS	
Sample MSD I.D.		
Spike I.D.:	20-032	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.169	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.655	
MS Target Conc.(pCi/L, g, F):	9.818	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.461	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.447	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.303	
Sample Matrix Spike Result:	8.741	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.176	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:	-2.300	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	84.48%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	N/A	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	136%	
MS/MSD Lower % Recovery Limits:	71%	

Duplicate Sample Assessment		
Sample I.D.:	30445931001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	30445931001DUP	
Sample Result (pCi/L, g, F):	0.108	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.211	
Sample Duplicate Result (pCi/L, g, F):	-0.052	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.176	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	1.138	30445931001
Duplicate RPD:	569.63%	30445931001DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	32%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

***~~Batch must be re-prepped due to unacceptable precision.~~ Results < MDC, NA

11/4/21

SLC 11/04/2021

11/10/21

Quality Control Sample Performance Assessment

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Test:	Ra-228
Analyst:	JC2
Date:	10/29/2021
Worklist:	63301
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2266077
MB concentration:	-0.113
M/B 2 Sigma CSU:	0.226
MB MDC:	0.556
MB Numerical Performance Indicator:	-0.98
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS63301	LCSD63301
Count Date:	11/2/2021	11/2/2021
Spike I.D.:	21-029	21-029
Decay Corrected Spike Concentration (pCi/mL):	37.612	37.612
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.807	0.806
Target Conc. (pCi/L, g, F):	4.659	4.664
Uncertainty (Calculated):	0.228	0.229
Result (pCi/L, g, F):	6.245	6.261
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.295	1.310
Numerical Performance Indicator:	2.36	2.35
Percent Recovery:	134.04%	134.23%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	10/11/2021	
Sample I.D.	30445956001	
Sample MS I.D.	30445956001MS	
Sample MSD I.D.		
Spike I.D.:	21-029	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	37.884	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.813	
MS Target Conc.(pCi/L, g, F):	9.324	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.457	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.025	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.294	
Sample Matrix Spike Result:	12.424	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	2.412	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:	2.438	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	132.98%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	Warning	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	135%	
MS/MSD Lower % Recovery Limits:	60%	

Duplicate Sample Assessment		
Sample I.D.:	LCS63301	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD63301	
Sample Result (pCi/L, g, F):	6.245	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.295	
Sample Duplicate Result (pCi/L, g, F):	6.261	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.310	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.018	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	0.15%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

11/3/21

SCC 11/07/21

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60383586
Sampling Event: October 18, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: December 17, 2021
Peer Reviewer: Katie Abbott — Date Completed: January 6, 2022

This report contains the final results of the data validation conducted for the water samples collected October 18th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006 (November 2020).

General Overall Assessment:

_____ Data are usable without qualification.
__X__ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.		X[1]	
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.			X
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • The agreement between parent sample results and laboratory duplicate sample results were evaluated. The duplicate error ratios (DER) met the criterion of a DER ≤2.			X
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below: • The agreement between parent sample results and field duplicate sample results were evaluated. The DER met the criterion of a DER ≤2.			X

<table>
<tr><th>Review Parameter</th><th>Criteria</th><th colspan="3">Criteria Met?</th></tr>
<tr><td>Sample-specific Parameters</td><td>For each “No” response, list qualified data and bias direction in Table 1 or explain no qualification in comments.</td><td>Yes</td><td>No</td><td>NA</td></tr>
<tr><td>Equipment Blanks</td><td>No target analytes reported in the associated equipment blank.</td><td>X</td><td></td><td></td></tr>
<tr><td>Detection Limits Mets</td><td>For radiochemical results if the associated uncertainty was greater than the reported result, the 2 sigma (σ) uncertainty multiplied by 1.65 was less than or equal to the specified detection limit.
<table>
<tr><th>Sample</th><th>Analyte</th><th>Result (pCi/L)</th><th>2 Sigma (σ) Uncertainty</th><th>MDC (pCi/L)</th></tr>
<tr><td>BAT-08-CCR</td><td>Radium-226</td><td>0.155</td><td>± 0.236</td><td>0.140</td></tr>
</table>
± – Plus or Minus
pCi/L – Picocuries Per Liter
MDC – Minimum Detectable Concentration
Ra – Radium</td><td></td><td>X[2]</td><td></td></tr>
<tr><td>Tracer and/or Carrier Recovery</td><td>The sample specific recoveries were within the laboratory limits.</td><td>X</td><td></td><td></td></tr>
<tr><td>Reporting</td><td>No reporting issues were found and further qualification was not considered necessary.</td><td>X</td><td></td><td></td></tr>
<tr><td>Package Completeness</td><td>No results were qualified as unusable and the data are 100% complete.</td><td>X</td><td></td><td></td></tr>
<tr><th colspan="5">Comments</th></tr>
<tr><td colspan="5">1 – Samples were received intact; however, no cooler temperature was recorded upon receipt at the laboratory. Due to the stability of the radiological parameters, data qualification on the basis of temperature exceedance is not considered necessary.

2 – For the radium-226 result for sample BAT-08-CCR, the 2 sigma (σ) uncertainty multiplied by 1.65 was greater than the reported minimum detectable concentration (MDC) and was qualified as estimated (J v) indicating the detection limit criteria was not met.</td></tr>
</table>

> – Greater Than
± – Plus or Minus/High or Low Bias
% – Percent
LCS – Laboratory Control Sample
MDC – Minimum Detectable Concentration
Ra – Radium

< – Less Than
σ – Sigma (Uncertainty)
DER – Duplicate Error Ratio
LCSD – Laboratory Control Sample Duplicate
MS/MSD – Matrix Spike/Matrix Spike Duplicate
RPD – Relative Percent Difference

≤ – Less Than or Equal To
pCi/L – Picocuries Per Liter
J – Estimated
MB – Method Blank
NA – Not Applicable
v – Compound Identification Issue

Pace Analytical Services, LLC
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December 02, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60659991 PRPA CCR
Pace Project No.: 60383586

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on October 19, 2021. 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 Analytical Services - Greensburg

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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CERTIFICATIONS

Project: 60659991 PRPA CCR
Pace Project No.: 60383586

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 60659991 PRPA CCR
Pace Project No.: 60383586

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60383586001	**BAT-10-CCR**	Water	10/18/21 09:30	10/19/21 09:30
60383586002	**BAT-08-CCR**	Water	10/18/21 11:30	10/19/21 09:30

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SAMPLE ANALYTE COUNT

Project: 60659991 PRPA CCR
Pace Project No.: 60383586

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60383586001	**BAT-10-CCR**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60383586002	**BAT-08-CCR**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383586

Sample: BAT-10-CCR **Lab ID: 60383586001** Collected: 10/18/21 09:30 Received: 10/19/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.309 ± 0.438 (0.742) C:NA T:91%**	pCi/L	11/10/21 15:38	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.357 ± 0.414 (0.872) C:68% T:87%**	pCi/L	11/04/21 14:41	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.666 ± 0.852 (1.61)**	pCi/L	11/11/21 16:49	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383586

Sample: BAT-08-CCR **Lab ID: 60383586002** Collected: 10/18/21 11:30 Received: 10/19/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.155 ± 0.236 (0.140) C:NA T:102%**	pCi/L	11/10/21 15:38	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.0321 ± 0.628 (1.45) C:65% T:88%**	pCi/L	11/04/21 18:38	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.187 ± 0.864 (1.59)**	pCi/L	11/11/21 16:49	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383586

QC Batch: 469285
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60383586001, 60383586002

METHOD BLANK: 2266081
Matrix: Water
Associated Lab Samples: 60383586001, 60383586002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.229 ± 0.359 (0.777) C:69% T:89%	pCi/L	11/04/21 14:43	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383586

QC Batch: 469284
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60383586001, 60383586002

METHOD BLANK: 2266080
Matrix: Water
Associated Lab Samples: 60383586001, 60383586002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0897 ± 0.305 (0.673) C:NA T:91%	pCi/L	11/10/21 15:38	

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.

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QUALIFIERS

Project: 60659991 PRPA CCR
Pace Project No.: 60383586

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60659991 PRPA CCR
Pace Project No.: 60383586

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60383586001	**BAT-10-CCR**	EPA 903.1	469284		
60383586002	**BAT-08-CCR**	EPA 903.1	469284		
60383586001	**BAT-10-CCR**	EPA 904.0	469285		
60383586002	**BAT-08-CCR**	EPA 904.0	469285		
60383586001	**BAT-10-CCR**	Total Radium Calculation	472265		
60383586002	**BAT-08-CCR**	Total Radium Calculation	472265		

Internal Transfer Chain of Custody

☐ Samples Pre-Logged into eCOC.

State Of Origin: CO
Cert. Needed: [X] Yes ☐ No

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www.pacelabs.com

Workorder: 60383586 **Workorder Name:** 60659991 PRPA CCR
Owner Received Date: 10/19/2021 **Results Requested By:** 11/9/2021

Report To

Heather Wilson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1407

Subcontract To

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

Requested Analysis

WO# : 30446187
30446187

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Total Radium-226 & Total Sum Radium	Total Radium-228	LAB USE ONLY
1	BAT-10-CCR	PS	10/18/2021 09:30	60383586001	Water	1	X	X	001
2	BAT-08-CCR	PS	10/18/2021 11:30	60383586002	Water	1	X	X	002
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1			[illegible]	10/19/21 09:30
2				
3				

Comments

IR30- Radium QC Sheets Required

Cooler Temperature on Receipt – °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.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace KS (AECOM) Project # _____

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 9308 4773 4807

Label: AF

LIMS Login: 4

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used: N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp: – °C Correction Factor: – °C Final Temp: – °C

Temp should be above freezing to 6°C

WO#: 30446187
PM: MS1 Due Date: 11/15/21
CLIENT: PACE_60_LEKS

pH paper Lot#: 10D0411 Date and Initials of person examining contents: 10/19/21 AF

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed: AF Date/time of preservation: Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: AF Date: 10/19/21 Survey Meter SN: 15563

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

CCR-PA

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A
Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B
Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	136205
Project Name:	60659991 PRPA CCR
Project Number:	60659991

Section C
Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D
Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-10-CCR	WT	G	—		10-18-21	0930		2			2						✓	✓	✓	N	
2	BAT-08-CCR	WT	G	—		10-18-21	1130		2			2						✓	✓	✓	N	
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

JL

WO#: 30446187
PM: MS1 Due Date: 11/15/21
CLIENT: PACE_60_LEKS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Jack Ley AECOM	10-18-21	1700				

SAMPLE CONDITIONS: Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Jack Ley
SIGNATURE of SAMPLER: [signature]
DATE Signed (MM/DD/YY): 10/18/21

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-228
Analyst:	JC2
Date:	11/2/2021
Worklist:	63305
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2266081
MB concentration:	0.229
M/B 2 Sigma CSU:	0.359
MB MDC:	0.777
MB Numerical Performance Indicator:	1.25
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS63305	LCSD63305
Count Date:	11/4/2021	11/4/2021
Spike I.D.:	21-029	21-029
Decay Corrected Spike Concentration (pCi/mL):	37.583	37.583
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.809	0.808
Target Conc. (pCi/L, g, F):	4.644	4.651
Uncertainty (Calculated):	0.228	0.228
Result (pCi/L, g, F):	4.293	4.399
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.099	1.142
Numerical Performance Indicator:	-0.61	-0.42
Percent Recovery:	92.45%	94.58%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS63305	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD63305	
Sample Result (pCi/L, g, F):	4.293	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.099	
Sample Duplicate Result (pCi/L, g, F):	4.399	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.142	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.131	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	2.28%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

MW 11/7/21

CG 11/11/21

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	SLC
Date:	11/1/2021
Batch ID:	63304
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2266080
MB concentration:	-0.090
M/B Counting Uncertainty:	0.304
MB MDC:	0.673
MB Numerical Performance Indicator:	-0.58
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS63304	LCSD63304
Count Date:	11/10/2021	11/10/2021
Spike I.D.:	20-032	20-032
Spike Concentration (pCi/mL):	32.168	32.168
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.659	0.654
Target Conc. (pCi/L, g, F):	4.879	4.920
Uncertainty (Calculated):	0.229	0.231
Result (pCi/L, g, F):	3.818	4.262
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.818	0.669
Numerical Performance Indicator:	-2.45	-1.82
Percent Recovery:	78.25%	86.63%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	73%	73%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS63304	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD63304	
Sample Result (pCi/L, g, F):	3.818	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.818	
Sample Duplicate Result (pCi/L, g, F):	4.262	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.669	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.823	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	10.17%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	32%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

SLC 11/10/2021

11/11/21

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

November 08, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60659991 PRPA CCR
Pace Project No.: 60383648

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on October 16, 2021. 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 Analytical Services - Kansas City

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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

CERTIFICATIONS

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

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 #: 2000302021-3
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, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60383648001	**ASH-04-CCR**	Water	10/15/21 09:20	10/16/21 09:15
60383648002	**ASH-05-CCR**	Water	10/15/21 10:30	10/16/21 09:15
60383648003	**BAT-12-CCR**	Water	10/15/21 12:15	10/16/21 09:15
60383648004	**BAT-09-CCR**	Water	10/15/21 14:15	10/16/21 09:15
60383648005	**DUP-02-CCR**	Water	10/15/21 08:00	10/16/21 09:15

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Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60383648001	**ASH-04-CCR**	EPA 6010	MA1	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60383648002	**ASH-05-CCR**	EPA 6010	MA1	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60383648003	**BAT-12-CCR**	EPA 6010	MA1	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60383648004	**BAT-09-CCR**	EPA 6010	MA1	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60383648005	**DUP-02-CCR**	EPA 6010	MA1	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

Sample: ASH-04-CCR **Lab ID: 60383648001** Collected: 10/15/21 09:20 Received: 10/16/21 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							
Boron	**640**	ug/L	100	1	11/03/21 14:24	11/05/21 17:29	7440-42-8	
Calcium	**466000**	ug/L	1000	5	11/03/21 14:24	11/05/21 18:01	7440-70-2	
Lithium	**438**	ug/L	10.0	1	11/03/21 14:24	11/05/21 17:29	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:38	7440-36-0	
Arsenic	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:38	7440-38-2	
Barium	**16.2**	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:38	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/03/21 14:24	11/08/21 13:38	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/03/21 14:24	11/08/21 13:38	7440-43-9	
Chromium	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:38	7440-47-3	
Cobalt	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:38	7440-48-4	
Lead	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:38	7439-92-1	
Molybdenum	**1.2**	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:38	7439-98-7	
Selenium	**112**	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:38	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:38	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/04/21 17:24	11/05/21 12:13	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**5590**	mg/L	100	1		10/21/21 12:14		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**209**	mg/L	50.0	50		10/29/21 19:21	16887-00-6	
Fluoride	ND	mg/L	0.20	1		10/29/21 18:34	16984-48-8	
Sulfate	**3790**	mg/L	500	500		10/29/21 19:45	14808-79-8	

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

ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

Sample: ASH-05-CCR **Lab ID: 60383648002** Collected: 10/15/21 10:30 Received: 10/16/21 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							
Boron	**871**	ug/L	100	1	11/03/21 14:24	11/05/21 17:31	7440-42-8	
Calcium	**549000**	ug/L	4000	20	11/03/21 14:24	11/07/21 11:58	7440-70-2	
Lithium	**300**	ug/L	200	20	11/03/21 14:24	11/07/21 11:58	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:55	7440-36-0	
Arsenic	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:55	7440-38-2	
Barium	**15.2**	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:55	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/03/21 14:24	11/08/21 13:55	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/03/21 14:24	11/08/21 13:55	7440-43-9	
Chromium	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:55	7440-47-3	
Cobalt	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:55	7440-48-4	
Lead	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:55	7439-92-1	
Molybdenum	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:55	7439-98-7	
Selenium	**38.6**	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:55	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 13:55	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/04/21 17:24	11/05/21 12:17	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**4810**	mg/L	100	1		10/21/21 12:14		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**266**	mg/L	50.0	50		10/29/21 20:21	16887-00-6	
Fluoride	ND	mg/L	0.20	1		10/29/21 20:09	16984-48-8	
Sulfate	**2270**	mg/L	400	400		10/29/21 20:32	14808-79-8	

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

Sample: BAT-12-CCR **Lab ID: 60383648003** Collected: 10/15/21 12:15 Received: 10/16/21 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							
Boron	**229**	ug/L	100	1	11/03/21 14:24	11/05/21 17:33	7440-42-8	
Calcium	**90200**	ug/L	200	1	11/03/21 14:24	11/05/21 17:33	7440-70-2	
Lithium	**89.5**	ug/L	10.0	1	11/03/21 14:24	11/05/21 17:33	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:08	7440-36-0	
Arsenic	**1.3**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:08	7440-38-2	
Barium	**30.9**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:08	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/03/21 14:24	11/08/21 14:08	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/03/21 14:24	11/08/21 14:08	7440-43-9	
Chromium	**1.4**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:08	7440-47-3	
Cobalt	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:08	7440-48-4	
Lead	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:08	7439-92-1	
Molybdenum	**7.7**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:08	7439-98-7	
Selenium	**3.3**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:08	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:08	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/04/21 17:24	11/05/21 12:19	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**936**	mg/L	13.3	1		10/21/21 12:14		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**137**	mg/L	10.0	10		10/29/21 20:56	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	1		10/29/21 20:44	16984-48-8	
Sulfate	**325**	mg/L	50.0	50		10/29/21 21:32	14808-79-8	

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

Sample: BAT-09-CCR **Lab ID: 60383648004** Collected: 10/15/21 14:15 Received: 10/16/21 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							
Boron	**2150**	ug/L	100	1	11/03/21 14:24	11/05/21 17:35	7440-42-8	
Calcium	**221000**	ug/L	1000	5	11/03/21 14:24	11/05/21 18:12	7440-70-2	
Lithium	**264**	ug/L	10.0	1	11/03/21 14:24	11/05/21 17:35	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:25	7440-36-0	
Arsenic	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:25	7440-38-2	
Barium	**13.8**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:25	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/03/21 14:24	11/08/21 14:25	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/03/21 14:24	11/08/21 14:25	7440-43-9	
Chromium	**1.7**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:25	7440-47-3	
Cobalt	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:25	7440-48-4	
Lead	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:25	7439-92-1	
Molybdenum	**3.8**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:25	7439-98-7	
Selenium	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:25	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:25	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/04/21 17:24	11/05/21 12:21	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**3250**	mg/L	100	1		10/21/21 12:14		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**188**	mg/L	20.0	20		11/01/21 22:18	16887-00-6	
Fluoride	ND	mg/L	0.20	1		10/29/21 21:55	16984-48-8	
Sulfate	**4.3**	mg/L	1.0	1		10/29/21 21:43	14808-79-8	

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

Sample: DUP-02-CCR **Lab ID: 60383648005** Collected: 10/15/21 08:00 Received: 10/16/21 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							
Boron	**228**	ug/L	100	1	11/03/21 14:24	11/05/21 17:37	7440-42-8	
Calcium	**87700**	ug/L	200	1	11/03/21 14:24	11/05/21 17:37	7440-70-2	
Lithium	**89.0**	ug/L	10.0	1	11/03/21 14:24	11/05/21 17:37	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:37	7440-36-0	
Arsenic	**1.2**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:37	7440-38-2	
Barium	**28.3**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:37	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/03/21 14:24	11/08/21 14:37	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/03/21 14:24	11/08/21 14:37	7440-43-9	
Chromium	**1.1**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:37	7440-47-3	
Cobalt	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:37	7440-48-4	
Lead	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:37	7439-92-1	
Molybdenum	**7.6**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:37	7439-98-7	
Selenium	**3.1**	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:37	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/03/21 14:24	11/08/21 14:37	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/04/21 17:24	11/05/21 12:28	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**899**	mg/L	10.0	1		10/21/21 12:14		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**134**	mg/L	20.0	20		11/01/21 22:29	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	1		10/29/21 22:19	16984-48-8	
Sulfate	**365**	mg/L	20.0	20		11/01/21 22:29	14808-79-8	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

QC Batch: 754224
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383648001, 60383648002, 60383648003, 60383648004, 60383648005

METHOD BLANK: 3018757
Matrix: Water
Associated Lab Samples: 60383648001, 60383648002, 60383648003, 60383648004, 60383648005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	11/05/21 11:45	

LABORATORY CONTROL SAMPLE: 3018758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018759 3018760

Parameter	Units	60383394002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.1	5.1	99	100	75-125	0	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

QC Batch: 753875
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383648001, 60383648002, 60383648003, 60383648004, 60383648005

METHOD BLANK: 3017489
Matrix: Water
Associated Lab Samples: 60383648001, 60383648002, 60383648003, 60383648004, 60383648005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	11/05/21 17:03	
Calcium	ug/L	ND	200	11/05/21 17:03	
Lithium	ug/L	ND	10.0	11/05/21 17:03	

LABORATORY CONTROL SAMPLE: 3017490

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	952	95	80-120	
Calcium	ug/L	10000	9330	93	80-120	
Lithium	ug/L	1000	864	86	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017491 3017492

Parameter	Units	60383394002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	2200	1000	1000	3100	3230	91	103	75-125	4	20	
Calcium	ug/L	208000	10000	10000	213000	217000	47	96	75-125	2	20	M1
Lithium	ug/L	267	1000	1000	1420	1440	115	117	75-125	1	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

QC Batch: 753874
QC Batch Method: EPA 3010
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383648001, 60383648002, 60383648003, 60383648004, 60383648005

METHOD BLANK: 3017485
Matrix: Water
Associated Lab Samples: 60383648001, 60383648002, 60383648003, 60383648004, 60383648005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	11/08/21 11:28	
Arsenic	ug/L	ND	1.0	11/08/21 11:28	
Barium	ug/L	ND	1.0	11/08/21 11:28	
Beryllium	ug/L	ND	0.50	11/08/21 11:28	
Cadmium	ug/L	ND	0.50	11/08/21 11:28	
Chromium	ug/L	ND	1.0	11/08/21 11:28	
Cobalt	ug/L	ND	1.0	11/08/21 11:28	
Lead	ug/L	ND	1.0	11/08/21 11:28	
Molybdenum	ug/L	ND	1.0	11/08/21 11:28	
Selenium	ug/L	ND	1.0	11/08/21 11:28	
Thallium	ug/L	ND	1.0	11/08/21 11:28	

LABORATORY CONTROL SAMPLE: 3017486

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.6	99	80-120	
Arsenic	ug/L	40	41.0	102	80-120	
Barium	ug/L	40	38.2	95	80-120	
Beryllium	ug/L	40	42.1	105	80-120	
Cadmium	ug/L	40	41.0	102	80-120	
Chromium	ug/L	40	40.1	100	80-120	
Cobalt	ug/L	40	39.2	98	80-120	
Lead	ug/L	40	40.4	101	80-120	
Molybdenum	ug/L	40	41.9	105	80-120	
Selenium	ug/L	40	39.8	100	80-120	
Thallium	ug/L	40	36.4	91	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017487 3017488

Parameter	Units	60383394001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	39.6	39.2	99	98	75-125	1	20	
Arsenic	ug/L	1.3	40	40	40.9	41.3	99	100	75-125	1	20	
Barium	ug/L	29.2	40	40	66.6	66.0	93	92	75-125	1	20	
Beryllium	ug/L	ND	40	40	39.0	38.6	97	97	75-125	1	20	
Cadmium	ug/L	ND	40	40	38.7	39.1	97	98	75-125	1	20	
Chromium	ug/L	1.1	40	40	40.6	40.4	99	98	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3017487 3017488

Parameter	Units	60383394001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	37.8	37.8	94	94	75-125	0	20	
Lead	ug/L	ND	40	40	37.7	37.5	94	94	75-125	0	20	
Molybdenum	ug/L	7.8	40	40	52.3	52.3	111	111	75-125	0	20	
Selenium	ug/L	3.4	40	40	39.9	40.8	91	94	75-125	2	20	
Thallium	ug/L	ND	40	40	34.7	34.8	87	87	75-125	0	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

QC Batch: 750981
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383648001, 60383648002, 60383648003, 60383648004, 60383648005

METHOD BLANK: 3006939
Matrix: Water
Associated Lab Samples: 60383648001, 60383648002, 60383648003, 60383648004, 60383648005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	10/21/21 12:13	

LABORATORY CONTROL SAMPLE: 3006940

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1030	103	80-120	

SAMPLE DUPLICATE: 3006941

Parameter	Units	60383644001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3290	3260	1	10	

SAMPLE DUPLICATE: 3006942

Parameter	Units	60383602001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	403	388	4	10	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

QC Batch: 752861
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60383648001, 60383648002, 60383648003, 60383648004, 60383648005

METHOD BLANK: 3013341 Matrix: Water
Associated Lab Samples: 60383648001, 60383648002, 60383648003, 60383648004, 60383648005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	10/29/21 16:00	
Fluoride	mg/L	ND	0.20	10/29/21 16:00	
Sulfate	mg/L	ND	1.0	10/29/21 16:00	

METHOD BLANK: 3016261 Matrix: Water
Associated Lab Samples: 60383648001, 60383648002, 60383648003, 60383648004, 60383648005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/01/21 10:05	
Fluoride	mg/L	ND	0.20	11/01/21 10:05	
Sulfate	mg/L	ND	1.0	11/01/21 10:05	

LABORATORY CONTROL SAMPLE: 3013342

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	80-120	
Fluoride	mg/L	2.5	2.5	102	80-120	
Sulfate	mg/L	5	4.8	96	80-120	

LABORATORY CONTROL SAMPLE: 3016262

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	80-120	
Fluoride	mg/L	2.5	2.7	106	80-120	
Sulfate	mg/L	5	5.3	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3013378 3013379

Parameter	Units	60383644003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	187	50	50	239	239	105	105	80-120	0	15	E
Fluoride	mg/L	ND	2.5	2.5	1.9	1.9	75	75	80-120	0	15	M1
Sulfate	mg/L	3870	2500	2500	6300	6250	97	95	80-120	1	15	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

SAMPLE DUPLICATE: 3013343

Parameter	Units	60383644003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	187	209	11	15	
Fluoride	mg/L	ND	0.25		15	
Sulfate	mg/L	3870	2950	27	15	D6

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QUALIFIERS

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60659991 PRPA CCR
Pace Project No.: 60383648

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60383648001	**ASH-04-CCR**	EPA 3010	753875	EPA 6010	753985
60383648002	**ASH-05-CCR**	EPA 3010	753875	EPA 6010	753985
60383648003	**BAT-12-CCR**	EPA 3010	753875	EPA 6010	753985
60383648004	**BAT-09-CCR**	EPA 3010	753875	EPA 6010	753985
60383648005	**DUP-02-CCR**	EPA 3010	753875	EPA 6010	753985
60383648001	**ASH-04-CCR**	EPA 3010	753874	EPA 6020	753984
60383648002	**ASH-05-CCR**	EPA 3010	753874	EPA 6020	753984
60383648003	**BAT-12-CCR**	EPA 3010	753874	EPA 6020	753984
60383648004	**BAT-09-CCR**	EPA 3010	753874	EPA 6020	753984
60383648005	**DUP-02-CCR**	EPA 3010	753874	EPA 6020	753984
60383648001	**ASH-04-CCR**	EPA 7470	754224	EPA 7470	754273
60383648002	**ASH-05-CCR**	EPA 7470	754224	EPA 7470	754273
60383648003	**BAT-12-CCR**	EPA 7470	754224	EPA 7470	754273
60383648004	**BAT-09-CCR**	EPA 7470	754224	EPA 7470	754273
60383648005	**DUP-02-CCR**	EPA 7470	754224	EPA 7470	754273
60383648001	**ASH-04-CCR**	SM 2540C	750981		
60383648002	**ASH-05-CCR**	SM 2540C	750981		
60383648003	**BAT-12-CCR**	SM 2540C	750981		
60383648004	**BAT-09-CCR**	SM 2540C	750981		
60383648005	**DUP-02-CCR**	SM 2540C	750981		
60383648001	**ASH-04-CCR**	EPA 9056	752861		
60383648002	**ASH-05-CCR**	EPA 9056	752861		
60383648003	**BAT-12-CCR**	EPA 9056	752861		
60383648004	**BAT-09-CCR**	EPA 9056	752861		
60383648005	**DUP-02-CCR**	EPA 9056	752861		

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Sample Condition Upon Receipt

WO# : 60383648

60383648

Client Name: AECOM

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 533387534361 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 ☑ SPC

Thermometer Used: 0296 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.5 **Corr. Factor** -0.3 **Corrected** 0.2 °C

Date and initials of person examining contents: SF 10/19/21

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	TDS 10/22
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# 0031173	☑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: _____

CCR-KS

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	136205
Project Name:	60659991 PRPA CCR
Project Number:	60659991

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	No RLI - 11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N) 9056 Cl, F, SO4	6020 Total Metals*	6010 Total Metals**	7470 Total Mercury	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	ASH-04-CCR	WT	G	—		10-15-21	0920		3	2		1						✓	✓	✓	✓	✓	N	60383648
2	ASH-05-CCR	WT	G	—		10-15-21	1030		3	2		1						✓	✓	✓	✓	✓	N	
3	BAT-12-CCR	WT	G	—		10-15-21	1215		3	2		1						✓	✓	✓	✓	✓	N	
4	BAT-09-CCR	WT	G	—		10-15-21	1415		3	2		1						✓	✓	✓	✓	✓	N	
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12	DUP-02-CCR	WT	G	—		10-15-21	—		3	2		1						✓	✓	✓	✓	✓	N	

JL

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, Tl	Jack Ley AECOM	10-15-21	1700	SROGERS PACE	10/16/21	09:15	0.2	Y	Y	Y
**B, Ca, Li										

Dept: 6003 Date : 01Oct21 Shipping : 0.00
Customer : 861077 Weight : 50 LBS Special : 0.00
Phone : (913)599-5665 COD : Handling : 0.00
Dept: client services DV : 0.00 Total : 0.00

Sure- PRIORITY OVERNIGHT Master 5333 8753 4269
SAMPLER NAME AND SIGN. TRCK: 5333 8753 4361

PRINT Name of SAMPLER: Jack Ley

SIGNATURE of SAMPLER: Jack Ley DATE Signed (MM/DD/YY): 10/15/21

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

COC PAGE 1 of 1

SBS
DI
MeOH (only)
BK
Kit

Client: AECOM

Site: 60605991 PRPA CCR

Sample Container Count

Profile # NO RCI-11033, 3

Notes

COC Line Item	Matrix	R	VG9H	DG9H	DG9Q	VG9U	DG9U	BG1U	AG1H	AG1U	AG2U	AG3S	AG4U	AG5U	BP1U	BP2U	BP3U	BP1N	BP3N	BP3F	BP3S	BP3C	BP3Z	JGFU	WGKU	ZPLC	DG9M	DG9B				
1															1		1	1														
2															1		1	1														
3															1		1	1														
4															1		1	1														
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12															1		1	1														

Container Codes

Glass			
DG9B	40mL bisulfate clear vial	WGKU	8oz clear soil jar
DG9H	40mL HCl amber voa vial	WGFU	4oz clear soil jar
DG9M	40mL MeOH clear vial	WG2U	2oz clear soil jar
DG9Q	40mL TSP amber vial	JGFU	4oz unpreserved amber wide
DG9S	40mL H2SO4 amber vial	AG0U	100mL unores amber glass
DG9T	40mL Na Thio amber vial	AG1H	1L HCl amber glass
DG9U	40mL amber unpreserved	AG1S	1L H2SO4 amber glass
VG9H	40mL HCl clear vial	AG1T	1L Na Thiosulfate clear/amber glass
VG9T	40mL Na Thio. clear vial	AG1U	1liter unpres amber glass
VG9U	40mL unpreserved clear vial	AG2N	500mL HNO3 amber glass
BG1S	1liter H2SO4 clear glass	AG2S	500mL H2SO4 amber glass
BG1U	1liter unpres glass	AG3S	250mL H2SO4 amber glass
BG3H	250mL HCL Clear glass	AG2U	500mL unpres amber glass
BG3U	250mL Unpres Clear glass	AG3U	250mL unpres amber glass
		AG4U	125mL unpres amber glass
		AG5U	100mL unpres amber glass

Plastic	
BP1C	1L NAOH plastic
BP1N	1L HNO3 plastic
BP1S	1L H2SO4 plastic
BP1U	1L unpreserved plastic
BP1Z	1L NaOH, Zn Acetate
BP2C	500mL NAOH plastic
BP2N	500mL HNO3 plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Acetate
BP3C	250mL NaOH plastic
BP3F	250mL HNO3 plastic - field filtered
BP3N	250mL HNO3 plastic
BP3U	250mL unpreserved plastic
BP3S	250mL H2SO4 plastic
BP3Z	250mL NaOH, Zn Acetate
BP4U	125mL unpreserved plastic
BP4N	125mL HNO3 plastic
BP4S	125mL H2SO4 plastic

Misc.	
I	Wipe/Swab
SP5T	120mL Coliform Na Thiosulfate
ZPLC	Ziploc Bag
AF	Air Filter
C	Air Cassettes
R	Terracore Kit
U	Summa Can

Matrix	
WT	Water
SL	Solid
NAL	Non-aqueous Liquid
OL	OIL
WP	Wipe
DW	Drinking Water

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60383814
Sampling Event: October 19, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: December 17, 2021
Peer Reviewer: Katie Abbott — Date Completed: January 6, 2022

This report contains the final results of the data validation conducted for the water samples collected October 19th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006 (November 2020).

General Overall Assessment:

__X__ Data are usable without qualification.
_____ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.		X[1]	
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.			X
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • The agreement between parent sample results and laboratory duplicate sample results were evaluated. The duplicate error ratios (DER) met the criterion of a DER ≤2.			X
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below: • The agreement between parent sample results and field duplicate sample results were evaluated. The DER met the criterion of a DER ≤2.			X

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Equipment Blanks	No target analytes reported in the associated equipment blank.	X		
Detection Limits Mets	For radiochemical results if the associated uncertainty was greater than the reported result, the 2 sigma (σ) uncertainty multiplied by 1.65 was less than or equal to the specified detection limit.	X		
Tracer and/or Carrier Recovery	The sample specific recoveries were within the laboratory limits.	X		
Reporting	No reporting issues were found and further qualification was not considered necessary.	X		
Package Completeness	No results were qualified as unusable and the data are 100% complete.	X		
Comments				
1 – Samples were received intact; however, no cooler temperature was recorded upon receipt at the laboratory. Due to the stability of the radiological parameters, data qualification on the basis of temperature exceedance is not considered necessary.				

> – Greater Than
< – Less Than
≤ – Less Than or Equal To
σ – Sigma (Uncertainty)
% – Percent
DER – Duplicate Error Ratio
LCS – Laboratory Control Sample
LCSD – Laboratory Control Sample Duplicate
MB – Method Blank
MDC – Minimum Detectable Concentration
MS/MSD – Matrix Spike/Matrix Spike Duplicate
NA – Not Applicable
RPD – Relative Percent Difference

Pace Analytical Services, LLC
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(913)599-5665

December 02, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60659991 PRPA CCR
Pace Project No.: 60383814

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on October 20, 2021. 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 Analytical Services - Greensburg

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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CERTIFICATIONS

Project: 60659991 PRPA CCR
Pace Project No.: 60383814

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 60659991 PRPA CCR
Pace Project No.: 60383814

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60383814001	**ERB-02-CCR**	Water	10/19/21 09:00	10/20/21 09:30
60383814002	**BAT-01-CCR**	Water	10/19/21 12:20	10/20/21 09:30
60383814003	**ASH-01-CCR**	Water	10/19/21 14:00	10/20/21 09:30

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SAMPLE ANALYTE COUNT

Project: 60659991 PRPA CCR
Pace Project No.: 60383814

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60383814001	**ERB-02-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60383814002	**BAT-01-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60383814003	**ASH-01-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383814

Sample: ERB-02-CCR **Lab ID: 60383814001** Collected: 10/19/21 09:00 Received: 10/20/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.0684 ± 0.312 (0.636) C:NA T:91%**	pCi/L	11/09/21 15:35	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.863 ± 0.549 (1.04) C:73% T:94%**	pCi/L	11/08/21 18:11	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.863 ± 0.861 (1.68)**	pCi/L	11/10/21 17:18	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383814

Sample: BAT-01-CCR **Lab ID: 60383814002** Collected: 10/19/21 12:20 Received: 10/20/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.256 ± 0.435 (0.767) C:NA T:99%**	pCi/L	11/09/21 15:35	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.124 ± 0.545 (1.23) C:71% T:94%**	pCi/L	11/08/21 18:11	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.380 ± 0.980 (2.00)**	pCi/L	11/10/21 17:18	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383814

Sample: ASH-01-CCR **Lab ID: 60383814003** Collected: 10/19/21 14:00 Received: 10/20/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.364 ± 0.506 (0.854) C:NA T:105%**	pCi/L	11/09/21 15:35	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.76 ± 0.641 (0.974) C:67% T:82%**	pCi/L	11/11/21 11:33	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**2.12 ± 1.15 (1.83)**	pCi/L	11/12/21 15:33	7440-14-4	

Pace Analytical Services, LLC
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Lenexa, KS 66219
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383814

QC Batch: 470660
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60383814001, 60383814002, 60383814003

METHOD BLANK: 2272194
Matrix: Water
Associated Lab Samples: 60383814001, 60383814002, 60383814003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.384 ± 0.301 (0.593) C:74% T:105%	pCi/L	11/08/21 14:43	

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.

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60383814

QC Batch: 470659
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60383814001, 60383814002, 60383814003

METHOD BLANK: 2272193
Matrix: Water
Associated Lab Samples: 60383814001, 60383814002, 60383814003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.171 ± 0.371 (0.684) C:NA T:99%	pCi/L	11/09/21 15:35	

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.

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QUALIFIERS

Project: 60659991 PRPA CCR
Pace Project No.: 60383814

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60659991 PRPA CCR
Pace Project No.: 60383814

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60383814001	**ERB-02-CCR**	EPA 903.1	470659		
60383814002	**BAT-01-CCR**	EPA 903.1	470659		
60383814003	**ASH-01-CCR**	EPA 903.1	470659		
60383814001	**ERB-02-CCR**	EPA 904.0	470660		
60383814002	**BAT-01-CCR**	EPA 904.0	470660		
60383814003	**ASH-01-CCR**	EPA 904.0	470660		
60383814001	**ERB-02-CCR**	Total Radium Calculation	472084		
60383814002	**BAT-01-CCR**	Total Radium Calculation	472084		
60383814003	**ASH-01-CCR**	Total Radium Calculation	472465		

Internal Transfer Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples Pre-Logged into eCOC.

State Of Origin: CO
Cert. Needed: ☒ Yes ☐ No

Workorder: 60383814 **Workorder Name:** 60659991 PRPA CCR

Owner Received Date: 10/20/2021 **Results Requested By:** 11/10/2021

Report To

Heather Wilson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1407

Subcontract To

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

Requested Analysis

WO#: 30447144
30447144

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Total Radium--226 & Total Sum	Total Radium-228	LAB USE ONLY
1	ERB-02-CCR	PS	10/19/2021 09:00	60383814001	Water	1	X	X	001
2	BAT-01-CCR	PS	10/19/2021 12:20	60383814002	Water	1	X	X	002
3	ASH-01-CCR	PS	10/19/2021 14:00	60383814003	Water	1	X	X	003
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1			[illegible] 10/20/21	0930
2				
3				

Comments

IR30- Radium QC Sheets Required

Cooler Temperature on Receipt — °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.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: PACE KS Project # _____

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 9308 4773 4829

Label _____
LIMS Login _____

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used — Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

WO#: 30447144
PM: MS1 Due Date: 11/08/21
CLIENT: PACE_60_LEKS

Comments:	Yes	No	N/A	pH paper Lot# 10D0411	Date and Initials of person examining contents AL 10/26/21
Chain of Custody Present:	X			1.	
Chain of Custody Filled Out:	X			2.	
Chain of Custody Relinquished:		X		3.	
Sampler Name & Signature on COC:		X		4.	
Sample Labels match COC: -Includes date/time/ID Matrix: WT		X		5. 2 containers received per sample	
Samples Arrived within Hold Time:	X			6.	
Short Hold Time Analysis (<72hr remaining):		X		7.	
Rush Turn Around Time Requested:		X		8.	
Sufficient Volume:	X			9.	
Correct Containers Used:	X			10.	
-Pace Containers Used:	X				
Containers Intact:	X			11.	
Orthophosphate field filtered			X	12.	
Hex Cr Aqueous sample field filtered			X	13.	
Organic Samples checked for dechlorination:			X	14.	
Filtered volume received for Dissolved tests			X	15.	
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	X			16.	
All containers meet method preservation requirements.	X			Initial when completed AL	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			X	17.	
Trip Blank Present:			X	18.	
Trip Blank Custody Seals Present			X		
Rad Samples Screened < 0.5 mrem/hr	X			Initial when completed: AL	Date: 10/26/21 Survey Meter SN: 15603

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

CCR-PA

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	136205
Project Name:	60659991 PRPA CCR
Project Number:	60659991

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	ERB-02-CCR	WT	G	—		10-19-21	0900		2			2						✓	✓	✓	N	
2	BAT-01-CCR	WT	G	—		10-19-21	1220		2			2						✓	✓	✓	N	
3	ASH-01-CCR	WT	G	—		10-19-21	1400		2			2						✓	✓	✓	N	
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

JL

WO#: 30447144
PM: MS1 Due Date: 11/08/21
CLIENT: PACE_60_LEKS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Jack Lay AECOM	10-19-21	1700				

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jack Lay

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 10/19/21

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	11/3/2021
Worklist:	63421
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2272194
MB concentration:	0.384
M/B 2 Sigma CSU:	0.301
MB MDC:	0.593
MB Numerical Performance Indicator:	2.50
MB Status vs Numerical Indicator:	Warning
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS63421	LCSD63421
Count Date:	11/8/2021	11/8/2021
Spike I.D.:	21-029	21-029
Decay Corrected Spike Concentration (pCi/mL):	37.534	37.534
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.810	0.810
Target Conc. (pCi/L, g, F):	4.636	4.636
Uncertainty (Calculated):	0.227	0.227
Result (pCi/L, g, F):	6.300	5.856
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.505	1.418
Numerical Performance Indicator:	2.14	1.67
Percent Recovery:	135.90%	126.32%
Status vs Numerical Indicator:	Warning	N/A
Status vs Recovery:	Fail High**	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS63421	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD63421	
Sample Result (pCi/L, g, F):	6.300	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.505	
Sample Duplicate Result (pCi/L, g, F):	5.856	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.418	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.421	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	7.30%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

~~**If all sample results are below MDC, the batch is acceptable, otherwise this batch must be reprepped due to LCS failure.~~

LCS NI < 3.0 JJT 11-9-21

11/9/21

Cy 11/9/21

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	MK1
Date:	11/2/2021
Batch ID:	63420
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2272193
MB concentration:	0.171
M/B Counting Uncertainty:	0.370
MB MDC:	0.684
MB Numerical Performance Indicator:	0.90
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS63420	**LCSD63420**
Count Date:	11/9/2021	11/9/2021
Spike I.D.:	20-032	20-032
Spike Concentration (pCi/mL):	32.168	32.168
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.676	0.664
Target Conc. (pCi/L, g, F):	4.758	4.844
Uncertainty (Calculated):	0.224	0.228
Result (pCi/L, g, F):	4.533	4.771
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.979	0.986
Numerical Performance Indicator:	-0.44	-0.14
Percent Recovery:	95.28%	98.49%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	73%	73%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS63420	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD63420	
Sample Result (pCi/L, g, F):	4.533	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.979	
Sample Duplicate Result (pCi/L, g, F):	4.771	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.986	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.335	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	3.31%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	32%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

SCC 11/09/2021

11/10/21

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60384069
Sampling Event: October 19, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: December 16, 2021
Peer Reviewer: Katie Abbott — Date Completed: January 6, 2022

This report contains the final results of the data validation conducted for the water samples collected October 19th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006 (November 2020).

General Overall Assessment:

__X__ Data are usable without qualification.
_____ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.	X		
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.			X
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • When both the sample and duplicate values are >5x the reporting limit (RL), acceptable sampling and analytical precision is indicated by an relative percent difference (RPD) between the results of ≤20%. • Where the result for one or both analytes of the method duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the method duplicate results is <1xRL.	X		

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below: • When both the sample and duplicate values are >5xRL acceptable sampling and analytical precision is indicated by a RPD between the results of ≤30%. • Where the result for one or both analytes of the field duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the field duplicate results is <2xRL.			X
Equipment Blanks	No target analytes reported in the associated equipment blank.	X		
Reporting Limits Met	No samples performed at dilutions or reported as non-detect at elevated method detection limits/reporting limits.	X		
Reporting	No reporting issues were found and further qualification was not considered necessary.	X		
Package Completeness	No results were qualified as unusable and the data are 100% complete.	X		

> – Greater Than
% – Percent
MB – Method Blank
RL – Reporting Limit
< – Less Than
LCS – Laboratory Control Sample
MS/MSD – Matrix Spike/Matrix Spike Duplicate
RPD – Relative Percent Difference
≤ – Less Than or Equal To
LCSD – Laboratory Control Sample Duplicate
NA – Not Applicable

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

November 11, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60659991 PRPA CCR
Pace Project No.: 60384069

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on October 20, 2021. 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 Analytical Services - Kansas City

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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

CERTIFICATIONS

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

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 #: 2000302021-3
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, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60384069001	**ERB-02-CCR**	Water	10/19/21 09:00	10/20/21 09:05
60384069002	**BAT-01-CCR**	Water	10/19/21 12:20	10/20/21 09:05
60384069003	**ASH-01-CCR**	Water	10/19/21 14:00	10/20/21 09:05

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SAMPLE ANALYTE COUNT

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60384069001	**ERB-02-CCR**	EPA 6010	MRV	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60384069002	**BAT-01-CCR**	EPA 6010	MRV	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60384069003	**ASH-01-CCR**	EPA 6010	MRV	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

Sample: ERB-02-CCR **Lab ID: 60384069001** Collected: 10/19/21 09:00 Received: 10/20/21 09:05 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							
Boron	ND	ug/L	100	1	11/08/21 14:18	11/10/21 13:23	7440-42-8	
Calcium	ND	ug/L	200	1	11/08/21 14:18	11/10/21 13:23	7440-70-2	
Lithium	ND	ug/L	10.0	1	11/08/21 14:18	11/10/21 13:23	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:33	7440-36-0	
Arsenic	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:33	7440-38-2	
Barium	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:33	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/08/21 14:18	11/10/21 10:33	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/08/21 14:18	11/10/21 10:33	7440-43-9	
Chromium	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:33	7440-47-3	
Cobalt	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:33	7440-48-4	
Lead	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:33	7439-92-1	
Molybdenum	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:33	7439-98-7	
Selenium	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:33	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:33	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/08/21 12:41	11/09/21 10:43	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	ND	mg/L	5.0	1		10/26/21 09:55		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	ND	mg/L	1.0	1		11/05/21 22:43	16887-00-6	
Fluoride	ND	mg/L	0.20	1		11/05/21 22:43	16984-48-8	
Sulfate	ND	mg/L	1.0	1		11/05/21 22:43	14808-79-8	

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

Sample: BAT-01-CCR **Lab ID: 60384069002** Collected: 10/19/21 12:20 Received: 10/20/21 09:05 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							
Boron	**1580**	ug/L	100	1	11/08/21 14:18	11/10/21 13:26	7440-42-8	
Calcium	**84500**	ug/L	200	1	11/08/21 14:18	11/10/21 13:26	7440-70-2	
Lithium	**179**	ug/L	10.0	1	11/08/21 14:18	11/10/21 13:26	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	**1.1**	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:50	7440-36-0	
Arsenic	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:50	7440-38-2	
Barium	**43.3**	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:50	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/08/21 14:18	11/10/21 10:50	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/08/21 14:18	11/10/21 10:50	7440-43-9	
Chromium	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:50	7440-47-3	
Cobalt	**1.2**	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:50	7440-48-4	
Lead	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:50	7439-92-1	
Molybdenum	**6.2**	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:50	7439-98-7	
Selenium	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:50	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 10:50	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/08/21 12:41	11/09/21 10:45	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**1590**	mg/L	20.0	1		10/26/21 09:55		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**313**	mg/L	50.0	50		11/05/21 23:19	16887-00-6	
Fluoride	ND	mg/L	0.20	1		11/05/21 23:07	16984-48-8	
Sulfate	**567**	mg/L	50.0	50		11/05/21 23:19	14808-79-8	

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

Sample: ASH-01-CCR **Lab ID: 60384069003** Collected: 10/19/21 14:00 Received: 10/20/21 09:05 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							
Boron	**494**	ug/L	100	1	11/08/21 14:18	11/10/21 13:28	7440-42-8	
Calcium	**369000**	ug/L	1000	5	11/08/21 14:18	11/10/21 13:49	7440-70-2	
Lithium	**435**	ug/L	50.0	5	11/08/21 14:18	11/10/21 13:49	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 11:08	7440-36-0	
Arsenic	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 11:08	7440-38-2	
Barium	**9.8**	ug/L	1.0	1	11/08/21 14:18	11/10/21 11:08	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/08/21 14:18	11/10/21 11:08	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/08/21 14:18	11/10/21 11:08	7440-43-9	
Chromium	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 11:08	7440-47-3	
Cobalt	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 11:08	7440-48-4	
Lead	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 11:08	7439-92-1	
Molybdenum	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 11:08	7439-98-7	
Selenium	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 11:08	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/08/21 14:18	11/10/21 11:08	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/08/21 12:41	11/09/21 10:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**3420**	mg/L	66.7	1		10/26/21 09:56		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**25.4**	mg/L	2.0	2		11/08/21 15:18	16887-00-6	
Fluoride	ND	mg/L	0.20	1		11/05/21 23:30	16984-48-8	
Sulfate	**2040**	mg/L	500	500		11/05/21 23:42	14808-79-8	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

QC Batch: 754781
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384069001, 60384069002, 60384069003

METHOD BLANK: 3020926
Matrix: Water
Associated Lab Samples: 60384069001, 60384069002, 60384069003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	11/09/21 10:22	

LABORATORY CONTROL SAMPLE: 3020927

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020928 3020929

Parameter	Units	60383727002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	3.9	4.9	77	98	75-125	23	20	R1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

QC Batch: 754815
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384069001, 60384069002, 60384069003

METHOD BLANK: 3021039
Matrix: Water
Associated Lab Samples: 60384069001, 60384069002, 60384069003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	11/10/21 13:05	
Calcium	ug/L	ND	200	11/10/21 13:05	
Lithium	ug/L	ND	10.0	11/10/21 13:05	

LABORATORY CONTROL SAMPLE: 3021040

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	975	97	80-120	
Calcium	ug/L	10000	10100	101	80-120	
Lithium	ug/L	1000	882	88	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3021041 3021042

Parameter	Units	60383727001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	ND	1000	1000	974	991	97	99	75-125	2	20	
Calcium	ug/L	ND	10000	10000	10300	10200	103	102	75-125	0	20	
Lithium	ug/L	ND	1000	1000	882	883	88	88	75-125	0	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

QC Batch: 754816
QC Batch Method: EPA 3010
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384069001, 60384069002, 60384069003

METHOD BLANK: 3021043
Matrix: Water
Associated Lab Samples: 60384069001, 60384069002, 60384069003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	11/10/21 09:16	
Arsenic	ug/L	ND	1.0	11/10/21 09:16	
Barium	ug/L	ND	1.0	11/10/21 09:16	
Beryllium	ug/L	ND	0.50	11/10/21 09:16	
Cadmium	ug/L	ND	0.50	11/10/21 09:16	
Chromium	ug/L	ND	1.0	11/10/21 09:16	
Cobalt	ug/L	ND	1.0	11/10/21 09:16	
Lead	ug/L	ND	1.0	11/10/21 09:16	
Molybdenum	ug/L	ND	1.0	11/10/21 09:16	
Selenium	ug/L	ND	1.0	11/10/21 09:16	
Thallium	ug/L	ND	1.0	11/10/21 09:16	

LABORATORY CONTROL SAMPLE: 3021044

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.0	98	80-120	
Arsenic	ug/L	40	39.9	100	80-120	
Barium	ug/L	40	39.3	98	80-120	
Beryllium	ug/L	40	40.5	101	80-120	
Cadmium	ug/L	40	41.0	102	80-120	
Chromium	ug/L	40	39.3	98	80-120	
Cobalt	ug/L	40	38.6	97	80-120	
Lead	ug/L	40	38.9	97	80-120	
Molybdenum	ug/L	40	40.3	101	80-120	
Selenium	ug/L	40	40.6	101	80-120	
Thallium	ug/L	40	38.1	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3021045 3021046

Parameter	Units	60383727001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	38.8	37.5	97	94	75-125	3	20	
Arsenic	ug/L	ND	40	40	39.5	38.6	99	96	75-125	2	20	
Barium	ug/L	ND	40	40	39.4	38.7	98	96	75-125	2	20	
Beryllium	ug/L	ND	40	40	41.0	41.0	102	103	75-125	0	20	
Cadmium	ug/L	ND	40	40	40.7	39.5	102	99	75-125	3	20	
Chromium	ug/L	ND	40	40	40.1	38.6	100	96	75-125	4	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3021045 3021046

Parameter	Units	60383727001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	38.9	37.8	97	94	75-125	3	20	
Lead	ug/L	ND	40	40	41.1	37.9	103	95	75-125	8	20	
Molybdenum	ug/L	ND	40	40	41.1	39.8	103	99	75-125	3	20	
Selenium	ug/L	ND	40	40	39.7	39.4	99	98	75-125	1	20	
Thallium	ug/L	ND	40	40	38.8	37.2	97	93	75-125	4	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

QC Batch: 751993
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384069001, 60384069002, 60384069003

METHOD BLANK: 3010593
Matrix: Water
Associated Lab Samples: 60384069001, 60384069002, 60384069003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	10/26/21 09:53	

LABORATORY CONTROL SAMPLE: 3010594

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	973	97	80-120	

SAMPLE DUPLICATE: 3010595

Parameter	Units	60384060001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	ND	ND		10	

SAMPLE DUPLICATE: 3010596

Parameter	Units	60384072001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	509	533	5	10	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

QC Batch: 754241
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384069001, 60384069002, 60384069003

METHOD BLANK: 3018848 Matrix: Water
Associated Lab Samples: 60384069001, 60384069002, 60384069003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/05/21 20:44	
Fluoride	mg/L	ND	0.20	11/05/21 20:44	
Sulfate	mg/L	ND	1.0	11/05/21 20:44	

METHOD BLANK: 3021929 Matrix: Water
Associated Lab Samples: 60384069001, 60384069002, 60384069003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/08/21 08:38	
Fluoride	mg/L	ND	0.20	11/08/21 08:38	
Sulfate	mg/L	ND	1.0	11/08/21 08:38	

METHOD BLANK: 3023020 Matrix: Water
Associated Lab Samples: 60384069001, 60384069002, 60384069003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/09/21 07:59	
Fluoride	mg/L	ND	0.20	11/09/21 07:59	
Sulfate	mg/L	ND	1.0	11/09/21 07:59	

LABORATORY CONTROL SAMPLE: 3018849

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	80-120	
Fluoride	mg/L	2.5	2.5	101	80-120	
Sulfate	mg/L	5	4.8	96	80-120	

LABORATORY CONTROL SAMPLE: 3021930

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	80-120	
Fluoride	mg/L	2.5	2.6	104	80-120	
Sulfate	mg/L	5	5.3	106	80-120	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

LABORATORY CONTROL SAMPLE: 3023021

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	80-120	
Fluoride	mg/L	2.5	2.5	101	80-120	
Sulfate	mg/L	5	5.1	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018850 3018851

Parameter	Units	60383573002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	18.9	5	5	24.8	24.9	118	120	80-120	0	15	E
Fluoride	mg/L	ND	2.5	2.5	2.7	2.8	101	103	80-120	2	15	
Sulfate	mg/L	626	250	250	876	870	100	98	80-120	1	15	

SAMPLE DUPLICATE: 3018852

Parameter	Units	60384069001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	ND	.51J		15	
Fluoride	mg/L	ND	ND		15	
Sulfate	mg/L	ND	ND		15	

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QUALIFIERS

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
R1	RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60659991 PRPA CCR
Pace Project No.: 60384069

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60384069001	**ERB-02-CCR**	EPA 3010	754815	EPA 6010	754933
60384069002	**BAT-01-CCR**	EPA 3010	754815	EPA 6010	754933
60384069003	**ASH-01-CCR**	EPA 3010	754815	EPA 6010	754933
60384069001	**ERB-02-CCR**	EPA 3010	754816	EPA 6020	754934
60384069002	**BAT-01-CCR**	EPA 3010	754816	EPA 6020	754934
60384069003	**ASH-01-CCR**	EPA 3010	754816	EPA 6020	754934
60384069001	**ERB-02-CCR**	EPA 7470	754781	EPA 7470	754813
60384069002	**BAT-01-CCR**	EPA 7470	754781	EPA 7470	754813
60384069003	**ASH-01-CCR**	EPA 7470	754781	EPA 7470	754813
60384069001	**ERB-02-CCR**	SM 2540C	751993		
60384069002	**BAT-01-CCR**	SM 2540C	751993		
60384069003	**ASH-01-CCR**	SM 2540C	751993		
60384069001	**ERB-02-CCR**	EPA 9056	754241		
60384069002	**BAT-01-CCR**	EPA 9056	754241		
60384069003	**ASH-01-CCR**	EPA 9056	754241		

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Sample Condition Upon Receipt

WO# : 60384069

60384069

Client Name: AECOM

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 5333 8752 4821 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 ☑ PLC

Thermometer Used: T299 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.9 **Corr. Factor** -0.2 **Corrected** 0.7

Date and initials of person examining contents: 102321 MLK

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	TDS expires 10/26
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# 103177	☑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: _____

CCR-KS

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	136205
Project Name:	60659991 PRPA CCR
Project Number:	60659991

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	No RLI - 11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): 9056 Cl, F, SO4	6020 Total Metals*	6010 Total Metals**	7470 Total Mercury	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60384069
1	ERB-02-CCR	WT	G	—		10-19-21	0900		3	2		1						✓	✓	✓	✓	✓	N	(0P1V, 6P1V, 6P3V)
2	BAT-01-CCR	WT	G	—		10-19-21	1220		3	2		1						✓	✓	✓	✓	✓	N	
3	ASH-01-CCR	WT	G	—		10-19-21	1400		3	2		1						✓	✓	✓	✓	✓	N	
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

J2

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, Tl	Jack Levy AECOM	10-19-21	1700	Michelle Pace	10/20/21	0905	0.7	Y	Y	Y
**B, Ca, Li										

Dept: 6003
Customer : 862471
Phone : (913)599-5665
Dept: client services
Date : 020ct21
Weight : 50 LBS
COD :
DV :
Shipping : 0.00
Special : 0.00
Handling : 0.00
0.00 Total : 0.00

Svc: PRIORITY OVERNIGHT Master 5333 8753 4810
TRCK: 5333 8753 4821

SAMPLER NAME A:

PRINT Name of SAMPLER: Jack Levy

SIGNATURE of SAMPLER: Jack Levy

DATE Signed (MM/DD/YY): 10/19/21

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60384108
Sampling Event: October 20, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: December 16, 2021
Peer Reviewer: Katie Abbott — Date Completed: January 6, 2022

This report contains the final results of the data validation conducted for the water samples collected October 20th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006 (November 2020).

General Overall Assessment:

__X__ Data are usable without qualification.
_____ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.	X		
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.	X		
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • When both the sample and duplicate values are >5x the reporting limit (RL), acceptable sampling and analytical precision is indicated by an relative percent difference (RPD) between the results of ≤20%. • Where the result for one or both analytes of the method duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the method duplicate results is <1xRL.			X

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below: • When both the sample and duplicate values are >5xRL acceptable sampling and analytical precision is indicated by a RPD between the results of ≤30%. • Where the result for one or both analytes of the field duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the field duplicate results is <2xRL.			X
Equipment Blanks	No target analytes reported in the associated equipment blank.	X		
Reporting Limits Met	No samples performed at dilutions or reported as non-detect at elevated method detection limits/reporting limits.		X[1]	
Reporting	No reporting issues were found and further qualification was not considered necessary.	X		
Package Completeness	No results were qualified as unusable and the data are 100% complete.	X		
Comments				
1 – Several analytes were reported as non-detect at elevated reporting limits. These non-detect results will need to be evaluated by the end user of the data with respect to project objectives.				

> – Greater Than
< – Less Than
≤ – Less Than or Equal To
% – Percent
LCS – Laboratory Control Sample
LCSD – Laboratory Control Sample Duplicate
MB – Method Blank
MS/MSD – Matrix Spike/Matrix Spike Duplicate
NA – Not Applicable
RL – Reporting Limit
RPD – Relative Percent Difference

Pace Analytical Services, LLC
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November 15, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60659991 PRPA CCR
Pace Project No.: 60384108

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on October 21, 2021. 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 Analytical Services - Kansas City

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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CERTIFICATIONS

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

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 #: 2000302021-3
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

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SAMPLE SUMMARY

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60384108001	**BAT-06-CCR**	Water	10/20/21 08:30	10/21/21 07:30
60384108002	**BAT-02-CCR**	Water	10/20/21 10:45	10/21/21 07:30
60384108003	**BAT-03-CCR**	Water	10/20/21 13:45	10/21/21 07:30

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SAMPLE ANALYTE COUNT

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60384108001	**BAT-06-CCR**	EPA 6010	MA1	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60384108002	**BAT-02-CCR**	EPA 6010	MA1	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60384108003	**BAT-03-CCR**	EPA 6010	MA1	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

Sample: BAT-06-CCR **Lab ID: 60384108001** Collected: 10/20/21 08:30 Received: 10/21/21 07:30 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							
Boron	**1930**	ug/L	100	1	11/10/21 11:50	11/12/21 10:30	7440-42-8	
Calcium	**108000**	ug/L	1000	5	11/10/21 11:50	11/12/21 10:58	7440-70-2	
Lithium	**175**	ug/L	50.0	5	11/10/21 11:50	11/12/21 10:58	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	3.0	3	11/10/21 11:50	11/11/21 11:57	7440-36-0	D3
Arsenic	**1.6**	ug/L	1.0	1	11/10/21 11:50	11/11/21 11:45	7440-38-2	
Barium	**16.1**	ug/L	3.0	3	11/10/21 11:50	11/11/21 11:57	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/10/21 11:50	11/11/21 11:45	7440-41-7	
Cadmium	ND	ug/L	1.5	3	11/10/21 11:50	11/11/21 11:57	7440-43-9	D3
Chromium	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 11:45	7440-47-3	
Cobalt	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 11:45	7440-48-4	
Lead	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 11:45	7439-92-1	
Molybdenum	**11.7**	ug/L	1.0	1	11/10/21 11:50	11/11/21 11:45	7439-98-7	
Selenium	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 11:45	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 11:45	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/08/21 12:41	11/09/21 11:01	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**2420**	mg/L	40.0	1		10/27/21 07:19		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**11.3**	mg/L	1.0	1		11/09/21 15:51	16887-00-6	
Fluoride	**0.21**	mg/L	0.20	1		11/09/21 15:51	16984-48-8	
Sulfate	**1460**	mg/L	100	100		11/09/21 15:21	14808-79-8	

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

Sample: BAT-02-CCR **Lab ID: 60384108002** Collected: 10/20/21 10:45 Received: 10/21/21 07:30 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							
Boron	**1250**	ug/L	100	1	11/10/21 11:50	11/12/21 10:32	7440-42-8	
Calcium	**322000**	ug/L	1000	5	11/10/21 11:50	11/12/21 11:00	7440-70-2	
Lithium	**236**	ug/L	50.0	5	11/10/21 11:50	11/12/21 11:00	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	3.0	3	11/10/21 11:50	11/11/21 12:10	7440-36-0	D3
Arsenic	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:02	7440-38-2	
Barium	**14.1**	ug/L	3.0	3	11/10/21 11:50	11/11/21 12:10	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/10/21 11:50	11/11/21 12:02	7440-41-7	
Cadmium	ND	ug/L	1.5	3	11/10/21 11:50	11/11/21 12:10	7440-43-9	D3
Chromium	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:02	7440-47-3	
Cobalt	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:02	7440-48-4	
Lead	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:02	7439-92-1	
Molybdenum	**3.0**	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:02	7439-98-7	
Selenium	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:02	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:02	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/08/21 12:41	11/09/21 11:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**2740**	mg/L	40.0	1		10/27/21 07:19		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**304**	mg/L	50.0	50		11/08/21 16:14	16887-00-6	
Fluoride	ND	mg/L	0.20	1		11/08/21 16:03	16984-48-8	
Sulfate	**1400**	mg/L	200	200		11/08/21 16:26	14808-79-8	

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

Sample: BAT-03-CCR **Lab ID: 60384108003** Collected: 10/20/21 13:45 Received: 10/21/21 07:30 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							
Boron	**1250**	ug/L	100	1	11/10/21 11:50	11/12/21 10:34	7440-42-8	
Calcium	**457000**	ug/L	1000	5	11/10/21 11:50	11/12/21 11:02	7440-70-2	
Lithium	**275**	ug/L	50.0	5	11/10/21 11:50	11/12/21 11:02	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	3.0	3	11/10/21 11:50	11/11/21 12:27	7440-36-0	D3
Arsenic	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:20	7440-38-2	
Barium	**28.2**	ug/L	3.0	3	11/10/21 11:50	11/11/21 12:27	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/10/21 11:50	11/11/21 12:20	7440-41-7	
Cadmium	ND	ug/L	1.5	3	11/10/21 11:50	11/11/21 12:27	7440-43-9	D3
Chromium	**1.1**	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:20	7440-47-3	
Cobalt	**2.1**	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:20	7440-48-4	
Lead	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:20	7439-92-1	
Molybdenum	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:20	7439-98-7	
Selenium	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:20	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/10/21 11:50	11/11/21 12:20	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/08/21 12:41	11/09/21 11:10	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**3890**	mg/L	66.7	1		10/27/21 07:19		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**15.8**	mg/L	5.0	5		11/09/21 13:44	16887-00-6	
Fluoride	ND	mg/L	0.20	1		11/08/21 16:37	16984-48-8	
Sulfate	**2860**	mg/L	200	200		11/08/21 16:48	14808-79-8	

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

QC Batch: 754781
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384108001, 60384108002, 60384108003

METHOD BLANK: 3020926
Matrix: Water
Associated Lab Samples: 60384108001, 60384108002, 60384108003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	11/09/21 10:22	

LABORATORY CONTROL SAMPLE: 3020927

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3020928 3020929

Parameter	Units	60383727002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	3.9	4.9	77	98	75-125	23	20	R1

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

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

QC Batch: 755296
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384108001, 60384108002, 60384108003

METHOD BLANK: 3022537
Matrix: Water
Associated Lab Samples: 60384108001, 60384108002, 60384108003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	11/12/21 10:05	
Calcium	ug/L	ND	200	11/12/21 10:05	
Lithium	ug/L	ND	10.0	11/12/21 10:05	

LABORATORY CONTROL SAMPLE: 3022538

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1020	102	80-120	
Calcium	ug/L	10000	10500	105	80-120	
Lithium	ug/L	1000	940	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3022539 3022540

Parameter	Units	60383859001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	1960	1000	1000	2960	2930	100	96	75-125	1	20	
Calcium	ug/L	114000	10000	10000	117000	121000	26	64	75-125	3	20	M1
Lithium	ug/L	170	1000	1000	1240	1240	107	107	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

QC Batch: 755299
QC Batch Method: EPA 3010
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384108001, 60384108002, 60384108003

METHOD BLANK: 3022542
Matrix: Water
Associated Lab Samples: 60384108001, 60384108002, 60384108003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	11/11/21 09:52	
Arsenic	ug/L	ND	1.0	11/11/21 09:52	
Barium	ug/L	ND	1.0	11/11/21 09:52	
Beryllium	ug/L	ND	0.50	11/11/21 09:52	
Cadmium	ug/L	ND	0.50	11/11/21 09:52	
Chromium	ug/L	ND	1.0	11/11/21 09:52	
Cobalt	ug/L	ND	1.0	11/11/21 09:52	
Lead	ug/L	ND	1.0	11/11/21 09:52	
Molybdenum	ug/L	ND	1.0	11/11/21 09:52	
Selenium	ug/L	ND	1.0	11/11/21 09:52	
Thallium	ug/L	ND	1.0	11/11/21 09:52	

LABORATORY CONTROL SAMPLE: 3022543

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	37.8	94	80-120	
Arsenic	ug/L	40	42.1	105	80-120	
Barium	ug/L	40	36.9	92	80-120	
Beryllium	ug/L	40	41.0	103	80-120	
Cadmium	ug/L	40	39.4	98	80-120	
Chromium	ug/L	40	40.7	102	80-120	
Cobalt	ug/L	40	39.1	98	80-120	
Lead	ug/L	40	39.7	99	80-120	
Molybdenum	ug/L	40	42.0	105	80-120	
Selenium	ug/L	40	41.7	104	80-120	
Thallium	ug/L	40	38.0	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3022544 3022545

Parameter	Units	60383859001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	39.8	36.8	99	92	75-125	8	20	
Arsenic	ug/L	1.6	40	40	40.1	38.8	96	93	75-125	3	20	
Barium	ug/L	14.6	40	40	54.7	52.2	100	94	75-125	5	20	
Beryllium	ug/L	ND	40	40	34.7	32.6	87	82	75-125	6	20	
Cadmium	ug/L	ND	40	40	36.5	34.7	91	87	75-125	5	20	
Chromium	ug/L	ND	40	40	42.0	36.8	103	90	75-125	13	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3022544 3022545

Parameter	Units	60383859001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	ND	40	40	37.0	34.9	91	86	75-125	6	20	
Lead	ug/L	ND	40	40	34.4	32.5	86	81	75-125	6	20	
Molybdenum	ug/L	11.5	40	40	54.7	52.0	108	101	75-125	5	20	
Selenium	ug/L	ND	40	40	37.8	35.7	94	89	75-125	6	20	
Thallium	ug/L	ND	40	40	34.5	32.6	86	81	75-125	6	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

QC Batch: 752239
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384108001, 60384108002, 60384108003

METHOD BLANK: 3011239
Matrix: Water
Associated Lab Samples: 60384108001, 60384108002, 60384108003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	10/27/21 07:17	

LABORATORY CONTROL SAMPLE: 3011240

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	969	97	80-120	

SAMPLE DUPLICATE: 3011241

Parameter	Units	60383790002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1110	1130	2	10	

SAMPLE DUPLICATE: 3011242

Parameter	Units	60384139002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1070	1090	2	10	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

QC Batch: 754241
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384108001, 60384108002, 60384108003

METHOD BLANK: 3018848 Matrix: Water
Associated Lab Samples: 60384108001, 60384108002, 60384108003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/05/21 20:44	
Fluoride	mg/L	ND	0.20	11/05/21 20:44	
Sulfate	mg/L	ND	1.0	11/05/21 20:44	

METHOD BLANK: 3021929 Matrix: Water
Associated Lab Samples: 60384108001, 60384108002, 60384108003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/08/21 08:38	
Fluoride	mg/L	ND	0.20	11/08/21 08:38	
Sulfate	mg/L	ND	1.0	11/08/21 08:38	

METHOD BLANK: 3023020 Matrix: Water
Associated Lab Samples: 60384108001, 60384108002, 60384108003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/09/21 07:59	
Fluoride	mg/L	ND	0.20	11/09/21 07:59	
Sulfate	mg/L	ND	1.0	11/09/21 07:59	

LABORATORY CONTROL SAMPLE: 3018849

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	80-120	
Fluoride	mg/L	2.5	2.5	101	80-120	
Sulfate	mg/L	5	4.8	96	80-120	

LABORATORY CONTROL SAMPLE: 3021930

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	80-120	
Fluoride	mg/L	2.5	2.6	104	80-120	
Sulfate	mg/L	5	5.3	106	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.

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

LABORATORY CONTROL SAMPLE: 3023021

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	80-120	
Fluoride	mg/L	2.5	2.5	101	80-120	
Sulfate	mg/L	5	5.1	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3018850 3018851

Parameter	Units	60383573002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	18.9	5	5	24.8	24.9	118	120	80-120	0	15	E
Fluoride	mg/L	ND	2.5	2.5	2.7	2.8	101	103	80-120	2	15	
Sulfate	mg/L	626	250	250	876	870	100	98	80-120	1	15	

SAMPLE DUPLICATE: 3018852

Parameter	Units	60384069001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	ND	.51J		15	
Fluoride	mg/L	ND	ND		15	
Sulfate	mg/L	ND	ND		15	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALIFIERS

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

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.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60659991 PRPA CCR
Pace Project No.: 60384108

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60384108001	**BAT-06-CCR**	EPA 3010	755296	EPA 6010	755480
60384108002	**BAT-02-CCR**	EPA 3010	755296	EPA 6010	755480
60384108003	**BAT-03-CCR**	EPA 3010	755296	EPA 6010	755480
60384108001	**BAT-06-CCR**	EPA 3010	755299	EPA 6020	755479
60384108002	**BAT-02-CCR**	EPA 3010	755299	EPA 6020	755479
60384108003	**BAT-03-CCR**	EPA 3010	755299	EPA 6020	755479
60384108001	**BAT-06-CCR**	EPA 7470	754781	EPA 7470	754813
60384108002	**BAT-02-CCR**	EPA 7470	754781	EPA 7470	754813
60384108003	**BAT-03-CCR**	EPA 7470	754781	EPA 7470	754813
60384108001	**BAT-06-CCR**	SM 2540C	752239		
60384108002	**BAT-02-CCR**	SM 2540C	752239		
60384108003	**BAT-03-CCR**	SM 2540C	752239		
60384108001	**BAT-06-CCR**	EPA 9056	754241		
60384108002	**BAT-02-CCR**	EPA 9056	754241		
60384108003	**BAT-03-CCR**	EPA 9056	754241		

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Sample Condition Upon Receipt

WO#: 60384108

60384108

Client Name: AECOM

Courier: FedEx ☒ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 5333 8753 4845 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 ☒ ZPLC

Thermometer Used: T299 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.0 **Corr. Factor** -0.2 **Corrected** 0.4

Date and initials of person examining contents: 10/25/21 MKY

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	TDS ok Pres 10/27
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$_2$SO$_4$, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT# 60375	☒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: _____

CCR-KS

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone:	(303) 740-2614
Fax:	
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	136205
Project Name:	60659991 PRPA CCR
Project Number:	60659991

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	No RLI - 11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): 9056 Cl, F, SO4	6020 Total Metals*	6010 Total Metals**	7470 Total Mercury	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-06-CCR	WT	G	—		10-20-21	0830		3	2		1						✓	✓	✓	✓	✓	N	60384108
2	BAT-02-CCR	WT	G	—		10-20-21	1045		3	2		1						✓	✓	✓	✓	✓	N	
3	BAT-03-CCR	WT	G	—		10-20-21	1345		3	2		1						✓	✓	✓	✓	✓	N	
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

JL

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, Tl	Jack Lay AECOM	10-20-21	1700	Matter/Pace	10/21/21	0730	0.4	Y	Y	Y
**B, Ca, Li										

Dept: 6003
Customer : 862471
Phone : (913)599-5665
Dept: client services
Date : 020ct21
Weight : 50 LBS
COD :
DV : 0.00
Shipping : 0.00
Special : 0.00
Handling : 0.00
Total : 0.00
Svc: PRIORITY OVERNIGHT Master 5333 8753 4810
TRCK: 5333 8753 4843

SAMPLER NAME AND SIG

PRINT Name of SAMPLER: Jack Lay

SIGNATURE of SAMPLER: Jack Lay

DATE Signed (MM/DD/YY): 10/20/21

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

COC PAGE ____ of ____

SBS ____
DI ____
MeOH (only) ____
BK ____
Kit

Client: AECOM

Site: ____

Sample Container Count

Profile # ____

Notes ____

COC Line Item	Matrix	R	VG9H	DG9H	DG9Q	VG9U	DG9U	BG1U	AG1H	AG1U	AG2U	AG3S	AG4U	AG5U	BP1U	BP2U	BP3U	BP1N	BP3N	BP3F	BP3S	BP3C	BP3Z	JGFU	WGKU	ZPLC	DG9M	DG9B				
1															1		1	1														
2																																
3																																
4																																
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Container Codes

Glass			
DG9B	40mL bisulfate clear vial	WGKU	8oz clear soil jar
DG9H	40mL HCl amber voa vial	WGFU	4oz clear soil jar
DG9M	40mL MeOH clear vial	WG2U	2oz clear soil jar
DG9Q	40mL TSP amber vial	JGFU	4oz unpreserved amber wide
DG9S	40mL H2SO4 amber vial	AG0U	100mL unores amber glass
DG9T	40mL Na Thio amber vial	AG1H	1L HCl amber glass
DG9U	40mL amber unpreserved	AG1S	1L H2SO4 amber glass
VG9H	40mL HCl clear vial	AG1T	1L Na Thiosulfate clear/amber glass
VG9T	40mL Na Thio. clear vial	AG1U	1liter unpres amber glass
VG9U	40mL unpreserved clear vial	AG2N	500mL HNO3 amber glass
BG1S	1liter H2SO4 clear glass	AG2S	500mL H2SO4 amber glass
BG1U	1liter unpres glass	AG3S	250mL H2SO4 amber glass
BG3H	250mL HCL Clear glass	AG2U	500mL unpres amber glass
BG3U	250mL Unpres Clear glass	AG3U	250mL unpres amber glass
		AG4U	125mL unpres amber glass
		AG5U	100mL unpres amber glass

Plastic	
BP1C	1L NAOH plastic
BP1N	1L HNO3 plastic
BP1S	1L H2SO4 plastic
BP1U	1L unpreserved plastic
BP1Z	1L NaOH, Zn Acetate
BP2C	500mL NAOH plastic
BP2N	500mL HNO3 plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Acetate
BP3C	250mL NaOH plastic
BP3F	250mL HNO3 plastic - field filtered
BP3N	250mL HNO3 plastic
BP3U	250mL unpreserved plastic
BP3S	250mL H2SO4 plastic
BP3Z	250mL NaOH, Zn Acetate
BP4U	125mL unpreserved plastic
BP4N	125mL HNO3 plastic
BP4S	125mL H2SO4 plastic

Misc.	
I	Wipe/Swab
SP5T	120mL Coliform Na Thiosulfate
ZPLC	Ziploc Bag
AF	Air Filter
C	Air Cassettes
R	Terracore Kit
U	Summa Can

Matrix	
WT	Water
SL	Solid
NAL	Non-aqueous Liquid
OL	OIL
WP	Wipe
DW	Drinking Water

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60384156
Sampling Event: October 20, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: January 4, 2022
Peer Reviewer: Katie Abbott — Date Completed: January 6, 2022

This report contains the final results of the data validation conducted for the water samples collected October 20th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006 (November 2020).

General Overall Assessment:

__X__ Data are usable without qualification.
_____ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.		X[1]	
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.			X
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • The agreement between parent sample results and laboratory duplicate sample results were evaluated. The duplicate error ratios (DER) met the criterion of a DER ≤2.			X
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below: • The agreement between parent sample results and field duplicate sample results were evaluated. The DER met the criterion of a DER ≤2.			X

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Equipment Blanks	No target analytes reported in the associated equipment blank.	X		
Detection Limits Mets	For radiochemical results if the associated uncertainty was greater than the reported result, the 2 sigma (σ) uncertainty multiplied by 1.65 was less than or equal to the specified detection limit.	X		
Tracer and/or Carrier Recovery	The sample specific recoveries were within the laboratory limits.	X		
Reporting	No reporting issues were found and further qualification was not considered necessary.	X		
Package Completeness	No results were qualified as unusable and the data are 100% complete.	X		
Comments				
1 – Samples were received intact; however, no cooler temperature was recorded upon receipt at the laboratory. Due to the stability of the radiological parameters, data qualification on the basis of temperature exceedance is not considered necessary.				

> – Greater Than
< – Less Than
≤ – Less Than or Equal To
σ – Sigma (Uncertainty)
% – Percent
DER – Duplicate Error Ratio
LCS – Laboratory Control Sample
LCSD – Laboratory Control Sample Duplicate
MB – Method Blank
MDC – Minimum Detectable Concentration
MS/MSD – Matrix Spike/Matrix Spike Duplicate
NA – Not Applicable
RPD – Relative Percent Difference

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

December 22, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60659991 PRPA CCR
Pace Project No.: 60384156

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on October 22, 2021. 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 Analytical Services - Greensburg

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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(913)599-5665

CERTIFICATIONS

Project: 60659991 PRPA CCR
Pace Project No.: 60384156

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 60659991 PRPA CCR
Pace Project No.: 60384156

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60384156001	**BAT-03-CCR**	Water	10/20/21 13:45	10/22/21 09:30
60384156002	**BAT-04R-CCR**	Water	10/21/21 10:00	10/22/21 09:30
60384156003	**BAT-05-CCR**	Water	10/21/21 10:45	10/22/21 09:30

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SAMPLE ANALYTE COUNT

Project: 60659991 PRPA CCR
Pace Project No.: 60384156

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60384156001	**BAT-03-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60384156002	**BAT-04R-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60384156003	**BAT-05-CCR**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60384156

Sample: BAT-03-CCR **Lab ID: 60384156001** Collected: 10/20/21 13:45 Received: 10/22/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.200 ± 0.346 (0.618)** **C:NA T:102%**	pCi/L	11/09/21 15:58	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**2.52 ± 0.833 (1.15)** **C:72% T:92%**	pCi/L	11/08/21 18:13	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**2.72 ± 1.18 (1.77)**	pCi/L	11/10/21 17:18	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60384156

Sample: BAT-04R-CCR **Lab ID: 60384156002** Collected: 10/21/21 10:00 Received: 10/22/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.200 ± 0.507 (0.940) C:NA T:101%**	pCi/L	11/09/21 15:58	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.950 ± 0.581 (1.10) C:71% T:99%**	pCi/L	11/08/21 18:13	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.15 ± 1.09 (2.04)**	pCi/L	11/10/21 17:18	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60384156

Sample: BAT-05-CCR **Lab ID: 60384156003** Collected: 10/21/21 10:45 Received: 10/22/21 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.153 ± 0.424 (0.822)** **C:NA T:86%**	pCi/L	11/09/21 15:58	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.55 ± 0.734 (1.27)** **C:65% T:96%**	pCi/L	11/08/21 18:13	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.70 ± 1.16 (2.09)**	pCi/L	11/10/21 17:18	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60384156

QC Batch: 470660
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60384156001, 60384156002, 60384156003

METHOD BLANK: 2272194
Matrix: Water
Associated Lab Samples: 60384156001, 60384156002, 60384156003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.384 ± 0.301 (0.593) C:74% T:105%	pCi/L	11/08/21 14:43	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60384156

QC Batch: 470659
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60384156001, 60384156002, 60384156003

METHOD BLANK: 2272193
Matrix: Water
Associated Lab Samples: 60384156001, 60384156002, 60384156003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.171 ± 0.371 (0.684) C:NA T:99%	pCi/L	11/09/21 15:35	

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.

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QUALIFIERS

Project: 60659991 PRPA CCR
Pace Project No.: 60384156

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60659991 PRPA CCR
Pace Project No.: 60384156

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60384156001	**BAT-03-CCR**	EPA 903.1	470659		
60384156002	**BAT-04R-CCR**	EPA 903.1	470659		
60384156003	**BAT-05-CCR**	EPA 903.1	470659		
60384156001	**BAT-03-CCR**	EPA 904.0	470660		
60384156002	**BAT-04R-CCR**	EPA 904.0	470660		
60384156003	**BAT-05-CCR**	EPA 904.0	470660		
60384156001	**BAT-03-CCR**	Total Radium Calculation	472084		
60384156002	**BAT-04R-CCR**	Total Radium Calculation	472084		
60384156003	**BAT-05-CCR**	Total Radium Calculation	472084		

Internal Transfer Chain of Custody

Pace Analytical
www.pacelabs.com

☐ Samples Pre-Logged into eCOC.

State Of Origin: CO
Cert. Needed: ☒ Yes ☐ No

Workorder: 60384156 **Workorder Name:** 60659991 PRPA CCR
Owner Received Date: 10/22/2021 **Results Requested By:** 11/15/2021

Report To

Heather Wilson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1407

Subcontract To

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

Requested Analysis

WO#: 30447149
30447149

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other						Total Radium-226 & Total Sum Radium	Total Radium-228										LAB USE ONLY
1	BAT-03-CCR	PS	10/20/2021 13:45	60384156001	Water	1						X	X										001
2	BAT-04R-CCR	PS	10/20/2021 10:00	60384156002	Water	1						X	X										002
3	BAT-05-CCR	PS	10/20/2021 10:45	60384156003	Water	1						X	X										003
4																							
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1			[signature] 10/22/21	0930
2				
3				

Comments

IR30- Radium QC Sheets Required

Cooler Temperature on Receipt — °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.*

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace KS Project # _____

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 9308 4773 4840

Label: AL
LIMS Login: AL

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used: — Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp: — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot#: 1020411 Date and Initials of person examining contents: AL 10/26/21

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:		X		3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT		X		5. 2 containers - 001 2 containers - 003 6 containers - 002
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Orthophosphate field filtered			X	12.
Hex Cr Aqueous sample field filtered			X	13.
Organic Samples checked for dechlorination:			X	14.
Filtered volume received for Dissolved tests			X	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	X			16.
All containers meet method preservation requirements.	X			Initial when completed: AL Date/time of preservation:
				Lot # of added preservative:
Headspace in VOA Vials (>6mm):			X	17.
Trip Blank Present:			X	18.
Trip Blank Custody Seals Present			X	
Rad Samples Screened < 0.5 mrem/hr	X			Initial when completed: AL Date: 10/26/21 Survey Meter SN: 1503

WO#: 30447149
PM: MS1 Due Date: 11/08/21
CLIENT: PACE_GO_LEKS

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

CCR - PA

Pace Analytical™

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	136205
Project Name:	60659991 PRPA CCR
Project Number:	60659991

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-03-CCR	WT	G	—		10.20.21	1345		2			2						✓	✓	✓	N	
2	BAT-04R-CCR	WT	G	—		10-21-21	1000		6			6						✓	✓	✓	N	MS/MSD collected
3	BAT-05-CCR	WT	G	—		10-21-21	1045		2			2						✓	✓	✓	N	
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

JL

WO#: 30447149
PM: MS1 Due Date: 11/08/21
CLIENT: PACE_60_LEKS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
MS/MSD collected at BAT-04R-CCR	Jack Lay AECOM	10-21-21	1700				

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jack Lay

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 10/21/21

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Internal Transfer Chain of Custody

☐ Samples Pre-Logged into eCOC.

State Of Origin: CO
Cert. Needed: [X] Yes ☐ No

Workorder: 60384156 **Workorder Name:** 60659991 PRPA CCR
Owner Received Date: 10/22/2021 **Results Requested By:** 11/12/2021

Report To

Heather Wilson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1407

Subcontract To

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other						Requested Analysis: Total Radium-226 & Total Sum Radium	Total Radium-226	Total Radium-228										LAB USE ONLY
1	BAT-03-CCR	PS	10/20/2021 13:45	60384156001	Water	1						X	X											
2	BAT-04R-CCR	PS	10/20/2021 10:00	60384156002	Water	1						X	X											
3	BAT-05-CCR	PS	10/20/2021 10:45	60384156003	Water	1						X	X											
4	BAT-04R-CCR MS	PS	10/21/2021 10:00	60384156004	Water	1							X	X										
5	BAT-04R-CCR MSD	PS	10/21/2021 10:00	60384156005	Water	1							X	X										

Transfers	Released By	Date/Time	Received By	Date/Time
1				
2				
3				

Comments

IR30- Radium QC Sheets Required

Cooler Temperature on Receipt _____°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.

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-226
Analyst:	MK1
Date:	11/2/2021
Batch ID:	63420
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2272193
MB concentration:	0.171
M/B Counting Uncertainty:	0.370
MB MDC:	0.684
MB Numerical Performance Indicator:	0.90
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS63420	**LCSD63420**
Count Date:	11/9/2021	11/9/2021
Spike I.D.:	20-032	20-032
Spike Concentration (pCi/mL):	32.168	32.168
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.676	0.664
Target Conc. (pCi/L, g, F):	4.758	4.844
Uncertainty (Calculated):	0.224	0.228
Result (pCi/L, g, F):	4.533	4.771
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.979	0.986
Numerical Performance Indicator:	-0.44	-0.14
Percent Recovery:	95.28%	98.49%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	73%	73%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS63420	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD63420	
Sample Result (pCi/L, g, F):	4.533	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.979	
Sample Duplicate Result (pCi/L, g, F):	4.771	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.986	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.335	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	3.31%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	32%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

SCC 11/09/2021

11/10/21

Quality Control Sample Performance Assessment

Pace Analytical
www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	11/3/2021
Worklist:	63421
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2272194
MB concentration:	0.384
M/B 2 Sigma CSU:	0.301
MB MDC:	0.593
MB Numerical Performance Indicator:	2.50
MB Status vs Numerical Indicator:	Warning
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS63421	LCSD63421
Count Date:	11/8/2021	11/8/2021
Spike I.D.:	21-029	21-029
Decay Corrected Spike Concentration (pCi/mL):	37.534	37.534
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.810	0.810
Target Conc. (pCi/L, g, F):	4.636	4.636
Uncertainty (Calculated):	0.227	0.227
Result (pCi/L, g, F):	6.300	5.856
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.505	1.418
Numerical Performance Indicator:	2.14	1.67
Percent Recovery:	135.90%	126.32%
Status vs Numerical Indicator:	Warning	N/A
Status vs Recovery:	Fail High**	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS63421	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD63421	
Sample Result (pCi/L, g, F):	6.300	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.505	
Sample Duplicate Result (pCi/L, g, F):	5.856	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.418	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.421	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	7.30%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

~~**If all sample results are below MDC, the batch is acceptable, otherwise this batch must be reprepped due to LCS failure.~~

LCS NI < 3.0 JJT 11-9-21

11/9/21

Cy 11/9/21

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60384206
Sampling Event: October 20, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: December 17, 2021
Peer Reviewer: Katie Abbott — Date Completed: January 6, 2022

This report contains the final results of the data validation conducted for the water samples collected October 20th, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006 (November 2020).

General Overall Assessment:

__X__ Data are usable without qualification.
_____ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.		X[1]	
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges.			X
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • The agreement between parent sample results and laboratory duplicate sample results were evaluated. The duplicate error ratios (DER) met the criterion of a DER ≤2.			X
Field Duplicate	The field duplicate sample results satisfied the evaluation criteria below: • The agreement between parent sample results and field duplicate sample results were evaluated. The DER met the criterion of a DER ≤2.			X

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Equipment Blanks	No target analytes reported in the associated equipment blank.	X		
Detection Limits Mets	For radiochemical results if the associated uncertainty was greater than the reported result, the 2 sigma (σ) uncertainty multiplied by 1.65 was less than or equal to the specified detection limit.	X		
Tracer and/or Carrier Recovery	The sample specific recoveries were within the laboratory limits.	X		
Reporting	No reporting issues were found and further qualification was not considered necessary.	X		
Package Completeness	No results were qualified as unusable and the data are 100% complete.	X		
Comments				
1 – Samples were received intact; however, no cooler temperature was recorded upon receipt at the laboratory. Due to the stability of the radiological parameters, data qualification on the basis of temperature exceedance is not considered necessary.				

> – Greater Than
< – Less Than
≤ – Less Than or Equal To
σ – Sigma (Uncertainty)
% – Percent
DER – Duplicate Error Ratio
LCS – Laboratory Control Sample
LCSD – Laboratory Control Sample Duplicate
MB – Method Blank
MS/MSD – Matrix Spike/Matrix Spike Duplicate
NA – Not Applicable
RPD – Relative Percent Difference

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

December 10, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60659991 PRPA CCR
Pace Project No.: 60384206

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on October 21, 2021. 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 Analytical Services - Greensburg

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

Pace Analytical Services, LLC
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(913)599-5665

CERTIFICATIONS

Project: 60659991 PRPA CCR
Pace Project No.: 60384206

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 60659991 PRPA CCR
Pace Project No.: 60384206

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60384206001	**BAT-06-CCR**	Water	10/20/21 08:30	10/21/21 10:00
60384206002	**BAT-02-CCR**	Water	10/20/21 10:45	10/21/21 10:00

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SAMPLE ANALYTE COUNT

Project: 60659991 PRPA CCR
Pace Project No.: 60384206

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60384206001	**BAT-06-CCR**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60384206002	**BAT-02-CCR**	EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60384206

Sample: BAT-06-CCR **Lab ID: 60384206001** Collected: 10/20/21 08:30 Received: 10/21/21 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.408 ± 0.376 (0.221)** **C:NA T:98%**	pCi/L	11/12/21 17:21	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.63 ± 0.699 (1.20)** **C:76% T:92%**	pCi/L	11/10/21 14:34	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**2.04 ± 1.08 (1.42)**	pCi/L	11/18/21 14:31	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60384206

Sample: BAT-02-CCR **Lab ID: 60384206002** Collected: 10/20/21 10:45 Received: 10/21/21 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.675 ± 0.474 (0.229)** **C:NA T:99%**	pCi/L	11/12/21 17:21	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.64 ± 0.676 (1.13)** **C:79% T:92%**	pCi/L	11/10/21 14:34	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**2.32 ± 1.15 (1.36)**	pCi/L	11/18/21 14:31	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60384206

QC Batch: 470986
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60384206001, 60384206002

METHOD BLANK: 2273576
Matrix: Water
Associated Lab Samples: 60384206001, 60384206002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.529 ± 0.325 (0.599) C:71% T:92%	pCi/L	11/10/21 11:26	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 60659991 PRPA CCR
Pace Project No.: 60384206

QC Batch: 470983
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60384206001, 60384206002

METHOD BLANK: 2273570
Matrix: Water
Associated Lab Samples: 60384206001, 60384206002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.117 ± 0.363 (0.703) C:NA T:95%	pCi/L	11/12/21 16:37	

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.

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QUALIFIERS

Project: 60659991 PRPA CCR
Pace Project No.: 60384206

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60659991 PRPA CCR
Pace Project No.: 60384206

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60384206001	**BAT-06-CCR**	EPA 903.1	470983		
60384206002	**BAT-02-CCR**	EPA 903.1	470983		
60384206001	**BAT-06-CCR**	EPA 904.0	470986		
60384206002	**BAT-02-CCR**	EPA 904.0	470986		
60384206001	**BAT-06-CCR**	Total Radium Calculation	473179		
60384206002	**BAT-02-CCR**	Total Radium Calculation	473179		

Internal Transfer Chain of Custody

☐ Samples Pre-Logged into eCOC.

State Of Origin: CO
Cert. Needed: [X] Yes ☐ No

Pace Analytical®
www.pacelabs.com

Workorder: 60384206 **Workorder Name:** 60659991 PRPA CCR
Owner Received Date: 10/21/2021 **Results Requested By:** 11/11/2021

Report To

Heather Wilson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1407

Subcontract To

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

Requested Analysis

WO#: 30447227
30447227

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other						Total Radium-226 & Total Sum Radium	Total Radium-228											LAB USE ONLY
1	BAT-06-CCR	PS	10/20/2021 08:30	60384206001	Water	1						X	X											001
2	BAT-02-CCR	PS	10/20/2021 10:45	60384206002	Water	1						X	X											002
3	BAT-03-CCR	PS	10/20/2021 13:45	60384206003	Water	1						X	X											~~003~~ AR 10/20/21
4																								
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1			[signature] 10/21/21	~~0930~~ 10/21/21
2				1000
3				

Comments

IR30- Radium QC Sheets Required

Cooler Temperature on Receipt — °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.*

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace KS Project # _____

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 9308 4773 4830

Label: AL
LIMS Login: AL

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used: — Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp: — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot#: 10D0411

Date and Initials of person examining contents: AL 10/26/21

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:		X		3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT		X		5. 2 bottles per sample received
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Orthophosphate field filtered			X	12.
Hex Cr Aqueous sample field filtered			X	13.
Organic Samples checked for dechlorination:			X	14.
Filtered volume received for Dissolved tests				15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	X			16.
All containers meet method preservation requirements.	X			Initial when completed: AL Date/time of preservation:
				Lot # of added preservative:
Headspace in VOA Vials (>6mm):			X	17.
Trip Blank Present:			X	18.
Trip Blank Custody Seals Present			X	
Rad Samples Screened < 0.5 mrem/hr	X			Initial when completed: AL Date: 10/26/21 Survey Meter SN: 15103

WO#: 30447227
PM: MS1 Due Date: 11/11/21
CLIENT: PACE_GO_LEKS

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

CCR-PA

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A
Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone: (303) 740-2614	Fax:
Requested Due Date/TAT:	

Section B
Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	136205
Project Name:	60659991 PRPA CCR
Project Number:	60659991

Section C
Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: CO

Section D
Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start Date	COLLECTED Composite Start Time	COLLECTED Composite End/Grab Date	COLLECTED Composite End/Grab Time	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	BAT-06-CCR	WT	G	—		10-20-21	0830		2			2						✓	✓	✓	N	
2	BAT-02-CCR	WT	G	—		10-20-21	1045		2			2						✓	✓	✓	N	
3	BAT-03-CCR	WT	G	—		10-20-21	1345		2			2						✓	✓	✓	N	
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

JL

WO#: 30447227
PM: MS1 Due Date: 11/11/21
CLIENT: PACE_60_LEKS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Jack Lay AECOM	10-20-21	1700				

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Jack Lay
SIGNATURE of SAMPLER: Jack Lay
DATE Signed (MM/DD/YY): 10/20/21

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Quality Control Sample Performance Assessment

Pace Analytical™
www.pacelabs.com

Test:	Ra-226
Analyst:	SLC
Date:	11/4/2021
Batch ID:	63463
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2273570
MB concentration:	0.117
M/B Counting Uncertainty:	0.363
MB MDC:	0.703
MB Numerical Performance Indicator:	0.63
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS63463	LCSD63463
Count Date:	11/12/2021	
Spike I.D.:	20-032	
Spike Concentration (pCi/mL):	32.168	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.652	
Target Conc. (pCi/L, g, F):	4.937	
Uncertainty (Calculated):	0.232	
Result (pCi/L, g, F):	4.779	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	1.086	
Numerical Performance Indicator:	-0.28	
Percent Recovery:	96.80%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	10/20/2021	
Sample I.D.	30447110001	
Sample MS I.D.	30447110001MS	
Sample MSD I.D.		
Spike I.D.:	20-032	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.169	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.651	
MS Target Conc.(pCi/L, g, F):	9.889	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.465	
MSD Spike Uncertainty (calculated):		
Sample Result:	1.453	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.660	
Sample Matrix Spike Result:	11.172	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.596	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:	-0.186	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	98.28%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	N/A	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	136%	
MS/MSD Lower % Recovery Limits:	71%	

Duplicate Sample Assessment		
Sample I.D.:	30447109001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	30447109001DUP	
Sample Result (pCi/L, g, F):	0.367	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.381	
Sample Duplicate Result (pCi/L, g, F):	0.427	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.443	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-0.200	30447109001
Duplicate RPD:	15.01%	30447109001DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	32%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

SLC 11/12/2021

Page 10 of 15

Quality Control Sample Performance Assessment

Pace Analytical™
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Test:	Ra-228
Analyst:	JC2
Date:	11/5/2021
Worklist:	63464
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2273576
MB concentration:	0.529
M/B 2 Sigma CSU:	0.325
MB MDC:	0.599
MB Numerical Performance Indicator:	3.19
MB Status vs Numerical Indicator:	Fail*
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS63464	LCSD63464
Count Date:	11/10/2021	
Spike I.D.:	21-029	
Decay Corrected Spike Concentration (pCi/mL):	37.513	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.812	
Target Conc. (pCi/L, g, F):	4.621	
Uncertainty (Calculated):	0.226	
Result (pCi/L, g, F):	4.891	
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.067	
Numerical Performance Indicator:	0.48	
Percent Recovery:	105.84%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	60%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	10/20/2021	
Sample I.D.	30447195001	
Sample MS I.D.	30447195001MS	
Sample MSD I.D.		
Spike I.D.:	21-029	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	37.775	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.808	
MS Target Conc.(pCi/L, g, F):	9.346	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.458	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.149	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.302	
Sample Matrix Spike Result:	9.315	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.839	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:	-0.184	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	98.07%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	Pass	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	135%	
MS/MSD Lower % Recovery Limits:	60%	

Duplicate Sample Assessment		
Sample I.D.:	30447110002	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	30447110002DUP	
Sample Result (pCi/L, g, F):	1.607	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.527	
Sample Duplicate Result (pCi/L, g, F):	1.169	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.459	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	1.229	30447110002
Duplicate RPD:	31.57%	30447110002DUP
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*If the lowest activity sample in this batch is greater than ten times the blank value, the blank is acceptable; otherwise this batch must be re-prepped.

MB activity < MDC Pass
11/12/21

Platte River Power Authority – Rawhide
DATA REVIEW CHECK

Data Package: 60384258
Sampling Event: October 21, 2021
Data Reviewer: Brian Rothmeyer — Date Completed: December 16, 2021
Peer Reviewer: Katie Abbott — Date Completed: January 6, 2022

This report contains the final results of the data validation conducted for the water samples collected October 21st, 2021. The data review was conducted in accordance with method requirements and laboratory limits using guidance from United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 542-R-20-006 (November 2020).

General Overall Assessment:

_____ Data are usable without qualification.
__X__ Data are usable with qualification (noted below).
_____ Some or all data are unusable for any purpose (detailed below).

Data Review Checklist

Review Parameter	Criteria	Criteria Met?		
Sample-specific Parameters	For each "No" response, list qualified data and bias direction in Table 1 or explain no qualification in comments.	Yes	No	NA
Chain of Custody, Sample Identification, & Sample Receipt	Samples were received intact and the cooler temperature was <6 degree Celsius upon arrival at the laboratory.	X		
Holding Times	The samples were analyzed within the method required holding times.	X		
Method Blanks (MB)	No target analytes reported in the associated MB.	X		
Quality Control Samples: Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD)	The LCS/LCSD recoveries were within the laboratory determined acceptance limits.	X		
Matrix Spike / Matrix Spike Duplicate (MS/MSD)	The recoveries and relative percent differences for the matrix spike and matrix spike duplicate analyses were within the laboratory-determined acceptance ranges. Results in the native sample greater than four times the concentration of the spike added during digestions/extractions are not considered to be a representative measure of accuracy. Further action with respect to spike recovery evaluation or qualification of data was not considered necessary.	X		
Laboratory Duplicate	The laboratory duplicate samples were within the laboratory determined acceptance limits. The following concentration dependent criteria were used to evaluate laboratory duplicates: • When both the sample and duplicate values are >5x the reporting limit (RL), acceptable sampling and analytical precision is indicated by an relative percent difference (RPD) between the results of ≤20%.		X[1]	

<table>
<tr><th>Review Parameter</th><th>Criteria</th><th colspan="3">Criteria Met?</th></tr>
<tr><td>Sample-specific Parameters</td><td>For each “No” response, list qualified data and bias direction in Table 1 or explain no qualification in comments.</td><td>Yes</td><td>No</td><td>NA</td></tr>
<tr><td></td><td>• Where the result for one or both analytes of the method duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the method duplicate results is <1xRL.
<table>
<tr><th>Analyte</th><th>Parent Sample Result</th><th>Duplicate Result</th><th>Criteria not Met</th></tr>
<tr><td colspan="4">BAT-04R-CCR</td></tr>
<tr><td>Chloride</td><td>48.1 mg/L</td><td>31.5 mg/L</td><td>Difference >1xRL</td></tr>
<tr><td>Sulfate</td><td>2130 mg/L</td><td>2830 mg/L</td><td>RPD>20%</td></tr>
</table>
mg/L – Milligram per Liter
% – Percent
> – Greater Than
RPD – Relative Percent Difference</td><td></td><td></td><td></td></tr>
<tr><td>Field Duplicate</td><td>The field duplicate sample results satisfied the evaluation criteria below:
• When both the sample and duplicate values are >5xRL acceptable sampling and analytical precision is indicated by a RPD between the results of ≤30%.
• Where the result for one or both analytes of the field duplicate pair is <5xRL, satisfactory precision is indicated if the absolute difference between the field duplicate results is <2xRL.</td><td></td><td></td><td>X</td></tr>
<tr><td>Equipment Blanks</td><td>No target analytes reported in the associated equipment blank.</td><td>X</td><td></td><td></td></tr>
<tr><td>Reporting Limits Met</td><td>No samples performed at dilutions or reported as non-detect at elevated method detection limits/reporting limits.</td><td>X</td><td></td><td></td></tr>
<tr><td>Reporting</td><td>No reporting issues were found and further qualification was not considered necessary.</td><td>X</td><td></td><td></td></tr>
<tr><td>Package Completeness</td><td>No results were qualified as unusable and the data are 100% complete.</td><td>X</td><td></td><td></td></tr>
<tr><th colspan="5">Comments</th></tr>
<tr><td colspan="5">1 – As the applicable laboratory duplicate criteria was not met, the associated chloride and sulfate results for sample BAT-04R-CCR were qualified as estimated (J ld).</td></tr>
</table>

> – Greater Than
mg/L – Milligram per Liter
LCS – Laboratory Control Sample
MB – Method Blank
RL – Reporting Limit
< – Less Than
% – Percent
LCSD – Laboratory Control Sample Duplicate
MS/MSD – Matrix Spike/Matrix Spike Duplicate
RPD – Relative Percent Difference
≤ – Less Than or Equal To
J – Estimated
ld – Laboratory Duplicate RPDs
NA – Not Applicable

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

November 15, 2021

Vasanta Kalluri
AECOM
6200 South Quebec Street
Greenwood Village, CO 80111

RE: Project: 60659991 PRPA CCR
Pace Project No.: 60384258

Dear Vasanta Kalluri:

Enclosed are the analytical results for sample(s) received by the laboratory on October 22, 2021. 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 Analytical Services - Kansas City

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Ann Cinabro, AECOM
Jeremy Hurshman, AECOM
Brian Rothmeyer, AECOM

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

CERTIFICATIONS

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

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 #: 2000302021-3
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, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60384258001	**BAT-04R-CCR**	Water	10/21/21 10:00	10/22/21 08:55
60384258002	**BAT-05-CCR**	Water	10/21/21 10:45	10/22/21 08:55

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60384258001	**BAT-04R-CCR**	EPA 6010	MA1	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K
60384258002	**BAT-05-CCR**	EPA 6010	MA1, MRV	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	VRB	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 9056	ALH	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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

ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

Sample: BAT-04R-CCR **Lab ID: 60384258001** Collected: 10/21/21 10:00 Received: 10/22/21 08:55 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							
Boron	**778**	ug/L	100	1	11/11/21 10:10	11/12/21 14:15	7440-42-8	
Calcium	**452000**	ug/L	1000	5	11/11/21 10:10	11/12/21 14:36	7440-70-2	M1
Lithium	**162**	ug/L	50.0	5	11/11/21 10:10	11/12/21 14:36	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/11/21 10:10	11/11/21 20:59	7440-36-0	
Arsenic	ND	ug/L	1.0	1	11/11/21 10:10	11/11/21 20:59	7440-38-2	
Barium	**15.4**	ug/L	1.0	1	11/11/21 10:10	11/11/21 20:59	7440-39-3	
Beryllium	ND	ug/L	0.50	1	11/11/21 10:10	11/11/21 20:59	7440-41-7	
Cadmium	ND	ug/L	0.50	1	11/11/21 10:10	11/11/21 20:59	7440-43-9	
Chromium	ND	ug/L	1.0	1	11/11/21 10:10	11/11/21 20:59	7440-47-3	
Cobalt	**4.3**	ug/L	1.0	1	11/11/21 10:10	11/11/21 20:59	7440-48-4	
Lead	ND	ug/L	1.0	1	11/11/21 10:10	11/11/21 20:59	7439-92-1	
Molybdenum	**2.1**	ug/L	1.0	1	11/11/21 10:10	11/11/21 20:59	7439-98-7	
Selenium	**19.0**	ug/L	1.0	1	11/11/21 10:10	11/11/21 20:59	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/11/21 10:10	11/11/21 20:59	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/09/21 16:24	11/10/21 11:52	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**2780**	mg/L	40.0	1		10/28/21 07:08		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**48.1**	mg/L	10.0	10		11/08/21 10:54	16887-00-6	D6
Fluoride	ND	mg/L	0.20	1		11/10/21 00:43	16984-48-8	
Sulfate	**2130**	mg/L	200	200		11/10/21 01:51	14808-79-8	D6

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ANALYTICAL RESULTS

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

Sample: BAT-05-CCR **Lab ID: 60384258002** Collected: 10/21/21 10:45 Received: 10/22/21 08:55 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							
Boron	**1320**	ug/L	100	1	11/11/21 10:10	11/12/21 14:21	7440-42-8	
Calcium	**593000**	ug/L	2000	10	11/11/21 10:10	11/13/21 12:37	7440-70-2	
Lithium	**268**	ug/L	100	10	11/11/21 10:10	11/13/21 12:37	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010							
	Pace Analytical Services - Kansas City							
Antimony	ND	ug/L	1.0	1	11/11/21 10:10	11/11/21 21:46	7440-36-0	
Arsenic	**15.2**	ug/L	1.0	1	11/11/21 10:10	11/11/21 21:46	7440-38-2	
Barium	**300**	ug/L	1.0	1	11/11/21 10:10	11/11/21 21:46	7440-39-3	
Beryllium	**1.7**	ug/L	0.50	1	11/11/21 10:10	11/11/21 21:46	7440-41-7	
Cadmium	**0.64**	ug/L	0.50	1	11/11/21 10:10	11/11/21 21:46	7440-43-9	
Chromium	**63.9**	ug/L	1.0	1	11/11/21 10:10	11/11/21 21:46	7440-47-3	
Cobalt	**27.0**	ug/L	1.0	1	11/11/21 10:10	11/11/21 21:46	7440-48-4	
Lead	**35.4**	ug/L	1.0	1	11/11/21 10:10	11/11/21 21:46	7439-92-1	
Molybdenum	**4.8**	ug/L	1.0	1	11/11/21 10:10	11/11/21 21:46	7439-98-7	
Selenium	**4.7**	ug/L	1.0	1	11/11/21 10:10	11/11/21 21:46	7782-49-2	
Thallium	ND	ug/L	1.0	1	11/11/21 10:10	11/11/21 21:46	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
	Pace Analytical Services - Kansas City							
Mercury	ND	ug/L	0.20	1	11/09/21 16:24	11/10/21 11:59	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Kansas City							
Total Dissolved Solids	**4140**	mg/L	66.7	1		10/28/21 07:09		
9056 IC Anions	Analytical Method: EPA 9056							
	Pace Analytical Services - Kansas City							
Chloride	**32.3**	mg/L	5.0	5		11/10/21 02:59	16887-00-6	
Fluoride	ND	mg/L	0.20	1		11/10/21 02:36	16984-48-8	
Sulfate	**2790**	mg/L	500	500		11/10/21 03:44	14808-79-8	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

QC Batch: 755159
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384258001, 60384258002

METHOD BLANK: 3022142
Matrix: Water
Associated Lab Samples: 60384258001, 60384258002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	11/10/21 11:38	

LABORATORY CONTROL SAMPLE: 3022143

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3022144 3022145

Parameter	Units	60384258001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	4.6	97	92	75-125	4	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

QC Batch: 755582
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384258001, 60384258002

METHOD BLANK: 3023595
Matrix: Water
Associated Lab Samples: 60384258001, 60384258002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	100	11/12/21 13:58	
Calcium	ug/L	ND	200	11/12/21 13:58	
Lithium	ug/L	ND	10.0	11/12/21 13:58	

LABORATORY CONTROL SAMPLE: 3023596

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1000	100	80-120	
Calcium	ug/L	10000	10200	102	80-120	
Lithium	ug/L	1000	849	85	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3023597 3023598

Parameter	Units	60384258001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	778	1000	1000	1780	1810	100	103	75-125	2	20	
Calcium	ug/L	452000	10000	10000	462000	476000	102	236	75-125	3	20	M1
Lithium	ug/L	162	1000	1000	1190	1190	102	103	75-125	0	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

QC Batch: 755583
QC Batch Method: EPA 3010
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384258001, 60384258002

METHOD BLANK: 3023599
Matrix: Water
Associated Lab Samples: 60384258001, 60384258002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	11/11/21 19:55	
Arsenic	ug/L	ND	1.0	11/11/21 19:55	
Barium	ug/L	ND	1.0	11/11/21 19:55	
Beryllium	ug/L	ND	0.50	11/11/21 19:55	
Cadmium	ug/L	ND	0.50	11/11/21 19:55	
Chromium	ug/L	ND	1.0	11/11/21 19:55	
Cobalt	ug/L	ND	1.0	11/11/21 19:55	
Lead	ug/L	ND	1.0	11/11/21 19:55	
Molybdenum	ug/L	ND	1.0	11/11/21 19:55	
Selenium	ug/L	ND	1.0	11/11/21 19:55	
Thallium	ug/L	ND	1.0	11/11/21 19:55	

LABORATORY CONTROL SAMPLE: 3023600

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.0	100	80-120	
Arsenic	ug/L	40	38.6	97	80-120	
Barium	ug/L	40	38.8	97	80-120	
Beryllium	ug/L	40	41.5	104	80-120	
Cadmium	ug/L	40	39.0	97	80-120	
Chromium	ug/L	40	39.1	98	80-120	
Cobalt	ug/L	40	37.7	94	80-120	
Lead	ug/L	40	39.3	98	80-120	
Molybdenum	ug/L	40	38.9	97	80-120	
Selenium	ug/L	40	38.2	95	80-120	
Thallium	ug/L	40	38.2	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3023601 3023602

Parameter	Units	60384258001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	37.3	37.3	92	92	75-125	0	20	
Arsenic	ug/L	ND	40	40	40.5	40.3	100	100	75-125	1	20	
Barium	ug/L	15.4	40	40	55.4	55.2	100	100	75-125	0	20	
Beryllium	ug/L	ND	40	40	36.3	36.4	91	91	75-125	0	20	
Cadmium	ug/L	ND	40	40	35.5	35.6	89	89	75-125	1	20	
Chromium	ug/L	ND	40	40	40.3	39.9	98	97	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3023601 3023602

Parameter	Units	60384258001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	ug/L	4.3	40	40	41.2	40.8	92	91	75-125	1	20	
Lead	ug/L	ND	40	40	33.9	33.7	84	83	75-125	1	20	
Molybdenum	ug/L	2.1	40	40	47.1	46.8	112	112	75-125	1	20	
Selenium	ug/L	19.0	40	40	60.2	59.0	103	100	75-125	2	20	
Thallium	ug/L	ND	40	40	36.4	36.3	91	91	75-125	0	20	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

QC Batch: 752567
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384258001, 60384258002

METHOD BLANK: 3012271
Matrix: Water
Associated Lab Samples: 60384258001, 60384258002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	10/28/21 07:06	

LABORATORY CONTROL SAMPLE: 3012272

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	987	99	80-120	

SAMPLE DUPLICATE: 3012273

Parameter	Units	60384251001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2940	2950	0	10	

SAMPLE DUPLICATE: 3012274

Parameter	Units	60384258001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2780	2910	4	10	

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

QC Batch: 754477
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60384258001, 60384258002

METHOD BLANK: 3019824 Matrix: Water
Associated Lab Samples: 60384258001, 60384258002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/08/21 08:40	
Fluoride	mg/L	ND	0.20	11/08/21 08:40	
Sulfate	mg/L	ND	1.0	11/08/21 08:40	

METHOD BLANK: 3023070 Matrix: Water
Associated Lab Samples: 60384258001, 60384258002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/09/21 08:18	
Fluoride	mg/L	ND	0.20	11/09/21 08:18	
Sulfate	mg/L	ND	1.0	11/09/21 08:18	

METHOD BLANK: 3024051 Matrix: Water
Associated Lab Samples: 60384258001, 60384258002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/10/21 10:55	
Fluoride	mg/L	ND	0.20	11/10/21 10:55	
Sulfate	mg/L	ND	1.0	11/10/21 10:55	

METHOD BLANK: 3024817 Matrix: Water
Associated Lab Samples: 60384258001, 60384258002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	11/11/21 08:00	
Fluoride	mg/L	ND	0.20	11/11/21 08:00	
Sulfate	mg/L	ND	1.0	11/11/21 08:00	

LABORATORY CONTROL SAMPLE: 3019825

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.5	90	80-120	
Fluoride	mg/L	2.5	2.2	87	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

LABORATORY CONTROL SAMPLE: 3019825

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.9	98	80-120	

LABORATORY CONTROL SAMPLE: 3023071

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.5	90	80-120	
Fluoride	mg/L	2.5	2.4	95	80-120	
Sulfate	mg/L	5	4.8	96	80-120	

LABORATORY CONTROL SAMPLE: 3024052

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	80-120	
Fluoride	mg/L	2.5	2.5	99	80-120	
Sulfate	mg/L	5	5.3	105	80-120	

LABORATORY CONTROL SAMPLE: 3024818

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	103	80-120	
Fluoride	mg/L	2.5	2.7	110	80-120	
Sulfate	mg/L	5	5.4	109	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3019827 3019828

Parameter	Units	60384258001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	48.1	50	50	95.7	94.6	95	93	80-120	1	15	
Fluoride	mg/L	ND	2.5	2.5	2.9	3.0	110	114	80-120	3	15	
Sulfate	mg/L	2130	1000	1000	3200	3160	107	103	80-120	1	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3019830 3019831

Parameter	Units	60384894002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	19.1	10	10	31.4	31.4	123	123	80-120	0	15	M1
Fluoride	mg/L	0.90	5	5	6.7	6.7	116	116	80-120	1	15	
Sulfate	mg/L	132	100	100	229	230	97	97	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3019833 3019834

Parameter	Units	60384985009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	281	100	100	390	387	109	106	80-120	1	15	
Fluoride	mg/L	<4.0	50	50	51.2	50.7	102	101	80-120	1	15	
Sulfate	mg/L	406	250	250	653	655	99	100	80-120	0	15	

SAMPLE DUPLICATE: 3019826

Parameter	Units	60384258001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	48.1	47.7	1	15	
Fluoride	mg/L	ND	.18J		15	
Sulfate	mg/L	2130	2030	5	15	

SAMPLE DUPLICATE: 3019829

Parameter	Units	60384258001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	48.1	31.5	42	15	D6
Fluoride	mg/L	ND	.15J		15	
Sulfate	mg/L	2130	2830	28	15	D6

SAMPLE DUPLICATE: 3019832

Parameter	Units	60384894002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	19.1	19.2	0	15	
Fluoride	mg/L	0.90	0.88	2	15	
Sulfate	mg/L	132	133	1	15	

SAMPLE DUPLICATE: 3019835

Parameter	Units	60384985009 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	281	280	0	15	
Fluoride	mg/L	<4.0	ND		15	
Sulfate	mg/L	406	400	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 60659991 PRPA CCR
Pace Project No.: 60384258

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
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: 60659991 PRPA CCR
Pace Project No.: 60384258

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60384258001	**BAT-04R-CCR**	EPA 3010	755582	EPA 6010	755770
60384258002	**BAT-05-CCR**	EPA 3010	755582	EPA 6010	755770
60384258001	**BAT-04R-CCR**	EPA 3010	755583	EPA 6020	755771
60384258002	**BAT-05-CCR**	EPA 3010	755583	EPA 6020	755771
60384258001	**BAT-04R-CCR**	EPA 7470	755159	EPA 7470	755194
60384258002	**BAT-05-CCR**	EPA 7470	755159	EPA 7470	755194
60384258001	**BAT-04R-CCR**	SM 2540C	752567		
60384258002	**BAT-05-CCR**	SM 2540C	752567		
60384258001	**BAT-04R-CCR**	EPA 9056	754477		
60384258002	**BAT-05-CCR**	EPA 9056	754477		

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Sample Condition Upon Receipt

WO# : 60384258

60384258

Client Name: AECOM

Courier: FedEx ☒ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 5333 8753 4019 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 ☒ ZPLC

Thermometer Used: T299 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 3.1 **Corr. Factor** -0.2 **Corrected** 2.9

Date and initials of person examining contents: 10/27/21 MLK

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	TDS expires 10/28
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# 1005173	☒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: _____

CCR-KS

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	AECOM
Address:	6200 South Quebec St
	Greenwood Village, CO 80111
Email To:	brian.rothmeyer@aecom.com
Phone:	(303) 740-2614
Fax:	
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Vasanta Kalluri
Copy To:	Brian Rothmeyer
Purchase Order No.:	136205
Project Name:	60659991 PRPA CCR
Project Number:	60659991

Section C Invoice Information:

Attention:	Accounts Payable
Company Name:	AECOM
Address:	Same as Section A
Pace Quote Reference:	42700
Pace Project Manager:	Heather Wilson
Pace Profile #:	No RLI - 11033, 3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): 9056 Cl, F, SO4	6020 Total Metals*	6010 Total Metals**	7470 Total Mercury	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60384258
1	BAT-04R-CCR	WT	G	—		10-21-21	1000		7	4		3						✓	✓	✓	✓	✓	N	MS/MSD collected
2	BAT-05-CCR	WT	G	—		10-21-21	1045		3	2		1						✓	✓	✓	✓	✓	N	
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

JV

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mo, Se, Tl	Jack Ley AECOM	10-21-21	1700	Mixner/Pace	10/22/21	0855	2.9	Y	Y	Y
**B, Ca, Li										
MS/MSD collected at BAT-04R-CCR										

Dept: 6003 Date : 01Oct21 Shipping : 0.00
Customer : 861078 Weight : 50 LBS Special : 0.00
Phone : (913)599-5665 COD : Handling : 0.00
Dept: client services DV : 0.00 Total : 0.00

Svc: PRIORITY OVERNIGHT Master 5333 8753 4019
TRCK: 5333 8753 4019

SAMPLER NAME AND SIG.

PRINT Name of SAMPLER: Jack Ley

SIGNATURE of SAMPLER: Jack Ley

DATE Signed (MM/DD/YY): 10/21/21

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

COC PAGE ____ of ____

Sample Container Count

SBS ____ DI ____ MeOH (only) ____ BK ____ Kit

Client: AECOM

Profile # ____

Site: ____

Notes ____

COC Line Item	Matrix	R	VG9H	DG9H	DG9Q	VG9U	DG9U	BG1U	AG1H	AG1U	AG2U	AG3S	AG4U	AG5U	BP1U	BP2U	BP3U	BP1N	BP3N	BP3F	BP3S	BP3C	BP3Z	JGFU	WGKU	ZPLC	DG9M	DG9B				
1															1		1	1														
2															1		1	1														
3																																
4																																
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

Container Codes

Glass			
DG9B	40mL bisulfate clear vial	WGKU	8oz clear soil jar
DG9H	40mL HCl amber voa vial	WGFU	4oz clear soil jar
DG9M	40mL MeOH clear vial	WG2U	2oz clear soil jar
DG9Q	40mL TSP amber vial	JGFU	4oz unpreserved amber wide
DG9S	40mL H2SO4 amber vial	AG0U	100mL unores amber glass
DG9T	40mL Na Thio amber vial	AG1H	1L HCl amber glass
DG9U	40mL amber unpreserved	AG1S	1L H2SO4 amber glass
VG9H	40mL HCl clear vial	AG1T	1L Na Thiosulfate clear/amber glass
VG9T	40mL Na Thio. clear vial	AG1U	1liter unpres amber glass
VG9U	40mL unpreserved clear vial	AG2N	500mL HNO3 amber glass
BG1S	1liter H2SO4 clear glass	AG2S	500mL H2SO4 amber glass
BG1U	1liter unpres glass	AG3S	250mL H2SO4 amber glass
BG3H	250mL HCL Clear glass	AG2U	500mL unpres amber glass
BG3U	250mL Unpres Clear glass	AG3U	250mL unpres amber glass
		AG4U	125mL unpres amber glass
		AG5U	100mL unpres amber glass

Plastic	
BP1C	1L NAOH plastic
BP1N	1L HNO3 plastic
BP1S	1L H2SO4 plastic
BP1U	1L unpreserved plastic
BP1Z	1L NaOH, Zn Acetate
BP2C	500mL NAOH plastic
BP2N	500mL HNO3 plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Acetate
BP3C	250mL NaOH plastic
BP3F	250mL HNO3 plastic - field filtered
BP3N	250mL HNO3 plastic
BP3U	250mL unpreserved plastic
BP3S	250mL H2SO4 plastic
BP3Z	250mL NaOH, Zn Acetate
BP4U	125mL unpreserved plastic
BP4N	125mL HNO3 plastic
BP4S	125mL H2SO4 plastic

Misc.	
I	Wipe/Swab
SP5T	120mL Coliform Na Thiosulfate
ZPLC	Ziploc Bag
AF	Air Filter
C	Air Cassettes
R	Terracore Kit
U	Summa Can

Matrix	
WT	Water
SL	Solid
NAL	Non-aqueous Liquid
OL	OIL
WP	Wipe
DW	Drinking Water

Appendix C

Statistical Analysis Results and Input/Output Files

New	Co_BAT-5	Pb_BAT-5	Cr_BAT-5
units = mg/L	0.01	0.00	0.005
	0.011	0.004	0.002
	0.008	0.002	0.001
	0.0069	0.0022	0.0027
	0.01	0.00	0.001
	0.007	0.003	0.002
	0.035	0.045	0.0362
	0	0	0
	0.012	0.006	0.007
	0.0108	0.004	0.0063
	0.0101	0.0032	0.0034
	0.008	0.003	0.003
	0.007	0.0023	0.0019
	0.027	0.0354	0.0639
	0.0142	0.0058	0.0045
	0.0101	0.0029	0.0014
	0.0261	0.0055	0.0017

Mean	0.013	0.008	0.008
Std Dev	0.009	0.012	0.017
n	17	17	17
alpha	0.05	0.05	0.05
Confidence	0.0045	0.0064	0.0085
LCL	0.00805	0.00126	-0.00009
GWPS	0.0042	0.015	1.015
LCL>GWPS?	TRUE	FALSE	FALSE

Location_ID	Date	Boron	D_Boron	Calcium	D_Calcium	Chloride	D_Chloride	Fluoride	D_Fluoride	pH	D_pH	Sulfate	D_Sulfate	TDS	D_TDS
BAT-09	9/14/2016	2200	1	220000	1	150	1	0.34	1					3100	1
BAT-09	11/30/2016	1900	1	170000	1	140	1	0.32	1					2800	1
BAT-09	12/19/2016	2000	1	160000	1	110	1	0.97	1					2500	1
BAT-09	4/6/2017	2100	1	140000	1	86	1	0.24	1			1600	1	2600	1
BAT-09	5/11/2017	2300	1	160000	1	92	1	0.2	1	7	1	1500	1	2700	1
BAT-09	6/14/2017	2400	1	160000	1	100	1	0.22	1	7	1	1500	1	2800	1
BAT-09	7/12/2017									7	1				
BAT-09	2/8/2018	2200	1	140000	1	87	1	0.37	1			1500	1	2600	1
BAT-09	3/27/2018							0.2	0	7	1				
BAT-09	6/22/2018	2390	1	135000	1	90.5	1	0.24	1	8	1	1540	1	2600	1
BAT-09	10/10/2018	2060	1	139000	1	98.1	1	0.2	0	7	1	1770	1	2550	1
BAT-09	5/1/2019	2110	1	199000	1	29.1	1	0.2	0	7	1	29.5	1	3030	1
BAT-09	7/12/2019									7	1				
BAT-09	10/15/2019	2220	1	179000	1	147	1	0.2	0			1650	1	3530	1
BAT-09	4/17/2020	2240	1	174000	1	131	1	0.2	0	8	1	1610	1	2790	1
BAT-09	10/7/2020	2220	1	190000	1	174	1	0.25	1	7	1	1610	1	3470	1
BAT-09	4/14/2021	2170	1	161000	1	168	1	0.2	0	7	1	1	0	2650	1
BAT-09	10/15/2021	2150	1	221000	1	188	1	0.2	0	7	1	4.3	1	3250	1
BAT-10	1/24/2019	813	1	363000	1	22.2	1	0.53	1	8	1	2760	1	3820	1
BAT-10	5/3/2019	875	1	360000	1	45.4	1	0.31	1	7	1	2360	1	3620	1
BAT-10	7/22/2019	859	1	392000	1	23.8	1	0.21	1	8	1	2490	1	4130	1
BAT-10	10/11/2019	750	1	364000	1	22.8	1	0.2	0			2490	1	3830	1
BAT-10	1/14/2020	818	1	343000	1	22.1	1	0.23	1	7	1	2940	1	4250	1
BAT-10	4/22/2020	889	1	413000	1	22.5	1	0.4	1	8	1	2630	1	3930	1
BAT-10	7/20/2020	659	1	471000	1	24.1	1	0.34	1	7	1	2550	1	3520	1
BAT-10	10/8/2020	881	1	378000	1	22.7	1	0.2	0	7	1	2460	1	4020	1
BAT-10	1/7/2021	788	1	397000	1	22.2	1	0.5	1	8	1	2490	1	4270	1
BAT-10	4/21/2021	798	1	396000	1	22.8	1	0.2	0	7	1	14.8	1	3810	1
BAT-10	10/18/2021	689	1	431000	1	24.5	1	0.2	0	7	1	2330	1	3950	1
BAT-11	1/24/2019	366	1	71000	1	7.5	1	0.26	1	8	1	209	1	637	1
BAT-11	5/6/2019	304	1	84800	1	6	1	0.31	1	8	1	191	1	606	1
BAT-11	7/22/2019	397	1	91000	1	8.3	1	0.26	1	6	1	248	1	714	1
BAT-11	7/23/2019									7	1				

BAT-11	10/11/2019	350	1	84100	1	7	1	0.22	1			187	1	665	1
BAT-11	1/14/2020	407	1	76500	1	9.3	1	0.2	0	7	1	191	1	906	1
BAT-11	4/8/2020	430	1	89500	1	7.2	1	0.2	0	8	1	182	1	680	1
BAT-11	7/20/2020	466	1	90500	1	7.2	1	0.26	1	7	1	178	1	665	1
BAT-11	10/9/2020	471	1	97200	1	8.5	1	0.24	1	8	1	187	1	713	1
BAT-11	1/7/2021	445	1	92900	1	8.4	1	0.25	1	8	1	185	1	696	1
BAT-11	4/21/2021	316	1	88200	1	5.3	1	0.2	0	8	1	166	1	1000	1
BAT-11	10/12/2021	500	0	100000	1	6.5	1	0.25	1	8	1	170	1	638	1

Location_ID	Sample ID	Antimony	D_Antimony	Arsenic	D_Arsenic	Barium	D_Barium	Beryllium	D_Beryllium	Cadmium	D_Cadmium	Chromium	D_Chromium	Cobalt	D_Cobalt	Fluoride	D_Fluoride	Lead	D_Lead	Lithium	D_Lithium	Mercury	D_Mercury	Molybdenum	D_Molybdenum	Radium	D_Radium	Radium-226	D_Radium-226	Radium-228	D_Radium-228	Selenium	D_Selenium	Thallium	D_Thallium
BAT-09	9/14/2016	2	1	5	1	46	1	1	0	0.1	1	2	1	3	1	0.34	1	1	1	194	1	0.1	0	23	1	3.2	1					12	1	1	0
BAT-09	11/30/2016	2	1	3	1	28	1	1	0	0.1	0	1	0	2	1	0.32	1	1	0	192	1	0.1	0	40	1	1.6	1					5	1	1	0
BAT-09	12/19/2016	1	1	4	1	27	1	1	0	0.1	0	1	0	1	1	0.97	1	1	0	330	1	0.1	0	32	1	1.6	1					3	1	1	0
BAT-09	4/6/2017	1	1	3	1	20	1	1	0	0.1	0	1	0	1	1	0.24	1	1	1	173	1	0.1	0	26	1	0.55	1					4	1	1	0
BAT-09	5/11/2017	1	0	2	1	17	1	1	0	0.1	0	1	0	1	1	0.2	1	1	0	187	1	0.1	0	25	1	1.7	1					3	1	1	0
BAT-09	6/14/2017	2	1	3	1	21	1	1	0	0.1	0	1	0	2	1	0.22	1	1	0	247	1	0.1	0	18	1	0.31	1					5	1	1	0
BAT-09	2/8/2018	1	1	4	1	19	1	1	0	0.1	0	1	0	1	1	0.37	1	1	0	230	1	0.1	0	33	1	1.4	1					3	1	1	0
BAT-09	3/27/2018	1	0	1.6	1	16.3	1	0.5	0	0.5	0	1	0	1	0	0.2	0	1	0	192	1	0.2	0	18.3	1	0.947	1	0.474	1	0.473	1	1	0	1	0
BAT-09	6/22/2018	3	0	3	0	18.1	1	1.5	0	1.5	0	3	0	3	0	0.24	1	3	0	200	1	0.2	0	17.7	1	0.85	1	0.311	1	0.539	1	3	0	3	0
BAT-09	10/10/2018	0.5	0	2.5	1	23.7	1	1	0	0.08	0	2.9	1	1.8	1	0.2	0	1.5	1	182	1	0.2	0	12.7	1	0.834	1	0.237	1	0.597	1	2.5	0	0.1	0
BAT-09	5/1/2019	1	0	1	0	19.3	1	0.5	0	0.5	0	1.6	1	1.4	1	0.2	0	1	0	209	1	0.2	0	9.6	1	1.09	1	0.724	1	0.363	1	1.5	1	1	0
BAT-09	10/15/2019	1	0	1.1	1	12.6	1	0.5	0	0.5	0	1	0	1.8	1	0.2	0	1	0	200	1	0.2	0	8.2	1	0.497	1	0.105	1	0.392	1	1	0	1	0
BAT-09	4/17/2020	1	0	1	0	11.9	1	0.5	0	0.5	0	1	0	1	0	0.2	0	1	0	212	1	0.2	0	4.9	1	0.451	1	0.12	1	0.331	1	1	0	1	0
BAT-09	10/7/2020	1	0	1	0	10.9	1	0.5	0	0.5	0	1	0	1	0	0.25	1	1	0	210	1	0.2	0	4.9	1	0.913	1	0.0577	1	0.855	1	1	0	1	0
BAT-09	4/14/2021	1	0	1	0	13.4	1	0.5	0	0.5	0	1	0	1	0	0.2	0	1	0	197	1	0.2	0	5.4	1	0.884	1	0.115	1	0.769	1	1	0	1	0
BAT-09	10/15/2021	1	0	1	0	13.8	1	0.5	0	0.5	0	1.7	1	1	0	0.2	0	1	0	264	1	0.2	0	3.8	1	2.81	1	0.578	1	2.23	1	1	0	1	0
BAT-10	1/24/2019	1.2	1	2.6	1	34.1	1	0.5	0	0.5	0	1	0	1.1	1	0.53	1	1	0	221	1	0.2	0	36.8	1							131	1	1	0
BAT-10	5/3/2019	2	0	2	0	30.9	1	1	0	1	0	2.2	1	2	0	0.31	1	2	0	227	1	0.2	0	32.5	1	1.03	1	0.525	1	0.505	1	100	1	2	0
BAT-10	7/22/2019	1	0	1	0	21.5	1	0.5	0	0.5	0	1	0	1.2	1	0.21	1	1	0	223	1	0.2	0	20.4	1	1.64	1	0.853	1	0.784	1	109	1	1	0
BAT-10	10/11/2019	3	0	3	0	25.3	1	1.5	0	1.5	0	3	0	3	0	0.2	0	3	0	196	1	0.2	0	19.3	1	0.915	1	-0.127	1	0.915	1	115	1	3	0
BAT-10	1/14/2020	1	0	1.2	1	59.2	1	0.5	0	0.5	0	1.5	1	1.5	1	0.23	1	1	0	193	1	0.2	0	17.4	1	0.681	1	0.222	1	0.459	1	79	1	1	0
BAT-10	4/22/2020	1	0	1	0	38.3	1	0.5	0	0.5	0	1.3	0	1	1	0.4	1	1	0	236	1	0.2	0	13.3	1	0.382	1	0	1	0.382	1	76.5	1	1	0
BAT-10	7/20/2020	1	0	1	0	24.9	1	0.5	0	0.5	0	1	0	1	0	0.34	1	1	0	383	1	0.2	0	12	1	0.487	1	0.125	1	0.362	1	90.3	1	1	0
BAT-10	10/8/2020	3	0	3	0	25.8	1	0.5	0	0.5	0	3	0	1	0	0.2	0	1	0	232	1	0.2	0	10.4	1	1.16	1	0.722	1	0.438	1	115	1	1	0
BAT-10	1/7/2021	1	0	1	0	17.8	1	0.5	0	0.5	0	1	0	1	0	0.5	1	1	0	195	1	0.2	0	6.2	1	1.2	1	0.28	1	0.921	1	228	1	1	0
BAT-10	4/21/2021	1	0	1	0	18.8	1	0.5	0	0.5	0	1	0	1	0	0.2	0	1	0	212	1	0.2	0	8.2	1	1.93	1	0.507	1	1.42	1	150	1	1	0
BAT-10	10/18/2021	1	0	1	0	24.6	1	0.5	0	0.5	0	1.1	1	1	0	0.2	0	1	0	197	1	0.2	0	6.4	1	0.666	1	0.309	1	0.357	1	213	1	1	0
BAT-11	1/24/2019	1.7	1	2.1	1	140	1	0.5	0	0.5	0	24.9	1	1.2	1	0.26	1	1	0	76.2	1	0.2	0	54.7	1							7.2	1	1	0
BAT-11	5/6/2019	1	0	1	0	127	1	0.5	0	0.5	0	1	1	1	0	0.31	1	1	0	60	1	0.2	0	30.9	1	1.08	1	0.369	1	0.706	1	4.7	1	1	0
BAT-11	7/22/2019	1	0	1.5	1	88.8	1	0.5	0	0.5	0	3.9	1	1	0	0.26	1	1	0	69.8	1	0.2	0	28.9	1	1.27	1	0.38	1	0.893	1	16.5	1	1	0
BAT-11	10/11/2019	1	0	1	0	82.3	1	0.5	0	0.5	0	1	0	1	0	0.22	1	1	0	60.6	1	0.2	0	21.1	1	0.0576	1	0.0576	1	-0.169	1	4.6	1	1	0
BAT-11	1/14/2020	1	0	1.1	1	64.9	1	0.5	0	0.5	0	1	0	1	0	0.2	0	1	0	57.8	1	0.2	0	17.9	1	0.399	1	0.121	1	0.278	1	1	0	1	0
BAT-11	4/8/2020	1	0	1	0	64.8	1	0.5	0	0.5	0	1	0	1	0	0.2	0	1	0	62.4	1	0.2	0	13.5	1	1.36	1	0.676	1	0.686	1	1.2	1	1	0
BAT-11	7/20/2020	1	0	1	0	55	1	0.5	0	0.5	0	1	0	1	0	0.26	1	1	0	71	1	0.2	0	11.8	1	1.87	1	1.08	1	0.789	1	1.8	1	1	0
BAT-11	10/9/2020	3	0	3	0	57.7	1	1.5	0	1.5	0	3	0	3	0	0.24	1	3	0	75.9	1	0.2	0	8.4	1	0.64	1	0.0807	1	0.559	1	3	0	3	0
BAT-11	1/7/2021	1	0	1	0	45.6	1	0.5	0	0.5	0	1	0	1	0	0.25	1	1	0	73.1	1	0.2	0	7.3	1	0.161	1	0.161	1	-0.119	1	1.2	1	1	0
BAT-11	4/21/2021	1	0	1	0	65.2	1	0.5	0	0.5	0	1.2	1	1	0	0.2	0	1	0	40.2	1	0.2	0	8.4	1	1.26	1	0.389	1	0.867	1	7.3	1	1	0
BAT-11	10/12/2021	1	0	1	0	46.6	1	0.5	0	0.5	0	1.7	1	1	0	0.25	1	1	0	56.1	1	0.2	0	6.8	1	0.192	1	0	1	0.192	1	8.1	1	1	0

	A	B	C	D	E	F	G	H	I	J	K	L
1				Background Statistics for Data Sets with Non-Detects								
2			User Selected Options									
3			Date/Time of Computation	ProUCL 5.11/18/2022 3:59:33 PM								
4			From File	ProUCL Input PRPA CCR BAT Appendix III Total 2016-2021.xls								
5			Full Precision	OFF								
6			Confidence Coefficient	95%								
7			Coverage	95%								
8			Different or Future K Observations	1								
9			Number of Bootstrap Operations	2000								
10												
11	Boron											
12												
13						General Statistics						
14						Total Number of Observations	37			Number of Missing Observations	4	
15						Number of Distinct Observations	35					
16						Number of Detects	36			Number of Non-Detects	1	
17						Number of Distinct Detects	34			Number of Distinct Non-Detects	1	
18						Minimum Detect	304			Minimum Non-Detect	500	
19						Maximum Detect	2400			Maximum Non-Detect	500	
20						Variance Detected	650119			Percent Non-Detects	2.703%	
21						Mean Detected	1262			SD Detected	806.3	
22						Mean of Detected Logged Data	6.902			SD of Detected Logged Data	0.733	
23												
24						Critical Values for Background Threshold Values (BTVs)						
25						Tolerance Factor K (For UTL)	2.14			d2max (for USL)	2.835	
26												
27						Normal GOF Test on Detects Only						
28						Shapiro Wilk Test Statistic	0.798			Shapiro Wilk GOF Test		
29						5% Shapiro Wilk Critical Value	0.935			Data Not Normal at 5% Significance Level		
30						Lilliefors Test Statistic	0.261			Lilliefors GOF Test		
31						5% Lilliefors Critical Value	0.145			Data Not Normal at 5% Significance Level		
32						Data Not Normal at 5% Significance Level						
33												
34						Kaplan Meier (KM) Background Statistics Assuming Normal Distribution						
35						KM Mean	1239			KM SD	796.8	
36						95% UTL95% Coverage	2944			95% KM UPL (t)	2602	
37						90% KM Percentile (z)	2260			95% KM Percentile (z)	2549	
38						99% KM Percentile (z)	3092			95% KM USL	3498	
39												
40						DL/2 Substitution Background Statistics Assuming Normal Distribution						
41						Mean	1235			SD	812.2	
42						95% UTL95% Coverage	2973			95% UPL (t)	2624	
43						90% Percentile (z)	2276			95% Percentile (z)	2571	
44						99% Percentile (z)	3124			95% USL	3537	
45						DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons						
46												
47						Gamma GOF Tests on Detected Observations Only						
48						A-D Test Statistic	2.267			Anderson-Darling GOF Test		
49						5% A-D Critical Value	0.758			Data Not Gamma Distributed at 5% Significance Level		
50						K-S Test Statistic	0.226			Kolmogorov-Smirnov GOF		
51						5% K-S Critical Value	0.149			Data Not Gamma Distributed at 5% Significance Level		
52						Data Not Gamma Distributed at 5% Significance Level						
53												
54						Gamma Statistics on Detected Data Only						

	A	B	C	D	E	F	G	H	I	J	K	L
55					k hat (MLE)	2.245					k star (bias corrected MLE)	2.077
56					Theta hat (MLE)	562.1					Theta star (bias corrected MLE)	607.7
57					nu hat (MLE)	161.7					nu star (bias corrected)	149.5
58					MLE Mean (bias corrected)	1262						
59					MLE Sd (bias corrected)	875.7					95% Percentile of Chisquare (2kstar)	9.735
60												
61					**Gamma ROS Statistics using Imputed Non-Detects**							
62					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
63					GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
64					For such situations, GROS method may yield incorrect values of UCLs and BTVs							
65					This is especially true when the sample size is small.							
66					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
67					Minimum	304					Mean	1242
68					Maximum	2400					Median	859
69					SD	804.6					CV	0.648
70					k hat (MLE)	2.229					k star (bias corrected MLE)	2.066
71					Theta hat (MLE)	557					Theta star (bias corrected MLE)	600.8
72					nu hat (MLE)	165					nu star (bias corrected)	152.9
73					MLE Mean (bias corrected)	1242					MLE Sd (bias corrected)	863.7
74					95% Percentile of Chisquare (2kstar)	9.702					90% Percentile	2396
75					95% Percentile	2915					99% Percentile	4063
76					**The following statistics are computed using Gamma ROS Statistics on Imputed Data**							
77					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
78					WH	HW					WH	HW
79				95% Approx. Gamma UTL with 95% Coverage	3671	3844				95% Approx. Gamma UPL	2973	3054
80				95% Gamma USL	5020	5436						
81												
82					**Estimates of Gamma Parameters using KM Estimates**							
83					Mean (KM)	1239					SD (KM)	796.8
84					Variance (KM)	634821					SE of Mean (KM)	132.9
85					k hat (KM)	2.416					k star (KM)	2.239
86					nu hat (KM)	178.8					nu star (KM)	165.7
87					theta hat (KM)	512.6					theta star (KM)	553.3
88					80% gamma percentile (KM)	1830					90% gamma percentile (KM)	2346
89					95% gamma percentile (KM)	2836					99% gamma percentile (KM)	3915
90												
91					**The following statistics are computed using gamma distribution and KM estimates**							
92					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
93					WH	HW					WH	HW
94				95% Approx. Gamma UTL with 95% Coverage	3638	3807				95% Approx. Gamma UPL	2948	3027
95				95% KM Gamma Percentile	2850	2918				95% Gamma USL	4970	5380
96												
97					**Lognormal GOF Test on Detected Observations Only**							
98					Shapiro Wilk Test Statistic	0.85	**Shapiro Wilk GOF Test**					
99					5% Shapiro Wilk Critical Value	0.935	Data Not Lognormal at 5% Significance Level					
100					Lilliefors Test Statistic	0.228	**Lilliefors GOF Test**					
101					5% Lilliefors Critical Value	0.145	Data Not Lognormal at 5% Significance Level					
102					**Data Not Lognormal at 5% Significance Level**							
103												
104					**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**							
105					Mean in Original Scale	1240					Mean in Log Scale	6.88
106					SD in Original Scale	806.2					SD in Log Scale	0.734
107					95% UTL95% Coverage	4680					95% BCA UTL95% Coverage	2400
108					95% Bootstrap (%) UTL95% Coverage	2400					95% UPL (t)	3415

	A	B	C	D	E	F	G	H	I	J	K	L
109					90% Percentile (z)	2492					95% Percentile (z)	3254
110					99% Percentile (z)	5366					95% USL	7795
111												
112					**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**							
113					KM Mean of Logged Data	6.876					95% KM UTL (Lognormal)95% Coverage	4610
114					KM SD of Logged Data	0.729					95% KM UPL (Lognormal)	3372
115					95% KM Percentile Lognormal (z)	3214					95% KM USL (Lognormal)	7652
116												
117					**Background DL/2 Statistics Assuming Lognormal Distribution**							
118					Mean in Original Scale	1235					Mean in Log Scale	6.864
119					SD in Original Scale	812.2					SD in Log Scale	0.757
120					95% UTL95% Coverage	4840					95% UPL (t)	3497
121					90% Percentile (z)	2526					95% Percentile (z)	3326
122					99% Percentile (z)	5573					95% USL	8192
123					**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**							
124												
125					**Nonparametric Distribution Free Background Statistics**							
126					**Data do not follow a Discernible Distribution (0.05)**							
127												
128					**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**							
129					Order of Statistic, r	37					95% UTL with95% Coverage	2400
130					Approx, f used to compute achieved CC	1.947					Approximate Actual Confidence Coefficient achieved by UTL	0.85
131					Approximate Sample Size needed to achieve specified CC	59					95% UPL	2391
132					95% USL	2400					95% KM Chebyshev UPL	4758
133												
134					Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.							
135					Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers							
136					and consists of observations collected from clean unimpacted locations.							
137					The use of USL tends to provide a balance between false positives and false negatives provided the data							
138					represents a background data set and when many onsite observations need to be compared with the BTV.							
139												
140	**Calcium**											
141												
142	**General Statistics**											
143					Total Number of Observations	37					Number of Distinct Observations	34
144											Number of Missing Observations	4
145					Minimum	71000					First Quartile	97200
146					Second Largest	431000					Median	161000
147					Maximum	471000					Third Quartile	360000
148					Mean	211397					SD	126523
149					Coefficient of Variation	0.599					Skewness	0.707
150					Mean of logged Data	12.09					SD of logged Data	0.599
151												
152					**Critical Values for Background Threshold Values (BTVs)**							
153					Tolerance Factor K (For UTL)	2.14					d2max (for USL)	2.835
154												
155					**Normal GOF Test**							
156					Shapiro Wilk Test Statistic	0.841					**Shapiro Wilk GOF Test**	
157					5% Shapiro Wilk Critical Value	0.936					Data Not Normal at 5% Significance Level	
158					Lilliefors Test Statistic	0.196					**Lilliefors GOF Test**	
159					5% Lilliefors Critical Value	0.144					Data Not Normal at 5% Significance Level	
160					**Data Not Normal at 5% Significance Level**							
161												
162					**Background Statistics Assuming Normal Distribution**							

	A	B	C	D	E	F	G	H	I	J	K	L
163					95% UTL with 95% Coverage	482163					90% Percentile (z)	373544
164					95% UPL (t)	427874					95% Percentile (z)	419510
165					95% USL	570117					99% Percentile (z)	505735
166												
167					Gamma GOF Test							
168					A-D Test Statistic	1.451	Anderson-Darling Gamma GOF Test					
169					5% A-D Critical Value	0.754	Data Not Gamma Distributed at 5% Significance Level					
170					K-S Test Statistic	0.162	Kolmogorov-Smirnov Gamma GOF Test					
171					5% K-S Critical Value	0.146	Data Not Gamma Distributed at 5% Significance Level					
172					Data Not Gamma Distributed at 5% Significance Level							
173												
174					Gamma Statistics							
175					k hat (MLE)	3.03					k star (bias corrected MLE)	2.803
176					Theta hat (MLE)	69757					Theta star (bias corrected MLE)	75424
177					nu hat (MLE)	224.3					nu star (bias corrected)	207.4
178					MLE Mean (bias corrected)	211397					MLE Sd (bias corrected)	126272
179												
180					Background Statistics Assuming Gamma Distribution							
181					95% Wilson Hilferty (WH) Approx. Gamma UPL	459263					90% Percentile	380666
182					95% Hawkins Wixley (HW) Approx. Gamma UPL	466281					95% Percentile	452461
183					95% WH Approx. Gamma UTL with 95% Coverage	553912					99% Percentile	608660
184					95% HW Approx. Gamma UTL with 95% Coverage	570190						
185					95% WH USL	733434					95% HW USL	774206
186												
187					Lognormal GOF Test							
188					Shapiro Wilk Test Statistic	0.902	Shapiro Wilk Lognormal GOF Test					
189					5% Shapiro Wilk Critical Value	0.936	Data Not Lognormal at 5% Significance Level					
190					Lilliefors Test Statistic	0.161	Lilliefors Lognormal GOF Test					
191					5% Lilliefors Critical Value	0.144	Data Not Lognormal at 5% Significance Level					
192					Data Not Lognormal at 5% Significance Level							
193												
194					Background Statistics assuming Lognormal Distribution							
195					95% UTL with 95% Coverage	640516					90% Percentile (z)	382905
196					95% UPL (t)	495282					95% Percentile (z)	476044
197					95% USL	971530					99% Percentile (z)	716173
198												
199					Nonparametric Distribution Free Background Statistics							
200					Data do not follow a Discernible Distribution (0.05)							
201												
202					Nonparametric Upper Limits for Background Threshold Values							
203					Order of Statistic, r	37					95% UTL with 95% Coverage	471000
204					Approx, f used to compute achieved CC	1.947	Approximate Actual Confidence Coefficient achieved by UTL					0.85
205							Approximate Sample Size needed to achieve specified CC					59
206					95% Percentile Bootstrap UTL with 95% Coverage	471000					95% BCA Bootstrap UTL with 95% Coverage	471000
207					95% UPL	435000					90% Percentile	396400
208					90% Chebyshev UPL	596063					95% Percentile	416600
209					95% Chebyshev UPL	770303					99% Percentile	456600
210					95% USL	471000						
211												
212					Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.							
213					Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers							
214					and consists of observations collected from clean unimpacted locations.							
215					The use of USL tends to provide a balance between false positives and false negatives provided the data							
216					represents a background data set and when many onsite observations need to be compared with the BTV.							

	A	B	C	D	E	F	G	H	I	J	K	L
217												
218	**Chloride**											
219												
220	**General Statistics**											
221					Total Number of Observations	37				Number of Distinct Observations		34
222										Number of Missing Observations		4
223					Minimum	5.3				First Quartile		8.5
224					Second Largest	174				Median		23.8
225					Maximum	188				Third Quartile		98.1
226					Mean	58.03				SD		58.28
227					Coefficient of Variation	1.004				Skewness		0.893
228					Mean of logged Data	3.447				SD of logged Data		1.195
229												
230					**Critical Values for Background Threshold Values (BTVs)**							
231					Tolerance Factor K (For UTL)	2.14				d2max (for USL)		2.835
232												
233					**Normal GOF Test**							
234					Shapiro Wilk Test Statistic	0.804				**Shapiro Wilk GOF Test**		
235					5% Shapiro Wilk Critical Value	0.936				Data Not Normal at 5% Significance Level		
236					Lilliefors Test Statistic	0.285				**Lilliefors GOF Test**		
237					5% Lilliefors Critical Value	0.144				Data Not Normal at 5% Significance Level		
238					**Data Not Normal at 5% Significance Level**							
239												
240					**Background Statistics Assuming Normal Distribution**							
241				95% UTL with	95% Coverage	182.7				90% Percentile (z)		132.7
242					95% UPL (t)	157.7				95% Percentile (z)		153.9
243					95% USL	223.3				99% Percentile (z)		193.6
244												
245					**Gamma GOF Test**							
246					A-D Test Statistic	1.672				**Anderson-Darling Gamma GOF Test**		
247					5% A-D Critical Value	0.779				Data Not Gamma Distributed at 5% Significance Level		
248					K-S Test Statistic	0.212				**Kolmogorov-Smirnov Gamma GOF Test**		
249					5% K-S Critical Value	0.15				Data Not Gamma Distributed at 5% Significance Level		
250					**Data Not Gamma Distributed at 5% Significance Level**							
251												
252					**Gamma Statistics**							
253					k hat (MLE)	0.947				k star (bias corrected MLE)		0.888
254					Theta hat (MLE)	61.28				Theta star (bias corrected MLE)		65.33
255					nu hat (MLE)	70.07				nu star (bias corrected)		65.73
256					MLE Mean (bias corrected)	58.03				MLE Sd (bias corrected)		61.57
257												
258					**Background Statistics Assuming Gamma Distribution**							
259					95% Wilson Hilferty (WH) Approx. Gamma UPL	184.1				90% Percentile		137.6
260					95% Hawkins Wixley (HW) Approx. Gamma UPL	192.8				95% Percentile		181.3
261				95% WH Approx. Gamma UTL with	95% Coverage	245.5				99% Percentile		283.8
262				95% HW Approx. Gamma UTL with	95% Coverage	266.7						
263					95% WH USL	371.6				95% HW USL		428.8
264												
265					**Lognormal GOF Test**							
266					Shapiro Wilk Test Statistic	0.885				**Shapiro Wilk Lognormal GOF Test**		
267					5% Shapiro Wilk Critical Value	0.936				Data Not Lognormal at 5% Significance Level		
268					Lilliefors Test Statistic	0.179				**Lilliefors Lognormal GOF Test**		
269					5% Lilliefors Critical Value	0.144				Data Not Lognormal at 5% Significance Level		
270					**Data Not Lognormal at 5% Significance Level**							

	A	B	C	D	E	F	G	H	I	J	K	L
271												
272	**Background Statistics assuming Lognormal Distribution**											
273					95% UTL with 95% Coverage	405.8				90% Percentile (z)		145.4
274					95% UPL (t)	242.9				95% Percentile (z)		224.5
275					95% USL	931.5				99% Percentile (z)		507
276												
277	**Nonparametric Distribution Free Background Statistics**											
278	**Data do not follow a Discernible Distribution (0.05)**											
279												
280	**Nonparametric Upper Limits for Background Threshold Values**											
281					Order of Statistic, r	37				95% UTL with 95% Coverage		188
282					Approx, f used to compute achieved CC	1.947				Approximate Actual Confidence Coefficient achieved by UTL		0.85
283										Approximate Sample Size needed to achieve specified CC		59
284					95% Percentile Bootstrap UTL with 95% Coverage	188				95% BCA Bootstrap UTL with 95% Coverage		188
285					95% UPL	175.4				90% Percentile		148.2
286					90% Chebyshev UPL	235.2				95% Percentile		169.2
287					95% Chebyshev UPL	315.5				99% Percentile		183
288					95% USL	188						
289												
290	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
291	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
292	and consists of observations collected from clean unimpacted locations.											
293	The use of USL tends to provide a balance between false positives and false negatives provided the data											
294	represents a background data set and when many onsite observations need to be compared with the BTV.											
295												
296	**Fluoride**											
297												
298	**General Statistics**											
299					Total Number of Observations	38				Number of Missing Observations		3
300					Number of Distinct Observations	15						
301					Number of Detects	24				Number of Non-Detects		14
302					Number of Distinct Detects	15				Number of Distinct Non-Detects		1
303					Minimum Detect	0.2				Minimum Non-Detect		0.2
304					Maximum Detect	0.97				Maximum Non-Detect		0.2
305					Variance Detected	0.0264				Percent Non-Detects		36.84%
306					Mean Detected	0.322				SD Detected		0.163
307					Mean of Detected Logged Data	-1.211				SD of Detected Logged Data		0.361
308												
309	**Critical Values for Background Threshold Values (BTVs)**											
310					Tolerance Factor K (For UTL)	2.132				d2max (for USL)		2.846
311												
312	**Normal GOF Test on Detects Only**											
313					Shapiro Wilk Test Statistic	0.641				**Shapiro Wilk GOF Test**		
314					5% Shapiro Wilk Critical Value	0.916				Data Not Normal at 5% Significance Level		
315					Lilliefors Test Statistic	0.247				**Lilliefors GOF Test**		
316					5% Lilliefors Critical Value	0.177				Data Not Normal at 5% Significance Level		
317	**Data Not Normal at 5% Significance Level**											
318												
319	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
320					KM Mean	0.277				KM SD		0.139
321					95% UTL95% Coverage	0.574				95% KM UPL (t)		0.515
322					90% KM Percentile (z)	0.456				95% KM Percentile (z)		0.506
323					99% KM Percentile (z)	0.601				95% KM USL		0.674
324												

	A	B	C	D	E	F	G	H	I	J	K	L
325	DL/2 Substitution Background Statistics Assuming Normal Distribution											
326					Mean	0.24					SD	0.168
327				95% UTL95% Coverage		0.598					95% UPL (t)	0.527
328				90% Percentile (z)		0.455					95% Percentile (z)	0.516
329				99% Percentile (z)		0.631					95% USL	0.718
330	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
331												
332	Gamma GOF Tests on Detected Observations Only											
333				A-D Test Statistic		1.712	Anderson-Darling GOF Test					
334				5% A-D Critical Value		0.746	Data Not Gamma Distributed at 5% Significance Level					
335				K-S Test Statistic		0.239	Kolmogorov-Smirnov GOF					
336				5% K-S Critical Value		0.178	Data Not Gamma Distributed at 5% Significance Level					
337	Data Not Gamma Distributed at 5% Significance Level											
338												
339	Gamma Statistics on Detected Data Only											
340				k hat (MLE)		6.698	k star (bias corrected MLE)					5.888
341				Theta hat (MLE)		0.048	Theta star (bias corrected MLE)					0.0546
342				nu hat (MLE)		321.5	nu star (bias corrected)					282.6
343				MLE Mean (bias corrected)		0.322						
344				MLE Sd (bias corrected)		0.133	95% Percentile of Chisquare (2kstar)					20.73
345												
346	Gamma ROS Statistics using Imputed Non-Detects											
347	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
348	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
349	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
350	This is especially true when the sample size is small.											
351	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
352				Minimum		0.01	Mean					0.221
353				Maximum		0.97	Median					0.235
354				SD		0.187	CV					0.846
355				k hat (MLE)		1.079	k star (bias corrected MLE)					1.011
356				Theta hat (MLE)		0.205	Theta star (bias corrected MLE)					0.218
357				nu hat (MLE)		82	nu star (bias corrected)					76.86
358				MLE Mean (bias corrected)		0.221	MLE Sd (bias corrected)					0.22
359				95% Percentile of Chisquare (2kstar)		6.035	90% Percentile					0.507
360				95% Percentile		0.659	99% Percentile					1.011
361	The following statistics are computed using Gamma ROS Statistics on Imputed Data											
362	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
363					WH	HW					WH	HW
364			95% Approx. Gamma UTL with 95% Coverage		0.877	0.993	95% Approx. Gamma UPL				0.672	0.732
365			95% Gamma USL		1.311	1.586						
366												
367	Estimates of Gamma Parameters using KM Estimates											
368				Mean (KM)		0.277	SD (KM)					0.139
369				Variance (KM)		0.0194	SE of Mean (KM)					0.0231
370				k hat (KM)		3.941	k star (KM)					3.647
371				nu hat (KM)		299.5	nu star (KM)					277.2
372				theta hat (KM)		0.0702	theta star (KM)					0.0759
373				80% gamma percentile (KM)		0.386	90% gamma percentile (KM)					0.471
374				95% gamma percentile (KM)		0.55	99% gamma percentile (KM)					0.719
375												
376	The following statistics are computed using gamma distribution and KM estimates											
377	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods											
378					WH	HW					WH	HW

	A	B	C	D	E	F	G	H	I	J	K	L
379	95% Approx. Gamma UTL with 95% Coverage				0.541	0.538	95% Approx. Gamma UPL				0.475	0.471
380	95% KM Gamma Percentile				0.465	0.461	95% Gamma USL				0.666	0.667
381												
382	**Lognormal GOF Test on Detected Observations Only**											
383	Shapiro Wilk Test Statistic					0.829	**Shapiro Wilk GOF Test**					
384	5% Shapiro Wilk Critical Value					0.916	Data Not Lognormal at 5% Significance Level					
385	Lilliefors Test Statistic					0.231	**Lilliefors GOF Test**					
386	5% Lilliefors Critical Value					0.177	Data Not Lognormal at 5% Significance Level					
387	**Data Not Lognormal at 5% Significance Level**											
388												
389	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
390	Mean in Original Scale					0.25	Mean in Log Scale					-1.535
391	SD in Original Scale					0.161	SD in Log Scale					0.538
392	95% UTL95% Coverage					0.679	95% BCA UTL95% Coverage					0.97
393	95% Bootstrap (%) UTL95% Coverage					0.97	95% UPL (t)					0.541
394	90% Percentile (z)					0.43	95% Percentile (z)					0.523
395	99% Percentile (z)					0.754	95% USL					0.998
396												
397	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
398	KM Mean of Logged Data					-1.358	95% KM UTL (Lognormal)95% Coverage					0.531
399	KM SD of Logged Data					0.34	95% KM UPL (Lognormal)					0.46
400	95% KM Percentile Lognormal (z)					0.45	95% KM USL (Lognormal)					0.677
401												
402	**Background DL/2 Statistics Assuming Lognormal Distribution**											
403	Mean in Original Scale					0.24	Mean in Log Scale					-1.613
404	SD in Original Scale					0.168	SD in Log Scale					0.605
405	95% UTL95% Coverage					0.724	95% UPL (t)					0.56
406	90% Percentile (z)					0.433	95% Percentile (z)					0.539
407	99% Percentile (z)					0.814	95% USL					1.114
408	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
409												
410	**Nonparametric Distribution Free Background Statistics**											
411	**Data do not follow a Discernible Distribution (0.05)**											
412												
413	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
414	Order of Statistic, r					38	95% UTL with95% Coverage					0.97
415	Approx, f used to compute achieved CC					2	Approximate Actual Confidence Coefficient achieved by UTL					0.858
416	Approximate Sample Size needed to achieve specified CC					59	95% UPL					0.552
417	95% USL					0.97	95% KM Chebyshev UPL					0.893
418												
419	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
420	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
421	and consists of observations collected from clean unimpacted locations.											
422	The use of USL tends to provide a balance between false positives and false negatives provided the data											
423	represents a background data set and when many onsite observations need to be compared with the BTV.											
424												
425	**pH**											
426												
427	**General Statistics**											
428	Total Number of Observations					33	Number of Distinct Observations					25
429							Number of Missing Observations					8
430	Minimum					6.36	First Quartile					7.3
431	Second Largest					7.78	Median					7.38
432	Maximum					8.1	Third Quartile					7.56

	A	B	C	D	E	F	G	H	I	J	K	L
433					Mean	7.387					SD	0.311
434					Coefficient of Variation	0.042					Skewness	-1.084
435					Mean of logged Data	1.999					SD of logged Data	0.0431
436												
437					**Critical Values for Background Threshold Values (BTVs)**							
438					Tolerance Factor K (For UTL)	2.176					d2max (for USL)	2.787
439												
440					**Normal GOF Test**							
441					Shapiro Wilk Test Statistic	0.913			**Shapiro Wilk GOF Test**			
442					5% Shapiro Wilk Critical Value	0.931			Data Not Normal at 5% Significance Level			
443					Lilliefors Test Statistic	0.177			**Lilliefors GOF Test**			
444					5% Lilliefors Critical Value	0.152			Data Not Normal at 5% Significance Level			
445					**Data Not Normal at 5% Significance Level**							
446												
447					**Background Statistics Assuming Normal Distribution**							
448				95% UTL with	95% Coverage	8.063					90% Percentile (z)	7.785
449					95% UPL (t)	7.921					95% Percentile (z)	7.898
450					95% USL	8.253					99% Percentile (z)	8.11
451												
452					**Gamma GOF Test**							
453					A-D Test Statistic	1.107			**Anderson-Darling Gamma GOF Test**			
454					5% A-D Critical Value	0.746			Data Not Gamma Distributed at 5% Significance Level			
455					K-S Test Statistic	0.182			**Kolmogorov-Smirnov Gamma GOF Test**			
456					5% K-S Critical Value	0.153			Data Not Gamma Distributed at 5% Significance Level			
457					**Data Not Gamma Distributed at 5% Significance Level**							
458												
459					**Gamma Statistics**							
460					k hat (MLE)	564.3					k star (bias corrected MLE)	513
461					Theta hat (MLE)	0.0131					Theta star (bias corrected MLE)	0.0144
462					nu hat (MLE)	37243					nu star (bias corrected)	33859
463					MLE Mean (bias corrected)	7.387					MLE Sd (bias corrected)	0.326
464												
465					**Background Statistics Assuming Gamma Distribution**							
466				95% Wilson Hilferty (WH) Approx. Gamma UPL		7.939					90% Percentile	7.808
467				95% Hawkins Wixley (HW) Approx. Gamma UPL		7.941					95% Percentile	7.932
468				95% WH Approx. Gamma UTL with	95% Coverage	8.091					99% Percentile	8.167
469				95% HW Approx. Gamma UTL with	95% Coverage	8.095						
470					95% WH USL	8.298					95% HW USL	8.304
471												
472					**Lognormal GOF Test**							
473					Shapiro Wilk Test Statistic	0.895			**Shapiro Wilk Lognormal GOF Test**			
474					5% Shapiro Wilk Critical Value	0.931			Data Not Lognormal at 5% Significance Level			
475					Lilliefors Test Statistic	0.187			**Lilliefors Lognormal GOF Test**			
476					5% Lilliefors Critical Value	0.152			Data Not Lognormal at 5% Significance Level			
477					**Data Not Lognormal at 5% Significance Level**							
478												
479					**Background Statistics assuming Lognormal Distribution**							
480				95% UTL with	95% Coverage	8.107					90% Percentile (z)	7.8
481					95% UPL (t)	7.949					95% Percentile (z)	7.923
482					95% USL	8.323					99% Percentile (z)	8.16
483												
484					**Nonparametric Distribution Free Background Statistics**							
485					**Data do not follow a Discernible Distribution (0.05)**							
486												

	A	B	C	D	E	F	G	H	I	J	K	L
487	**Nonparametric Upper Limits for Background Threshold Values**											
488					Order of Statistic, r	33				95% UTL with 95% Coverage		8.1
489					Approx, f used to compute achieved CC	1.737				Approximate Actual Confidence Coefficient achieved by UTL		0.816
490										Approximate Sample Size needed to achieve specified CC		59
491				95% Percentile Bootstrap UTL with 95% Coverage		8.1				95% BCA Bootstrap UTL with 95% Coverage		8.1
492					95% UPL	7.876					90% Percentile	7.642
493					90% Chebyshev UPL	8.333					95% Percentile	7.768
494					95% Chebyshev UPL	8.762					99% Percentile	7.998
495					95% USL	8.1						
496												
497	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
498	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
499	and consists of observations collected from clean unimpacted locations.											
500	The use of USL tends to provide a balance between false positives and false negatives provided the data											
501	represents a background data set and when many onsite observations need to be compared with the BTV.											
502												
503	**Sulfate**											
504												
505	**General Statistics**											
506					Total Number of Observations	34				Number of Missing Observations		7
507					Number of Distinct Observations	27						
508					Number of Detects	33				Number of Non-Detects		1
509					Number of Distinct Detects	26				Number of Distinct Non-Detects		1
510					Minimum Detect	4.3				Minimum Non-Detect		1
511					Maximum Detect	2940				Maximum Non-Detect		1
512					Variance Detected	1099974				Percent Non-Detects		2.941%
513					Mean Detected	1270				SD Detected		1049
514					Mean of Detected Logged Data	6.362				SD of Detected Logged Data		1.689
515												
516	**Critical Values for Background Threshold Values (BTVs)**											
517					Tolerance Factor K (For UTL)	2.166				d2max (for USL)		2.799
518												
519	**Normal GOF Test on Detects Only**											
520					Shapiro Wilk Test Statistic	0.832				**Shapiro Wilk GOF Test**		
521					5% Shapiro Wilk Critical Value	0.931				Data Not Normal at 5% Significance Level		
522					Lilliefors Test Statistic	0.259				**Lilliefors GOF Test**		
523					5% Lilliefors Critical Value	0.152				Data Not Normal at 5% Significance Level		
524	**Data Not Normal at 5% Significance Level**											
525												
526	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
527					KM Mean	1233				KM SD		1040
528					95% UTL95% Coverage	3486				95% KM UPL (t)		3019
529					90% KM Percentile (z)	2566				95% KM Percentile (z)		2943
530					99% KM Percentile (z)	3652				95% KM USL		4144
531												
532	**DL/2 Substitution Background Statistics Assuming Normal Distribution**											
533					Mean	1233				SD		1055
534					95% UTL95% Coverage	3520				95% UPL (t)		3045
535					90% Percentile (z)	2586				95% Percentile (z)		2969
536					99% Percentile (z)	3688				95% USL		4188
537	**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**											
538												
539	**Gamma GOF Tests on Detected Observations Only**											
540					A-D Test Statistic	2.311				**Anderson-Darling GOF Test**		

	A	B	C	D	E	F	G	H	I	J	K	L
541				5% A-D Critical Value		0.787	Data Not Gamma Distributed at 5% Significance Level					
542				K-S Test Statistic		0.278	**Kolmogorov-Smirnov GOF**					
543				5% K-S Critical Value		0.159	Data Not Gamma Distributed at 5% Significance Level					
544	**Data Not Gamma Distributed at 5% Significance Level**											
545												
546	**Gamma Statistics on Detected Data Only**											
547				k hat (MLE)		0.761	k star (bias corrected MLE)					0.712
548				Theta hat (MLE)		1670	Theta star (bias corrected MLE)					1784
549				nu hat (MLE)		50.22	nu star (bias corrected)					46.99
550				MLE Mean (bias corrected)		1270						
551				MLE Sd (bias corrected)		1506	95% Percentile of Chisquare (2kstar)					4.817
552												
553	**Gamma ROS Statistics using Imputed Non-Detects**											
554	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
555	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
556	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
557	This is especially true when the sample size is small.											
558	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
559				Minimum		4.3	Mean					1244
560				Maximum		2940	Median					1500
561				SD		1044	CV					0.84
562				k hat (MLE)		0.768	k star (bias corrected MLE)					0.719
563				Theta hat (MLE)		1621	Theta star (bias corrected MLE)					1729
564				nu hat (MLE)		52.19	nu star (bias corrected)					48.92
565				MLE Mean (bias corrected)		1244	MLE Sd (bias corrected)					1466
566				95% Percentile of Chisquare (2kstar)		4.849	90% Percentile					3102
567				95% Percentile		4192	99% Percentile					6788
568	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
569	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
570					WH	HW					WH	HW
571				95% Approx. Gamma UTL with 95% Coverage	5889	6947	95% Approx. Gamma UPL				4298	4807
572				95% Gamma USL	8734	11087						
573												
574	**Estimates of Gamma Parameters using KM Estimates**											
575				Mean (KM)		1233	SD (KM)					1040
576				Variance (KM)		1081268	SE of Mean (KM)					181.1
577				k hat (KM)		1.406	k star (KM)					1.302
578				nu hat (KM)		95.62	nu star (KM)					88.51
579				theta hat (KM)		876.9	theta star (KM)					947.3
580				80% gamma percentile (KM)		1937	90% gamma percentile (KM)					2660
581				95% gamma percentile (KM)		3370	99% gamma percentile (KM)					4987
582												
583	**The following statistics are computed using gamma distribution and KM estimates**											
584	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
585					WH	HW					WH	HW
586				95% Approx. Gamma UTL with 95% Coverage	6081	7382	95% Approx. Gamma UPL				4391	5018
587				95% KM Gamma Percentile	4153	4699	95% Gamma USL				9125	12019
588												
589	**Lognormal GOF Test on Detected Observations Only**											
590				Shapiro Wilk Test Statistic		0.809	**Shapiro Wilk GOF Test**					
591				5% Shapiro Wilk Critical Value		0.931	Data Not Lognormal at 5% Significance Level					
592				Lilliefors Test Statistic		0.289	**Lilliefors GOF Test**					
593				5% Lilliefors Critical Value		0.152	Data Not Lognormal at 5% Significance Level					
594	**Data Not Lognormal at 5% Significance Level**											

	A	B	C	D	E	F	G	H	I	J	K	L
595												
596	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
597					Mean in Original Scale	1233					Mean in Log Scale	6.249
598					SD in Original Scale	1055					SD in Log Scale	1.789
599					95% UTL95% Coverage	24953					95% BCA UTL95% Coverage	2940
600					95% Bootstrap (%) UTL95% Coverage	2940					95% UPL (t)	11169
601					90% Percentile (z)	5124					95% Percentile (z)	9816
602					99% Percentile (z)	33223					95% USL	77451
603												
604	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
605					KM Mean of Logged Data	6.175					95% KM UTL (Lognormal)95% Coverage	33540
606					KM SD of Logged Data	1.96					95% KM UPL (Lognormal)	13905
607					95% KM Percentile Lognormal (z)	12070					95% KM USL (Lognormal)	115991
608												
609	**Background DL/2 Statistics Assuming Lognormal Distribution**											
610					Mean in Original Scale	1233					Mean in Log Scale	6.154
611					SD in Original Scale	1055					SD in Log Scale	2.057
612					95% UTL95% Coverage	40555					95% UPL (t)	16095
613					90% Percentile (z)	6571					95% Percentile (z)	13873
614					99% Percentile (z)	56360					95% USL	149139
615	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
616												
617	**Nonparametric Distribution Free Background Statistics**											
618	**Data do not follow a Discernible Distribution (0.05)**											
619												
620	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
621					Order of Statistic, r	34					95% UTL with95% Coverage	2940
622					Approx, f used to compute achieved CC	1.789					Approximate Actual Confidence Coefficient achieved by UTL	0.825
623					Approximate Sample Size needed to achieve specified CC	59					95% UPL	2805
624					95% USL	2940					95% KM Chebyshev UPL	5832
625												
626	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
627	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
628	and consists of observations collected from clean unimpacted locations.											
629	The use of USL tends to provide a balance between false positives and false negatives provided the data											
630	represents a background data set and when many onsite observations need to be compared with the BTV.											
631												
632	**TDS**											
633												
634	**General Statistics**											
635					Total Number of Observations	37					Number of Distinct Observations	33
636											Number of Missing Observations	4
637					Minimum	606					First Quartile	906
638					Second Largest	4250					Median	2790
639					Maximum	4270					Third Quartile	3620
640					Mean	2542					SD	1305
641					Coefficient of Variation	0.514					Skewness	-0.442
642					Mean of logged Data	7.637					SD of logged Data	0.726
643												
644	**Critical Values for Background Threshold Values (BTVs)**											
645					Tolerance Factor K (For UTL)	2.14					d2max (for USL)	2.835
646												
647	**Normal GOF Test**											
648					Shapiro Wilk Test Statistic	0.846					**Shapiro Wilk GOF Test**	

	A	B	C	D	E	F	G	H	I	J	K	L
649					5% Shapiro Wilk Critical Value	0.936	Data Not Normal at 5% Significance Level					
650					Lilliefors Test Statistic	0.19	**Lilliefors GOF Test**					
651					5% Lilliefors Critical Value	0.144	Data Not Normal at 5% Significance Level					
652	**Data Not Normal at 5% Significance Level**											
653												
654	**Background Statistics Assuming Normal Distribution**											
655			95% UTL with	95% Coverage		5335	90% Percentile (z)					4214
656					95% UPL (t)	4775	95% Percentile (z)					4689
657					95% USL	6242	99% Percentile (z)					5578
658												
659	**Gamma GOF Test**											
660					A-D Test Statistic	3.196	**Anderson-Darling Gamma GOF Test**					
661					5% A-D Critical Value	0.756	Data Not Gamma Distributed at 5% Significance Level					
662					K-S Test Statistic	0.275	**Kolmogorov-Smirnov Gamma GOF Test**					
663					5% K-S Critical Value	0.146	Data Not Gamma Distributed at 5% Significance Level					
664	**Data Not Gamma Distributed at 5% Significance Level**											
665												
666	**Gamma Statistics**											
667					k hat (MLE)	2.608	k star (bias corrected MLE)					2.415
668					Theta hat (MLE)	974.5	Theta star (bias corrected MLE)					1053
669					nu hat (MLE)	193	nu star (bias corrected)					178.7
670					MLE Mean (bias corrected)	2542	MLE Sd (bias corrected)					1636
671												
672	**Background Statistics Assuming Gamma Distribution**											
673			95% Wilson Hilferty (WH) Approx. Gamma UPL			5812	90% Percentile					4732
674			95% Hawkins Wixley (HW) Approx. Gamma UPL			6059	95% Percentile					5687
675			95% WH Approx. Gamma UTL with	95% Coverage		7083	99% Percentile					7781
676			95% HW Approx. Gamma UTL with	95% Coverage		7535						
677					95% WH USL	9513	95% HW USL					10480
678												
679	**Lognormal GOF Test**											
680					Shapiro Wilk Test Statistic	0.761	**Shapiro Wilk Lognormal GOF Test**					
681					5% Shapiro Wilk Critical Value	0.936	Data Not Lognormal at 5% Significance Level					
682					Lilliefors Test Statistic	0.304	**Lilliefors Lognormal GOF Test**					
683					5% Lilliefors Critical Value	0.144	Data Not Lognormal at 5% Significance Level					
684	**Data Not Lognormal at 5% Significance Level**											
685												
686	**Background Statistics assuming Lognormal Distribution**											
687			95% UTL with	95% Coverage		9805	90% Percentile (z)					5257
688					95% UPL (t)	7180	95% Percentile (z)					6844
689					95% USL	16243	99% Percentile (z)					11225
690												
691	**Nonparametric Distribution Free Background Statistics**											
692	**Data do not follow a Discernible Distribution (0.05)**											
693												
694	**Nonparametric Upper Limits for Background Threshold Values**											
695					Order of Statistic, r	37	95% UTL with	95% Coverage				4270
696					Approx, f used to compute achieved CC	1.947	Approximate Actual Confidence Coefficient achieved by UTL					0.85
697							Approximate Sample Size needed to achieve specified CC					59
698			95% Percentile Bootstrap UTL with	95% Coverage		4270	95% BCA Bootstrap UTL with	95% Coverage				4270
699					95% UPL	4252	90% Percentile					3978
700					90% Chebyshev UPL	6510	95% Percentile					4154
701					95% Chebyshev UPL	8307	99% Percentile					4263
702					95% USL	4270						

	A	B	C	D	E	F	G	H	I	J	K	L
703												
704	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
705	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
706	and consists of observations collected from clean unimpacted locations.											
707	The use of USL tends to provide a balance between false positives and false negatives provided the data											
708	represents a background data set and when many onsite observations need to be compared with the BTV.											
709												

	A	B	C	D	E	F	G	H	I	J	K	L
1				**Background Statistics for Data Sets with Non-Detects**								
2			**User Selected Options**									
3			Date/Time of Computation	ProUCL 5.11/19/2022 10:53:08 AM								
4			From File	ProUCL Input PRPA CCR BAT Appendix IV Total 2016-2021.xls								
5			Full Precision	OFF								
6			Confidence Coefficient	95%								
7			Coverage	95%								
8			Different or Future K Observations	1								
9			Number of Bootstrap Operations	2000								
10												
11	**Antimony**											
12												
13						**General Statistics**						
14						Total Number of Observations	38			Number of Missing Observations		0
15						Number of Distinct Observations	6					
16						Number of Detects	8			Number of Non-Detects		30
17						Number of Distinct Detects	4			Number of Distinct Non-Detects		4
18						Minimum Detect	1			Minimum Non-Detect		0.5
19						Maximum Detect	2			Maximum Non-Detect		3
20						Variance Detected	0.233			Percent Non-Detects		78.95%
21						Mean Detected	1.488			SD Detected		0.482
22						Mean of Detected Logged Data	0.349			SD of Detected Logged Data		0.334
23												
24						**Critical Values for Background Threshold Values (BTVs)**						
25						Tolerance Factor K (For UTL)	2.132			d2max (for USL)		2.846
26												
27						**Normal GOF Test on Detects Only**						
28						Shapiro Wilk Test Statistic	0.776			**Shapiro Wilk GOF Test**		
29						5% Shapiro Wilk Critical Value	0.818			Data Not Normal at 5% Significance Level		
30						Lilliefors Test Statistic	0.231			**Lilliefors GOF Test**		
31						5% Lilliefors Critical Value	0.283			Detected Data appear Normal at 5% Significance Level		
32						**Detected Data appear Approximate Normal at 5% Significance Level**						
33												
34						**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**						
35						KM Mean	0.736			KM SD		0.474
36						95% UTL95% Coverage	1.746			95% KM UPL (t)		1.545
37						90% KM Percentile (z)	1.343			95% KM Percentile (z)		1.515
38						99% KM Percentile (z)	1.838			95% KM USL		2.084
39												
40						**DL/2 Substitution Background Statistics Assuming Normal Distribution**						
41						Mean	0.82			SD		0.516
42						95% UTL95% Coverage	1.92			95% UPL (t)		1.702
43						90% Percentile (z)	1.481			95% Percentile (z)		1.669
44						99% Percentile (z)	2.021			95% USL		2.289
45						**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**						
46												
47						**Gamma GOF Tests on Detected Observations Only**						
48						A-D Test Statistic	0.868			**Anderson-Darling GOF Test**		
49						5% A-D Critical Value	0.715			Data Not Gamma Distributed at 5% Significance Level		
50						K-S Test Statistic	0.242			**Kolmogorov-Smirnov GOF**		
51						5% K-S Critical Value	0.294			Detected data appear Gamma Distributed at 5% Significance Level		
52						**Detected data follow Appr. Gamma Distribution at 5% Significance Level**						
53												
54						**Gamma Statistics on Detected Data Only**						

	A	B	C	D	E	F	G	H	I	J	K	L
55					k hat (MLE)	10.57					k star (bias corrected MLE)	6.69
56					Theta hat (MLE)	0.141					Theta star (bias corrected MLE)	0.222
57					nu hat (MLE)	169.1					nu star (bias corrected)	107
58					MLE Mean (bias corrected)	1.488						
59					MLE Sd (bias corrected)	0.575					95% Percentile of Chisquare (2kstar)	22.87
60												
61					**Gamma ROS Statistics using Imputed Non-Detects**							
62					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
63					GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
64					For such situations, GROS method may yield incorrect values of UCLs and BTVs							
65					This is especially true when the sample size is small.							
66					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
67					Minimum	0.01					Mean	0.531
68					Maximum	2					Median	0.298
69					SD	0.607					CV	1.143
70					k hat (MLE)	0.529					k star (bias corrected MLE)	0.504
71					Theta hat (MLE)	1.004					Theta star (bias corrected MLE)	1.052
72					nu hat (MLE)	40.17					nu star (bias corrected)	38.34
73					MLE Mean (bias corrected)	0.531					MLE Sd (bias corrected)	0.747
74					95% Percentile of Chisquare (2kstar)	3.863					90% Percentile	1.434
75					95% Percentile	2.033					99% Percentile	3.505
76					**The following statistics are computed using Gamma ROS Statistics on Imputed Data**							
77					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
78						WH	HW				WH	HW
79				95% Approx. Gamma UTL with 95% Coverage		2.85	3.398			95% Approx. Gamma UPL	2.033	2.278
80					95% Gamma USL	4.683	6.164					
81												
82					**Estimates of Gamma Parameters using KM Estimates**							
83					Mean (KM)	0.736					SD (KM)	0.474
84					Variance (KM)	0.224					SE of Mean (KM)	0.0873
85					k hat (KM)	2.412					k star (KM)	2.239
86					nu hat (KM)	183.3					nu star (KM)	170.1
87					theta hat (KM)	0.305					theta star (KM)	0.329
88					80% gamma percentile (KM)	1.087					90% gamma percentile (KM)	1.394
89					95% gamma percentile (KM)	1.685					99% gamma percentile (KM)	2.325
90												
91					**The following statistics are computed using gamma distribution and KM estimates**							
92					**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**							
93						WH	HW				WH	HW
94				95% Approx. Gamma UTL with 95% Coverage		1.737	1.738			95% Approx. Gamma UPL	1.47	1.46
95					95% KM Gamma Percentile	1.432	1.421			95% Gamma USL	2.258	2.294
96												
97					**Lognormal GOF Test on Detected Observations Only**							
98					Shapiro Wilk Test Statistic	0.777	**Shapiro Wilk GOF Test**					
99					5% Shapiro Wilk Critical Value	0.818	Data Not Lognormal at 5% Significance Level					
100					Lilliefors Test Statistic	0.227	**Lilliefors GOF Test**					
101					5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level					
102					**Detected Data appear Approximate Lognormal at 5% Significance Level**							
103												
104					**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**							
105					Mean in Original Scale	0.717					Mean in Log Scale	-0.531
106					SD in Original Scale	0.494					SD in Log Scale	0.634
107					95% UTL95% Coverage	2.269					95% BCA UTL95% Coverage	2
108					95% Bootstrap (%) UTL95% Coverage	2					95% UPL (t)	1.736

	A	B	C	D	E	F	G	H	I	J	K	L
109					90% Percentile (z)	1.324					95% Percentile (z)	1.667
110					99% Percentile (z)	2.567					95% USL	3.568
111												
112					**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**							
113					KM Mean of Logged Data	-0.444					95% KM UTL (Lognormal)95% Coverage	1.744
114					KM SD of Logged Data	0.469					95% KM UPL (Lognormal)	1.43
115					95% KM Percentile Lognormal (z)	1.388					95% KM USL (Lognormal)	2.438
116												
117					**Background DL/2 Statistics Assuming Lognormal Distribution**							
118					Mean in Original Scale	0.82					Mean in Log Scale	-0.358
119					SD in Original Scale	0.516					SD in Log Scale	0.545
120					95% UTL95% Coverage	2.235					95% UPL (t)	1.775
121					90% Percentile (z)	1.406					95% Percentile (z)	1.713
122					99% Percentile (z)	2.484					95% USL	3.298
123					**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**							
124												
125					**Nonparametric Distribution Free Background Statistics**							
126					**Data appear to follow a Discernible Distribution at 5% Significance Level**							
127												
128					**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**							
129					Order of Statistic, r	38					95% UTL with95% Coverage	3
130					Approx, f used to compute achieved CC	2					Approximate Actual Confidence Coefficient achieved by UTL	0.858
131					Approximate Sample Size needed to achieve specified CC	59					95% UPL	3
132					95% USL	3					95% KM Chebyshev UPL	2.828
133												
134					Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.							
135					Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers							
136					and consists of observations collected from clean unimpacted locations.							
137					The use of USL tends to provide a balance between false positives and false negatives provided the data							
138					represents a background data set and when many onsite observations need to be compared with the BTV.							
139												
140	**Arsenic**											
141												
142					**General Statistics**							
143					Total Number of Observations	38					Number of Missing Observations	0
144					Number of Distinct Observations	12						
145					Number of Detects	15					Number of Non-Detects	23
146					Number of Distinct Detects	11					Number of Distinct Non-Detects	3
147					Minimum Detect	1.1					Minimum Non-Detect	1
148					Maximum Detect	5					Maximum Non-Detect	3
149					Variance Detected	1.381					Percent Non-Detects	60.53%
150					Mean Detected	2.513					SD Detected	1.175
151					Mean of Detected Logged Data	0.816					SD of Detected Logged Data	0.485
152												
153					**Critical Values for Background Threshold Values (BTVs)**							
154					Tolerance Factor K (For UTL)	2.132					d2max (for USL)	2.846
155												
156					**Normal GOF Test on Detects Only**							
157					Shapiro Wilk Test Statistic	0.933					**Shapiro Wilk GOF Test**	
158					5% Shapiro Wilk Critical Value	0.881					Detected Data appear Normal at 5% Significance Level	
159					Lilliefors Test Statistic	0.139					**Lilliefors GOF Test**	
160					5% Lilliefors Critical Value	0.22					Detected Data appear Normal at 5% Significance Level	
161					**Detected Data appear Normal at 5% Significance Level**							
162												

	A	B	C	D	E	F	G	H	I	J	K	L
163	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
164					KM Mean	1.625					KM SD	1.026
165					95% UTL95% Coverage	3.812					95% KM UPL (t)	3.378
166					90% KM Percentile (z)	2.939					95% KM Percentile (z)	3.312
167					99% KM Percentile (z)	4.011					95% KM USL	4.545
168												
169	**DL/2 Substitution Background Statistics Assuming Normal Distribution**											
170					Mean	1.413					SD	1.193
171					95% UTL95% Coverage	3.958					95% UPL (t)	3.453
172					90% Percentile (z)	2.943					95% Percentile (z)	3.376
173					99% Percentile (z)	4.19					95% USL	4.81
174	**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**											
175												
176	**Gamma GOF Tests on Detected Observations Only**											
177					A-D Test Statistic	0.285	**Anderson-Darling GOF Test**					
178					5% A-D Critical Value	0.739	Detected data appear Gamma Distributed at 5% Significance Level					
179					K-S Test Statistic	0.113	**Kolmogorov-Smirnov GOF**					
180					5% K-S Critical Value	0.222	Detected data appear Gamma Distributed at 5% Significance Level					
181	**Detected data appear Gamma Distributed at 5% Significance Level**											
182												
183	**Gamma Statistics on Detected Data Only**											
184					k hat (MLE)	4.875					k star (bias corrected MLE)	3.944
185					Theta hat (MLE)	0.516					Theta star (bias corrected MLE)	0.637
186					nu hat (MLE)	146.2					nu star (bias corrected)	118.3
187					MLE Mean (bias corrected)	2.513						
188					MLE Sd (bias corrected)	1.266					95% Percentile of Chisquare (2kstar)	15.35
189												
190	**Gamma ROS Statistics using Imputed Non-Detects**											
191	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
192	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
193	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
194	This is especially true when the sample size is small.											
195	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
196					Minimum	0.01					Mean	1.168
197					Maximum	5					Median	0.718
198					SD	1.353					CV	1.159
199					k hat (MLE)	0.446					k star (bias corrected MLE)	0.428
200					Theta hat (MLE)	2.618					Theta star (bias corrected MLE)	2.726
201					nu hat (MLE)	33.91					nu star (bias corrected)	32.56
202					MLE Mean (bias corrected)	1.168					MLE Sd (bias corrected)	1.784
203					95% Percentile of Chisquare (2kstar)	3.476					90% Percentile	3.257
204					95% Percentile	4.737					99% Percentile	8.433
205	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
206	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
207					WH	HW					WH	HW
208				95% Approx. Gamma UTL with 95% Coverage	6.68	8.227				95% Approx. Gamma UPL	4.693	5.388
209				95% Gamma USL	11.18	15.39						
210												
211	**Estimates of Gamma Parameters using KM Estimates**											
212					Mean (KM)	1.625					SD (KM)	1.026
213					Variance (KM)	1.053					SE of Mean (KM)	0.174
214					k hat (KM)	2.507					k star (KM)	2.327
215					nu hat (KM)	190.5					nu star (KM)	176.8
216					theta hat (KM)	0.648					theta star (KM)	0.698

	A	B	C	D	E	F	G	H	I	J	K	L
217				80% gamma percentile (KM)		2.389				90% gamma percentile (KM)		3.05
218				95% gamma percentile (KM)		3.676				99% gamma percentile (KM)		5.052
219												
220				The following statistics are computed using gamma distribution and KM estimates								
221				Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods								
222					WH	HW					WH	HW
223				95% Approx. Gamma UTL with 95% Coverage	3.912	3.939				95% Approx. Gamma UPL	3.299	3.293
224				95% KM Gamma Percentile	3.212	3.202				95% Gamma USL	5.113	5.24
225												
226				Lognormal GOF Test on Detected Observations Only								
227				Shapiro Wilk Test Statistic		0.947				Shapiro Wilk GOF Test		
228				5% Shapiro Wilk Critical Value		0.881				Detected Data appear Lognormal at 5% Significance Level		
229				Lilliefors Test Statistic		0.12				Lilliefors GOF Test		
230				5% Lilliefors Critical Value		0.22				Detected Data appear Lognormal at 5% Significance Level		
231				Detected Data appear Lognormal at 5% Significance Level								
232												
233				Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects								
234				Mean in Original Scale		1.405				Mean in Log Scale		0.0248
235				SD in Original Scale		1.184				SD in Log Scale		0.81
236				95% UTL95% Coverage		5.761				95% BCA UTL95% Coverage		4.15
237				95% Bootstrap (%) UTL95% Coverage		5				95% UPL (t)		4.091
238				90% Percentile (z)		2.894				95% Percentile (z)		3.883
239				99% Percentile (z)		6.743				95% USL		10.27
240												
241				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution								
242				KM Mean of Logged Data		0.341				95% KM UTL (Lognormal)95% Coverage		4.047
243				KM SD of Logged Data		0.496				95% KM UPL (Lognormal)		3.282
244				95% KM Percentile Lognormal (z)		3.179				95% KM USL (Lognormal)		5.768
245												
246				Background DL/2 Statistics Assuming Lognormal Distribution								
247				Mean in Original Scale		1.413				Mean in Log Scale		0.0363
248				SD in Original Scale		1.193				SD in Log Scale		0.78
249				95% UTL95% Coverage		5.474				95% UPL (t)		3.935
250				90% Percentile (z)		2.819				95% Percentile (z)		3.743
251				99% Percentile (z)		6.37				95% USL		9.558
252				DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.								
253												
254				Nonparametric Distribution Free Background Statistics								
255				Data appear to follow a Discernible Distribution at 5% Significance Level								
256												
257				Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)								
258				Order of Statistic, r		38				95% UTL with95% Coverage		5
259				Approx, f used to compute achieved CC		2				Approximate Actual Confidence Coefficient achieved by UTL		0.858
260				Approximate Sample Size needed to achieve specified CC		59				95% UPL		4.05
261				95% USL		5				95% KM Chebyshev UPL		6.155
262												
263				Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.								
264				Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers								
265				and consists of observations collected from clean unimpacted locations.								
266				The use of USL tends to provide a balance between false positives and false negatives provided the data								
267				represents a background data set and when many onsite observations need to be compared with the BTV.								
268												
269	Barium											
270												

	A	B	C	D	E	F	G	H	I	J	K	L
271	General Statistics											
272					Total Number of Observations	38				Number of Distinct Observations		38
273					Minimum	10.9				First Quartile		18.85
274					Second Largest	127				Median		25.55
275					Maximum	140				Third Quartile		52.9
276					Mean	38.87				SD		30.5
277					Coefficient of Variation	0.785				Skewness		1.817
278					Mean of logged Data	3.424				SD of logged Data		0.671
279												
280					Critical Values for Background Threshold Values (BTVs)							
281					Tolerance Factor K (For UTL)	2.132				d2max (for USL)		2.846
282												
283					Normal GOF Test							
284					Shapiro Wilk Test Statistic	0.787			Shapiro Wilk GOF Test			
285					5% Shapiro Wilk Critical Value	0.938			Data Not Normal at 5% Significance Level			
286					Lilliefors Test Statistic	0.218			Lilliefors GOF Test			
287					5% Lilliefors Critical Value	0.142			Data Not Normal at 5% Significance Level			
288					Data Not Normal at 5% Significance Level							
289												
290					Background Statistics Assuming Normal Distribution							
291					95% UTL with 95% Coverage	103.9				90% Percentile (z)		77.96
292					95% UPL (t)	91.01				95% Percentile (z)		89.05
293					95% USL	125.7				99% Percentile (z)		109.8
294												
295					Gamma GOF Test							
296					A-D Test Statistic	1.141			Anderson-Darling Gamma GOF Test			
297					5% A-D Critical Value	0.758			Data Not Gamma Distributed at 5% Significance Level			
298					K-S Test Statistic	0.174			Kolmogorov-Smirnov Gamma GOF Test			
299					5% K-S Critical Value	0.145			Data Not Gamma Distributed at 5% Significance Level			
300					Data Not Gamma Distributed at 5% Significance Level							
301												
302					Gamma Statistics							
303					k hat (MLE)	2.266				k star (bias corrected MLE)		2.105
304					Theta hat (MLE)	17.15				Theta star (bias corrected MLE)		18.47
305					nu hat (MLE)	172.2				nu star (bias corrected)		160
306					MLE Mean (bias corrected)	38.87				MLE Sd (bias corrected)		26.79
307												
308					Background Statistics Assuming Gamma Distribution							
309					95% Wilson Hilferty (WH) Approx. Gamma UPL	91.61				90% Percentile		74.7
310					95% Hawkins Wixley (HW) Approx. Gamma UPL	92.4				95% Percentile		90.73
311					95% WH Approx. Gamma UTL with 95% Coverage	112.6				99% Percentile		126.2
312					95% HW Approx. Gamma UTL with 95% Coverage	115.3						
313					95% WH USL	155				95% HW USL		163.4
314												
315					Lognormal GOF Test							
316					Shapiro Wilk Test Statistic	0.945			Shapiro Wilk Lognormal GOF Test			
317					5% Shapiro Wilk Critical Value	0.938			Data appear Lognormal at 5% Significance Level			
318					Lilliefors Test Statistic	0.133			Lilliefors Lognormal GOF Test			
319					5% Lilliefors Critical Value	0.142			Data appear Lognormal at 5% Significance Level			
320					Data appear Lognormal at 5% Significance Level							
321												
322					Background Statistics assuming Lognormal Distribution							
323					95% UTL with 95% Coverage	128.2				90% Percentile (z)		72.46
324					95% UPL (t)	96.53				95% Percentile (z)		92.46

325					95% USL	206.9				99% Percentile (z)		146
326												
327					Nonparametric Distribution Free Background Statistics							
328					Data appear Lognormal at 5% Significance Level							
329												
330					Nonparametric Upper Limits for Background Threshold Values							
331					Order of Statistic, r	38				95% UTL with 95% Coverage		140
332					Approx, f used to compute achieved CC	2				Approximate Actual Confidence Coefficient achieved by UTL		0.858
333										Approximate Sample Size needed to achieve specified CC		59
334					95% Percentile Bootstrap UTL with 95% Coverage	140				95% BCA Bootstrap UTL with 95% Coverage		140
335					95% UPL	127.7				90% Percentile		70.33
336					90% Chebyshev UPL	131.6				95% Percentile		94.53
337					95% Chebyshev UPL	173.6				99% Percentile		135.2
338					95% USL	140						
339												
340					Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.							
341					Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers							
342					and consists of observations collected from clean unimpacted locations.							
343					The use of USL tends to provide a balance between false positives and false negatives provided the data							
344					represents a background data set and when many onsite observations need to be compared with the BTV.							
345												
346	Beryllium											
347												
348					General Statistics							
349					Total Number of Observations	38				Number of Missing Observations		0
350					Number of Distinct Observations	3						
351					Number of Detects	0				Number of Non-Detects		38
352					Number of Distinct Detects	0				Number of Distinct Non-Detects		3
353					Minimum Detect	N/A				Minimum Non-Detect		0.5
354					Maximum Detect	N/A				Maximum Non-Detect		1.5
355					Variance Detected	N/A				Percent Non-Detects		100%
356					Mean Detected	N/A				SD Detected		N/A
357					Mean of Detected Logged Data	N/A				SD of Detected Logged Data		N/A
358												
359					Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!							
360					Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!							
361					The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).							
362												
363					The data set for variable Beryllium was not processed!							
364												
365												
366	Cadmium											
367												
368					General Statistics							
369					Total Number of Observations	38				Number of Missing Observations		0
370					Number of Distinct Observations	5						
371					Number of Detects	1				Number of Non-Detects		37
372					Number of Distinct Detects	1				Number of Distinct Non-Detects		5
373					Minimum Detect	0.1				Minimum Non-Detect		0.08
374					Maximum Detect	0.1				Maximum Non-Detect		1.5
375					Variance Detected	N/A				Percent Non-Detects		97.37%
376					Mean Detected	0.1				SD Detected		N/A
377					Mean of Detected Logged Data	-2.303				SD of Detected Logged Data		N/A
378												

	A	B	C	D	E	F	G	H	I	J	K	L
379	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
380	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
381												
382	The data set for variable Cadmium was not processed!											
383												
384												
385	Chromium											
386												
387	General Statistics											
388					Total Number of Observations	38			Number of Missing Observations		0	
389					Number of Distinct Observations	13						
390					Number of Detects	12			Number of Non-Detects		26	
391					Number of Distinct Detects	11			Number of Distinct Non-Detects		3	
392					Minimum Detect	1			Minimum Non-Detect		1	
393					Maximum Detect	24.9			Maximum Non-Detect		3	
394					Variance Detected	44.79			Percent Non-Detects		68.42%	
395					Mean Detected	3.808			SD Detected		6.692	
396					Mean of Detected Logged Data	0.778			SD of Detected Logged Data		0.861	
397												
398	Critical Values for Background Threshold Values (BTVs)											
399					Tolerance Factor K (For UTL)	2.132			d2max (for USL)		2.846	
400												
401	Normal GOF Test on Detects Only											
402					Shapiro Wilk Test Statistic	0.43			Shapiro Wilk GOF Test			
403					5% Shapiro Wilk Critical Value	0.859			Data Not Normal at 5% Significance Level			
404					Lilliefors Test Statistic	0.411			Lilliefors GOF Test			
405					5% Lilliefors Critical Value	0.243			Data Not Normal at 5% Significance Level			
406	Data Not Normal at 5% Significance Level											
407												
408	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
409					KM Mean	1.91			KM SD		3.828	
410					95% UTL95% Coverage	10.07			95% KM UPL (t)		8.452	
411					90% KM Percentile (z)	6.816			95% KM Percentile (z)		8.206	
412					99% KM Percentile (z)	10.81			95% KM USL		12.81	
413												
414	DL/2 Substitution Background Statistics Assuming Normal Distribution											
415					Mean	1.654			SD		3.95	
416					95% UTL95% Coverage	10.08			95% UPL (t)		8.406	
417					90% Percentile (z)	6.717			95% Percentile (z)		8.152	
418					99% Percentile (z)	10.84			95% USL		12.9	
419	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
420												
421	Gamma GOF Tests on Detected Observations Only											
422					A-D Test Statistic	1.938			Anderson-Darling GOF Test			
423					5% A-D Critical Value	0.756			Data Not Gamma Distributed at 5% Significance Level			
424					K-S Test Statistic	0.316			Kolmogorov-Smirnov GOF			
425					5% K-S Critical Value	0.252			Data Not Gamma Distributed at 5% Significance Level			
426	Data Not Gamma Distributed at 5% Significance Level											
427												
428	Gamma Statistics on Detected Data Only											
429					k hat (MLE)	1.029			k star (bias corrected MLE)		0.827	
430					Theta hat (MLE)	3.701			Theta star (bias corrected MLE)		4.604	
431					nu hat (MLE)	24.69			nu star (bias corrected)		19.85	
432					MLE Mean (bias corrected)	3.808						

	A	B	C	D	E	F	G	H	I	J	K	L
433					MLE Sd (bias corrected)	4.187				95% Percentile of Chisquare (2kstar)		5.303
434												
435					Gamma ROS Statistics using Imputed Non-Detects							
436					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
437					GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
438					For such situations, GROS method may yield incorrect values of UCLs and BTVs							
439					This is especially true when the sample size is small.							
440					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
441					Minimum	0.01				Mean		1.216
442					Maximum	24.9				Median		0.01
443					SD	4.062				CV		3.342
444					k hat (MLE)	0.237				k star (bias corrected MLE)		0.236
445					Theta hat (MLE)	5.12				Theta star (bias corrected MLE)		5.146
446					nu hat (MLE)	18.05				nu star (bias corrected)		17.96
447					MLE Mean (bias corrected)	1.216				MLE Sd (bias corrected)		2.501
448					95% Percentile of Chisquare (2kstar)	2.325				90% Percentile		3.662
449					95% Percentile	5.983				99% Percentile		12.21
450					The following statistics are computed using Gamma ROS Statistics on Imputed Data							
451					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
452						WH	HW				WH	HW
453					95% Approx. Gamma UTL with 95% Coverage	6.595	6.958			95% Approx. Gamma UPL	4.249	4.122
454					95% Gamma USL	12.28	14.78					
455												
456					Estimates of Gamma Parameters using KM Estimates							
457					Mean (KM)	1.91				SD (KM)		3.828
458					Variance (KM)	14.65				SE of Mean (KM)		0.649
459					k hat (KM)	0.249				k star (KM)		0.247
460					nu hat (KM)	18.92				nu star (KM)		18.76
461					theta hat (KM)	7.672				theta star (KM)		7.738
462					80% gamma percentile (KM)	2.761				90% gamma percentile (KM)		5.738
463					95% gamma percentile (KM)	9.28				99% gamma percentile (KM)		18.73
464												
465					The following statistics are computed using gamma distribution and KM estimates							
466					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
467						WH	HW				WH	HW
468					95% Approx. Gamma UTL with 95% Coverage	5.941	5.537			95% Approx. Gamma UPL	4.689	4.351
469					95% KM Gamma Percentile	4.516	4.189			95% Gamma USL	8.53	8.071
470												
471					Lognormal GOF Test on Detected Observations Only							
472					Shapiro Wilk Test Statistic	0.748				Shapiro Wilk GOF Test		
473					5% Shapiro Wilk Critical Value	0.859				Data Not Lognormal at 5% Significance Level		
474					Lilliefors Test Statistic	0.245				Lilliefors GOF Test		
475					5% Lilliefors Critical Value	0.243				Data Not Lognormal at 5% Significance Level		
476					Data Not Lognormal at 5% Significance Level							
477												
478					Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects							
479					Mean in Original Scale	1.415				Mean in Log Scale		-0.808
480					SD in Original Scale	4.01				SD in Log Scale		1.418
481					95% UTL95% Coverage	9.171				95% BCA UTL95% Coverage		24.9
482					95% Bootstrap (%) UTL95% Coverage	24.9				95% UPL (t)		5.034
483					90% Percentile (z)	2.745				95% Percentile (z)		4.595
484					99% Percentile (z)	12.08				95% USL		25.26
485												
486					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							

	A	B	C	D	E	F	G	H	I	J	K	L
487					KM Mean of Logged Data	0.262				95% KM UTL (Lognormal)95% Coverage		4.568
488					KM SD of Logged Data	0.59				95% KM UPL (Lognormal)		3.56
489				95% KM Percentile Lognormal (z)		3.427				95% KM USL (Lognormal)		6.961
490												
491					Background DL/2 Statistics Assuming Lognormal Distribution							
492					Mean in Original Scale	1.654				Mean in Log Scale		-0.106
493					SD in Original Scale	3.95				SD in Log Scale		0.837
494					95% UTL95% Coverage	5.358				95% UPL (t)		3.76
495					90% Percentile (z)	2.629				95% Percentile (z)		3.563
496					99% Percentile (z)	6.303				95% USL		9.741
497					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
498												
499					Nonparametric Distribution Free Background Statistics							
500					Data do not follow a Discernible Distribution (0.05)							
501												
502					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
503					Order of Statistic, r	38				95% UTL with95% Coverage		24.9
504					Approx, f used to compute achieved CC	2				Approximate Actual Confidence Coefficient achieved by UTL		0.858
505					Approximate Sample Size needed to achieve specified CC	59				95% UPL		4.95
506					95% USL	24.9				95% KM Chebyshev UPL		18.81
507												
508					Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.							
509					Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers							
510					and consists of observations collected from clean unimpacted locations.							
511					The use of USL tends to provide a balance between false positives and false negatives provided the data							
512					represents a background data set and when many onsite observations need to be compared with the BTV.							
513												
514	Cobalt											
515												
516					General Statistics							
517					Total Number of Observations	38				Number of Missing Observations		0
518					Number of Distinct Observations	8						
519					Number of Detects	15				Number of Non-Detects		23
520					Number of Distinct Detects	8				Number of Distinct Non-Detects		3
521					Minimum Detect	1				Minimum Non-Detect		1
522					Maximum Detect	3				Maximum Non-Detect		3
523					Variance Detected	0.322				Percent Non-Detects		60.53%
524					Mean Detected	1.467				SD Detected		0.568
525					Mean of Detected Logged Data	0.324				SD of Detected Logged Data		0.342
526												
527					Critical Values for Background Threshold Values (BTVs)							
528					Tolerance Factor K (For UTL)	2.132				d2max (for USL)		2.846
529												
530					Normal GOF Test on Detects Only							
531					Shapiro Wilk Test Statistic	0.81				Shapiro Wilk GOF Test		
532					5% Shapiro Wilk Critical Value	0.881				Data Not Normal at 5% Significance Level		
533					Lilliefors Test Statistic	0.214				Lilliefors GOF Test		
534					5% Lilliefors Critical Value	0.22				Detected Data appear Normal at 5% Significance Level		
535					Detected Data appear Approximate Normal at 5% Significance Level							
536												
537					Kaplan Meier (KM) Background Statistics Assuming Normal Distribution							
538					KM Mean	1.199				KM SD		0.419
539					95% UTL95% Coverage	2.092				95% KM UPL (t)		1.915
540					90% KM Percentile (z)	1.736				95% KM Percentile (z)		1.888

	A	B	C	D	E	F	G	H	I	J	K	L
541					99% KM Percentile (z)	2.174					95% KM USL	2.392
542												
543					DL/2 Substitution Background Statistics Assuming Normal Distribution							
544					Mean	0.974					SD	0.599
545					95% UTL95% Coverage	2.25					95% UPL (t)	1.997
546					90% Percentile (z)	1.741					95% Percentile (z)	1.958
547					99% Percentile (z)	2.366					95% USL	2.677
548					DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons							
549												
550					Gamma GOF Tests on Detected Observations Only							
551					A-D Test Statistic	0.811					Anderson-Darling GOF Test	
552					5% A-D Critical Value	0.738					Data Not Gamma Distributed at 5% Significance Level	
553					K-S Test Statistic	0.209					Kolmogorov-Smirnov GOF	
554					5% K-S Critical Value	0.222					Detected data appear Gamma Distributed at 5% Significance Level	
555					Detected data follow Appr. Gamma Distribution at 5% Significance Level							
556												
557					Gamma Statistics on Detected Data Only							
558					k hat (MLE)	8.662					k star (bias corrected MLE)	6.974
559					Theta hat (MLE)	0.169					Theta star (bias corrected MLE)	0.21
560					nu hat (MLE)	259.9					nu star (bias corrected)	209.2
561					MLE Mean (bias corrected)	1.467						
562					MLE Sd (bias corrected)	0.555					95% Percentile of Chisquare (2kstar)	23.62
563												
564					Gamma ROS Statistics using Imputed Non-Detects							
565					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
566					GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
567					For such situations, GROS method may yield incorrect values of UCLs and BTVs							
568					This is especially true when the sample size is small.							
569					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
570					Minimum	0.01					Mean	0.794
571					Maximum	3					Median	0.643
572					SD	0.695					CV	0.876
573					k hat (MLE)	0.781					k star (bias corrected MLE)	0.737
574					Theta hat (MLE)	1.016					Theta star (bias corrected MLE)	1.076
575					nu hat (MLE)	59.39					nu star (bias corrected)	56.03
576					MLE Mean (bias corrected)	0.794					MLE Sd (bias corrected)	0.924
577					95% Percentile of Chisquare (2kstar)	4.926					90% Percentile	1.968
578					95% Percentile	2.651					99% Percentile	4.276
579					The following statistics are computed using Gamma ROS Statistics on Imputed Data							
580					Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods							
581						WH	HW				WH	HW
582					95% Approx. Gamma UTL with 95% Coverage	3.603	4.295				95% Approx. Gamma UPL	2.688	3.043
583					95% Gamma USL	5.581	7.237					
584												
585					Estimates of Gamma Parameters using KM Estimates							
586					Mean (KM)	1.199					SD (KM)	0.419
587					Variance (KM)	0.176					SE of Mean (KM)	0.0722
588					k hat (KM)	8.176					k star (KM)	7.548
589					nu hat (KM)	621.3					nu star (KM)	573.6
590					theta hat (KM)	0.147					theta star (KM)	0.159
591					80% gamma percentile (KM)	1.542					90% gamma percentile (KM)	1.781
592					95% gamma percentile (KM)	1.995					99% gamma percentile (KM)	2.439
593												
594					The following statistics are computed using gamma distribution and KM estimates							

	A	B	C	D	E	F	G	H	I	J	K	L
595	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
596					WH	HW					WH	HW
597	95% Approx. Gamma UTL with 95% Coverage				2.045	2.04	95% Approx. Gamma UPL				1.843	1.835
598	95% KM Gamma Percentile				1.814	1.805	95% Gamma USL				2.417	2.424
599												
600	**Lognormal GOF Test on Detected Observations Only**											
601	Shapiro Wilk Test Statistic					0.868	**Shapiro Wilk GOF Test**					
602	5% Shapiro Wilk Critical Value					0.881	Data Not Lognormal at 5% Significance Level					
603	Lilliefors Test Statistic					0.194	**Lilliefors GOF Test**					
604	5% Lilliefors Critical Value					0.22	Detected Data appear Lognormal at 5% Significance Level					
605	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
606												
607	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
608	Mean in Original Scale					0.952	Mean in Log Scale					-0.199
609	SD in Original Scale					0.57	SD in Log Scale					0.549
610	95% UTL95% Coverage					2.643	95% BCA UTL95% Coverage					2.15
611	95% Bootstrap (%) UTL95% Coverage					3	95% UPL (t)					2.095
612	90% Percentile (z)					1.657	95% Percentile (z)					2.023
613	99% Percentile (z)					2.94	95% USL					3.912
614												
615	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
616	KM Mean of Logged Data					0.139	95% KM UTL (Lognormal)95% Coverage					2.027
617	KM SD of Logged Data					0.266	95% KM UPL (Lognormal)					1.811
618	95% KM Percentile Lognormal (z)					1.78	95% KM USL (Lognormal)					2.451
619												
620	**Background DL/2 Statistics Assuming Lognormal Distribution**											
621	Mean in Original Scale					0.974	Mean in Log Scale					-0.187
622	SD in Original Scale					0.599	SD in Log Scale					0.558
623	95% UTL95% Coverage					2.725	95% UPL (t)					2.153
624	90% Percentile (z)					1.696	95% Percentile (z)					2.077
625	99% Percentile (z)					3.037	95% USL					4.059
626	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
627												
628	**Nonparametric Distribution Free Background Statistics**											
629	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
630												
631	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
632	Order of Statistic, r					38	95% UTL with95% Coverage					3
633	Approx, f used to compute achieved CC					2	Approximate Actual Confidence Coefficient achieved by UTL					0.858
634	Approximate Sample Size needed to achieve specified CC					59	95% UPL					3
635	95% USL					3	95% KM Chebyshev UPL					3.05
636												
637	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
638	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
639	and consists of observations collected from clean unimpacted locations.											
640	The use of USL tends to provide a balance between false positives and false negatives provided the data											
641	represents a background data set and when many onsite observations need to be compared with the BTV.											
642												
643	**Fluoride**											
644												
645	**General Statistics**											
646	Total Number of Observations					38	Number of Missing Observations					0
647	Number of Distinct Observations					15						
648	Number of Detects					24	Number of Non-Detects					14

	A	B	C	D	E	F	G	H	I	J	K	L
649					Number of Distinct Detects	15					Number of Distinct Non-Detects	1
650					Minimum Detect	0.2					Minimum Non-Detect	0.2
651					Maximum Detect	0.97					Maximum Non-Detect	0.2
652					Variance Detected	0.0264					Percent Non-Detects	36.84%
653					Mean Detected	0.322					SD Detected	0.163
654					Mean of Detected Logged Data	-1.211					SD of Detected Logged Data	0.361
655												
656					**Critical Values for Background Threshold Values (BTVs)**							
657					Tolerance Factor K (For UTL)	2.132					d2max (for USL)	2.846
658												
659					**Normal GOF Test on Detects Only**							
660					Shapiro Wilk Test Statistic	0.641					**Shapiro Wilk GOF Test**	
661					5% Shapiro Wilk Critical Value	0.916					Data Not Normal at 5% Significance Level	
662					Lilliefors Test Statistic	0.247					**Lilliefors GOF Test**	
663					5% Lilliefors Critical Value	0.177					Data Not Normal at 5% Significance Level	
664					**Data Not Normal at 5% Significance Level**							
665												
666					**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**							
667					KM Mean	0.277					KM SD	0.139
668					95% UTL95% Coverage	0.574					95% KM UPL (t)	0.515
669					90% KM Percentile (z)	0.456					95% KM Percentile (z)	0.506
670					99% KM Percentile (z)	0.601					95% KM USL	0.674
671												
672					**DL/2 Substitution Background Statistics Assuming Normal Distribution**							
673					Mean	0.24					SD	0.168
674					95% UTL95% Coverage	0.598					95% UPL (t)	0.527
675					90% Percentile (z)	0.455					95% Percentile (z)	0.516
676					99% Percentile (z)	0.631					95% USL	0.718
677					**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**							
678												
679					**Gamma GOF Tests on Detected Observations Only**							
680					A-D Test Statistic	1.712					**Anderson-Darling GOF Test**	
681					5% A-D Critical Value	0.746					Data Not Gamma Distributed at 5% Significance Level	
682					K-S Test Statistic	0.239					**Kolmogorov-Smirnov GOF**	
683					5% K-S Critical Value	0.178					Data Not Gamma Distributed at 5% Significance Level	
684					**Data Not Gamma Distributed at 5% Significance Level**							
685												
686					**Gamma Statistics on Detected Data Only**							
687					k hat (MLE)	6.698					k star (bias corrected MLE)	5.888
688					Theta hat (MLE)	0.048					Theta star (bias corrected MLE)	0.0546
689					nu hat (MLE)	321.5					nu star (bias corrected)	282.6
690					MLE Mean (bias corrected)	0.322						
691					MLE Sd (bias corrected)	0.133					95% Percentile of Chisquare (2kstar)	20.73
692												
693					**Gamma ROS Statistics using Imputed Non-Detects**							
694					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
695					GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
696					For such situations, GROS method may yield incorrect values of UCLs and BTVs							
697					This is especially true when the sample size is small.							
698					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
699					Minimum	0.01					Mean	0.221
700					Maximum	0.97					Median	0.235
701					SD	0.187					CV	0.846
702					k hat (MLE)	1.079					k star (bias corrected MLE)	1.011

	A	B	C	D	E	F	G	H	I	J	K	L
703					Theta hat (MLE)	0.205				Theta star (bias corrected MLE)		0.218
704					nu hat (MLE)	82				nu star (bias corrected)		76.86
705					MLE Mean (bias corrected)	0.221				MLE Sd (bias corrected)		0.22
706				95% Percentile of Chisquare (2kstar)		6.035				90% Percentile		0.507
707					95% Percentile	0.659				99% Percentile		1.011
708	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
709	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
710					WH	HW					WH	HW
711	95% Approx. Gamma UTL with 95% Coverage				0.877	0.993			95% Approx. Gamma UPL		0.672	0.732
712				95% Gamma USL	1.311	1.586						
713												
714	**Estimates of Gamma Parameters using KM Estimates**											
715					Mean (KM)	0.277				SD (KM)		0.139
716					Variance (KM)	0.0194				SE of Mean (KM)		0.0231
717					k hat (KM)	3.941				k star (KM)		3.647
718					nu hat (KM)	299.5				nu star (KM)		277.2
719					theta hat (KM)	0.0702				theta star (KM)		0.0759
720				80% gamma percentile (KM)		0.386				90% gamma percentile (KM)		0.471
721				95% gamma percentile (KM)		0.55				99% gamma percentile (KM)		0.719
722												
723	**The following statistics are computed using gamma distribution and KM estimates**											
724	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
725					WH	HW					WH	HW
726	95% Approx. Gamma UTL with 95% Coverage				0.541	0.538			95% Approx. Gamma UPL		0.475	0.471
727			95% KM Gamma Percentile		0.465	0.461			95% Gamma USL		0.666	0.667
728												
729	**Lognormal GOF Test on Detected Observations Only**											
730				Shapiro Wilk Test Statistic		0.829	**Shapiro Wilk GOF Test**					
731				5% Shapiro Wilk Critical Value		0.916	Data Not Lognormal at 5% Significance Level					
732				Lilliefors Test Statistic		0.231	**Lilliefors GOF Test**					
733				5% Lilliefors Critical Value		0.177	Data Not Lognormal at 5% Significance Level					
734	**Data Not Lognormal at 5% Significance Level**											
735												
736	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
737				Mean in Original Scale		0.25				Mean in Log Scale		-1.535
738				SD in Original Scale		0.161				SD in Log Scale		0.538
739				95% UTL95% Coverage		0.679				95% BCA UTL95% Coverage		0.97
740				95% Bootstrap (%) UTL95% Coverage		0.97				95% UPL (t)		0.541
741				90% Percentile (z)		0.43				95% Percentile (z)		0.523
742				99% Percentile (z)		0.754				95% USL		0.998
743												
744	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
745				KM Mean of Logged Data		-1.358				95% KM UTL (Lognormal)95% Coverage		0.531
746				KM SD of Logged Data		0.34				95% KM UPL (Lognormal)		0.46
747				95% KM Percentile Lognormal (z)		0.45				95% KM USL (Lognormal)		0.677
748												
749	**Background DL/2 Statistics Assuming Lognormal Distribution**											
750				Mean in Original Scale		0.24				Mean in Log Scale		-1.613
751				SD in Original Scale		0.168				SD in Log Scale		0.605
752				95% UTL95% Coverage		0.724				95% UPL (t)		0.56
753				90% Percentile (z)		0.433				95% Percentile (z)		0.539
754				99% Percentile (z)		0.814				95% USL		1.114
755	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
756												

	A	B	C	D	E	F	G	H	I	J	K	L
757	Nonparametric Distribution Free Background Statistics											
758	Data do not follow a Discernible Distribution (0.05)											
759												
760	Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)											
761					Order of Statistic, r	38			95% UTL with95% Coverage			0.97
762					Approx, f used to compute achieved CC	2			Approximate Actual Confidence Coefficient achieved by UTL			0.858
763					Approximate Sample Size needed to achieve specified CC	59			95% UPL			0.552
764					95% USL	0.97			95% KM Chebyshev UPL			0.893
765												
766	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
767	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
768	and consists of observations collected from clean unimpacted locations.											
769	The use of USL tends to provide a balance between false positives and false negatives provided the data											
770	represents a background data set and when many onsite observations need to be compared with the BTV.											
771												
772	Lead											
773												
774	General Statistics											
775					Total Number of Observations	38			Number of Missing Observations			0
776					Number of Distinct Observations	4						
777					Number of Detects	3			Number of Non-Detects			35
778					Number of Distinct Detects	2			Number of Distinct Non-Detects			3
779					Minimum Detect	1			Minimum Non-Detect			1
780					Maximum Detect	1.5			Maximum Non-Detect			3
781					Variance Detected	0.0833			Percent Non-Detects			92.11%
782					Mean Detected	1.167			SD Detected			0.289
783					Mean of Detected Logged Data	0.135			SD of Detected Logged Data			0.234
784												
785	Warning: Data set has only 3 Detected Values.											
786	This is not enough to compute meaningful or reliable statistics and estimates.											
787												
788												
789	Critical Values for Background Threshold Values (BTVs)											
790					Tolerance Factor K (For UTL)	2.132			d2max (for USL)			2.846
791												
792	Normal GOF Test on Detects Only											
793					Shapiro Wilk Test Statistic	0.75			Shapiro Wilk GOF Test			
794					5% Shapiro Wilk Critical Value	0.767			Data Not Normal at 5% Significance Level			
795					Lilliefors Test Statistic	0.385			Lilliefors GOF Test			
796					5% Lilliefors Critical Value	0.425			Detected Data appear Normal at 5% Significance Level			
797	Detected Data appear Approximate Normal at 5% Significance Level											
798												
799	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
800					KM Mean	1.015			KM SD			0.0845
801					95% UTL95% Coverage	1.195			95% KM UPL (t)			1.159
802					90% KM Percentile (z)	1.123			95% KM Percentile (z)			1.154
803					99% KM Percentile (z)	1.211			95% KM USL			1.255
804												
805	DL/2 Substitution Background Statistics Assuming Normal Distribution											
806					Mean	0.645			SD			0.327
807					95% UTL95% Coverage	1.342			95% UPL (t)			1.203
808					90% Percentile (z)	1.064			95% Percentile (z)			1.182
809					99% Percentile (z)	1.405			95% USL			1.575
810	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											

	A	B	C	D	E	F	G	H	I	J	K	L
811												
812	**Gamma GOF Tests on Detected Observations Only**											
813	**Not Enough Data to Perform GOF Test**											
814												
815	**Gamma Statistics on Detected Data Only**											
816					k hat (MLE)	26.49				k star (bias corrected MLE)		N/A
817					Theta hat (MLE)	0.044				Theta star (bias corrected MLE)		N/A
818					nu hat (MLE)	158.9				nu star (bias corrected)		N/A
819					MLE Mean (bias corrected)	N/A						
820					MLE Sd (bias corrected)	N/A				95% Percentile of Chisquare (2kstar)		N/A
821												
822	**Gamma ROS Statistics using Imputed Non-Detects**											
823	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
824	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
825	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
826	This is especially true when the sample size is small.											
827	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
828					Minimum	0.01				Mean		0.156
829					Maximum	1.5				Median		0.01
830					SD	0.337				CV		2.163
831					k hat (MLE)	0.377				k star (bias corrected MLE)		0.365
832					Theta hat (MLE)	0.413				Theta star (bias corrected MLE)		0.427
833					nu hat (MLE)	28.67				nu star (bias corrected)		27.74
834					MLE Mean (bias corrected)	0.156				MLE Sd (bias corrected)		0.258
835					95% Percentile of Chisquare (2kstar)	3.129				90% Percentile		0.447
836					95% Percentile	0.668				99% Percentile		1.229
837	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
838	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
839					WH	HW					WH	HW
840				95% Approx. Gamma UTL with 95% Coverage	0.826	0.842				95% Approx. Gamma UPL	0.559	0.539
841				95% Gamma USL	1.449	1.624						
842												
843	**Estimates of Gamma Parameters using KM Estimates**											
844					Mean (KM)	1.015				SD (KM)		0.0845
845					Variance (KM)	0.00714				SE of Mean (KM)		0.0177
846					k hat (KM)	144.3				k star (KM)		132.9
847					nu hat (KM)	10965				nu star (KM)		10100
848					theta hat (KM)	0.00703				theta star (KM)		0.00764
849					80% gamma percentile (KM)	1.088				90% gamma percentile (KM)		1.129
850					95% gamma percentile (KM)	1.164				99% gamma percentile (KM)		1.231
851												
852	**The following statistics are computed using gamma distribution and KM estimates**											
853	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
854					WH	HW					WH	HW
855				95% Approx. Gamma UTL with 95% Coverage	1.179	1.177				95% Approx. Gamma UPL	1.145	1.143
856				95% KM Gamma Percentile	1.139	1.138				95% Gamma USL	1.238	1.236
857												
858	**Lognormal GOF Test on Detected Observations Only**											
859					Shapiro Wilk Test Statistic	0.75				**Shapiro Wilk GOF Test**		
860					5% Shapiro Wilk Critical Value	0.767				Data Not Lognormal at 5% Significance Level		
861					Lilliefors Test Statistic	0.385				**Lilliefors GOF Test**		
862					5% Lilliefors Critical Value	0.425				Detected Data appear Lognormal at 5% Significance Level		
863	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
864												

	A	B	C	D	E	F	G	H	I	J	K	L
865	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											
866					Mean in Original Scale	0.353				Mean in Log Scale		-1.325
867					SD in Original Scale	0.299				SD in Log Scale		0.762
868					95% UTL95% Coverage	1.348				95% BCA UTL95% Coverage		1.075
869					95% Bootstrap (%) UTL95% Coverage	1.5				95% UPL (t)		0.977
870					90% Percentile (z)	0.705				95% Percentile (z)		0.93
871					99% Percentile (z)	1.563				95% USL		2.323
872												
873	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
874					KM Mean of Logged Data	0.0119				95% KM UTL (Lognormal)95% Coverage		1.171
875					KM SD of Logged Data	0.0685				95% KM UPL (Lognormal)		1.138
876					95% KM Percentile Lognormal (z)	1.133				95% KM USL (Lognormal)		1.23
877												
878	**Background DL/2 Statistics Assuming Lognormal Distribution**											
879					Mean in Original Scale	0.645				Mean in Log Scale		-0.523
880					SD in Original Scale	0.327				SD in Log Scale		0.374
881					95% UTL95% Coverage	1.315				95% UPL (t)		1.123
882					90% Percentile (z)	0.957				95% Percentile (z)		1.096
883					99% Percentile (z)	1.414				95% USL		1.717
884	**DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.**											
885												
886	**Nonparametric Distribution Free Background Statistics**											
887	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
888												
889	**Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)**											
890					Order of Statistic, r	38				95% UTL with95% Coverage		3
891					Approx, f used to compute achieved CC	2				Approximate Actual Confidence Coefficient achieved by UTL		0.858
892					Approximate Sample Size needed to achieve specified CC	59				95% UPL		3
893					95% USL	3				95% KM Chebyshev UPL		1.388
894												
895	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
896	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
897	and consists of observations collected from clean unimpacted locations.											
898	The use of USL tends to provide a balance between false positives and false negatives provided the data											
899	represents a background data set and when many onsite observations need to be compared with the BTV.											
900												
901	**Lithium**											
902												
903	**General Statistics**											
904					Total Number of Observations	38				Number of Distinct Observations		34
905					Minimum	40.2				First Quartile		75.98
906					Second Largest	330				Median		195.5
907					Maximum	383				Third Quartile		218.8
908					Mean	174.7				SD		81.21
909					Coefficient of Variation	0.465				Skewness		-0.0115
910					Mean of logged Data	5.019				SD of logged Data		0.593
911												
912	**Critical Values for Background Threshold Values (BTVs)**											
913					Tolerance Factor K (For UTL)	2.132				d2max (for USL)		2.846
914												
915	**Normal GOF Test**											
916					Shapiro Wilk Test Statistic	0.88				**Shapiro Wilk GOF Test**		
917					5% Shapiro Wilk Critical Value	0.938				Data Not Normal at 5% Significance Level		
918					Lilliefors Test Statistic	0.22				**Lilliefors GOF Test**		

	A	B	C	D	E	F	G	H	I	J	K	L
919					5% Lilliefors Critical Value	0.142	Data Not Normal at 5% Significance Level					
920					**Data Not Normal at 5% Significance Level**							
921												
922					**Background Statistics Assuming Normal Distribution**							
923				95% UTL with	95% Coverage	347.8				90% Percentile (z)		278.7
924					95% UPL (t)	313.5				95% Percentile (z)		308.2
925					95% USL	405.8				99% Percentile (z)		363.6
926												
927					**Gamma GOF Test**							
928					A-D Test Statistic	3.152	**Anderson-Darling Gamma GOF Test**					
929					5% A-D Critical Value	0.753	Data Not Gamma Distributed at 5% Significance Level					
930					K-S Test Statistic	0.285	**Kolmogorov-Smirnov Gamma GOF Test**					
931					5% K-S Critical Value	0.144	Data Not Gamma Distributed at 5% Significance Level					
932					**Data Not Gamma Distributed at 5% Significance Level**							
933												
934					**Gamma Statistics**							
935					k hat (MLE)	3.643				k star (bias corrected MLE)		3.373
936					Theta hat (MLE)	47.95				Theta star (bias corrected MLE)		51.79
937					nu hat (MLE)	276.8				nu star (bias corrected)		256.3
938					MLE Mean (bias corrected)	174.7				MLE Sd (bias corrected)		95.11
939												
940					**Background Statistics Assuming Gamma Distribution**							
941					95% Wilson Hilferty (WH) Approx. Gamma UPL	360.3				90% Percentile		302.2
942					95% Hawkins Wixley (HW) Approx. Gamma UPL	371.1				95% Percentile		354.6
943					95% WH Approx. Gamma UTL with 95% Coverage	427.7				99% Percentile		467.6
944					95% HW Approx. Gamma UTL with 95% Coverage	447.1						
945					95% WH USL	559.6				95% HW USL		601.1
946												
947					**Lognormal GOF Test**							
948					Shapiro Wilk Test Statistic	0.815	**Shapiro Wilk Lognormal GOF Test**					
949					5% Shapiro Wilk Critical Value	0.938	Data Not Lognormal at 5% Significance Level					
950					Lilliefors Test Statistic	0.306	**Lilliefors Lognormal GOF Test**					
951					5% Lilliefors Critical Value	0.142	Data Not Lognormal at 5% Significance Level					
952					**Data Not Lognormal at 5% Significance Level**							
953												
954					**Background Statistics assuming Lognormal Distribution**							
955				95% UTL with	95% Coverage	536.1				90% Percentile (z)		323.7
956					95% UPL (t)	417.1				95% Percentile (z)		401.5
957					95% USL	818.9				99% Percentile (z)		601.6
958												
959					**Nonparametric Distribution Free Background Statistics**							
960					**Data do not follow a Discernible Distribution (0.05)**							
961												
962					**Nonparametric Upper Limits for Background Threshold Values**							
963					Order of Statistic, r	38				95% UTL with 95% Coverage		383
964					Approx, f used to compute achieved CC	2	Approximate Actual Confidence Coefficient achieved by UTL					0.858
965							Approximate Sample Size needed to achieve specified CC					59
966					95% Percentile Bootstrap UTL with 95% Coverage	383				95% BCA Bootstrap UTL with 95% Coverage		383
967					95% UPL	332.7				90% Percentile		239.3
968					90% Chebyshev UPL	421.5				95% Percentile		273.9
969					95% Chebyshev UPL	533.3				99% Percentile		363.4
970					95% USL	383						
971												
972					Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.							

	A	B	C	D	E	F	G	H	I	J	K	L
973	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
974	and consists of observations collected from clean unimpacted locations.											
975	The use of USL tends to provide a balance between false positives and false negatives provided the data											
976	represents a background data set and when many onsite observations need to be compared with the BTV.											
977												
978	**Mercury**											
979												
980	**General Statistics**											
981	Total Number of Observations					38	Number of Missing Observations					0
982	Number of Distinct Observations					2						
983	Number of Detects					0	Number of Non-Detects					38
984	Number of Distinct Detects					0	Number of Distinct Non-Detects					2
985	Minimum Detect					N/A	Minimum Non-Detect					0.1
986	Maximum Detect					N/A	Maximum Non-Detect					0.2
987	Variance Detected					N/A	Percent Non-Detects					100%
988	Mean Detected					N/A	SD Detected					N/A
989	Mean of Detected Logged Data					N/A	SD of Detected Logged Data					N/A
990												
991	**Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!**											
992	**Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!**											
993	**The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**											
994												
995	**The data set for variable Mercury was not processed!**											
996												
997												
998	**Molybdenum**											
999												
1000	**General Statistics**											
1001	Total Number of Observations					38	Number of Distinct Observations					35
1002	Minimum					3.8	First Quartile					8.25
1003	Second Largest					40	Median					15.45
1004	Maximum					54.7	Third Quartile					24.5
1005	Mean					17.77	SD					11.76
1006	Coefficient of Variation					0.662	Skewness					1.109
1007	Mean of logged Data					2.661	SD of logged Data					0.683
1008												
1009	**Critical Values for Background Threshold Values (BTVs)**											
1010	Tolerance Factor K (For UTL)					2.132	d2max (for USL)					2.846
1011												
1012	**Normal GOF Test**											
1013	Shapiro Wilk Test Statistic					0.9	**Shapiro Wilk GOF Test**					
1014	5% Shapiro Wilk Critical Value					0.938	Data Not Normal at 5% Significance Level					
1015	Lilliefors Test Statistic					0.142	**Lilliefors GOF Test**					
1016	5% Lilliefors Critical Value					0.142	Data appear Normal at 5% Significance Level					
1017	**Data appear Approximate Normal at 5% Significance Level**											
1018												
1019	**Background Statistics Assuming Normal Distribution**											
1020	95% UTL with 95% Coverage					42.85	90% Percentile (z)					32.84
1021	95% UPL (t)					37.87	95% Percentile (z)					37.12
1022	95% USL					51.25	99% Percentile (z)					45.14
1023												
1024	**Gamma GOF Test**											
1025	A-D Test Statistic					0.383	**Anderson-Darling Gamma GOF Test**					
1026	5% A-D Critical Value					0.757	Detected data appear Gamma Distributed at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
1027					K-S Test Statistic	0.11	**Kolmogorov-Smirnov Gamma GOF Test**					
1028					5% K-S Critical Value	0.145	Detected data appear Gamma Distributed at 5% Significance Level					
1029	**Detected data appear Gamma Distributed at 5% Significance Level**											
1030												
1031	**Gamma Statistics**											
1032					k hat (MLE)	2.467	k star (bias corrected MLE)					2.29
1033					Theta hat (MLE)	7.201	Theta star (bias corrected MLE)					7.759
1034					nu hat (MLE)	187.5	nu star (bias corrected)					174
1035					MLE Mean (bias corrected)	17.77	MLE Sd (bias corrected)					11.74
1036												
1037	**Background Statistics Assuming Gamma Distribution**											
1038				95% Wilson Hilferty (WH) Approx. Gamma UPL		41.02	90% Percentile					33.48
1039				95% Hawkins Wixley (HW) Approx. Gamma UPL		41.91	95% Percentile					40.4
1040				95% WH Approx. Gamma UTL with 95% Coverage		50.09	99% Percentile					55.62
1041				95% HW Approx. Gamma UTL with 95% Coverage		52.04						
1042					95% WH USL	68.27	95% HW USL					73.17
1043												
1044	**Lognormal GOF Test**											
1045					Shapiro Wilk Test Statistic	0.968	**Shapiro Wilk Lognormal GOF Test**					
1046					5% Shapiro Wilk Critical Value	0.938	Data appear Lognormal at 5% Significance Level					
1047					Lilliefors Test Statistic	0.113	**Lilliefors Lognormal GOF Test**					
1048					5% Lilliefors Critical Value	0.142	Data appear Lognormal at 5% Significance Level					
1049	**Data appear Lognormal at 5% Significance Level**											
1050												
1051	**Background Statistics assuming Lognormal Distribution**											
1052					95% UTL with 95% Coverage	61.39	90% Percentile (z)					34.34
1053					95% UPL (t)	45.99	95% Percentile (z)					44.01
1054					95% USL	99.98	99% Percentile (z)					70.1
1055												
1056	**Nonparametric Distribution Free Background Statistics**											
1057	**Data appear Approximate Normal at 5% Significance Level**											
1058												
1059	**Nonparametric Upper Limits for Background Threshold Values**											
1060					Order of Statistic, r	38	95% UTL with 95% Coverage					54.7
1061					Approx, f used to compute achieved CC	2	Approximate Actual Confidence Coefficient achieved by UTL					0.858
1062							Approximate Sample Size needed to achieve specified CC					59
1063				95% Percentile Bootstrap UTL with 95% Coverage		54.7	95% BCA Bootstrap UTL with 95% Coverage					54.7
1064					95% UPL	40.74	90% Percentile					32.65
1065					90% Chebyshev UPL	53.52	95% Percentile					37.28
1066					95% Chebyshev UPL	69.72	99% Percentile					49.26
1067					95% USL	54.7						
1068												
1069	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1070	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1071	and consists of observations collected from clean unimpacted locations.											
1072	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1073	represents a background data set and when many onsite observations need to be compared with the BTV.											
1074												
1075	**Radium**											
1076												
1077	**General Statistics**											
1078					Total Number of Observations	36	Number of Distinct Observations					35
1079							Number of Missing Observations					2
1080					Minimum	0.0576	First Quartile					0.537

	A	B	C	D	E	F	G	H	I	J	K	L
1081					Second Largest	2.81					Median	0.931
1082					Maximum	3.2					Third Quartile	1.37
1083					Mean	1.056					SD	0.69
1084					Coefficient of Variation	0.653					Skewness	1.202
1085					Mean of logged Data	-0.196					SD of logged Data	0.814
1086												
1087					**Critical Values for Background Threshold Values (BTVs)**							
1088					Tolerance Factor K (For UTL)	2.148					d2max (for USL)	2.824
1089												
1090					**Normal GOF Test**							
1091					Shapiro Wilk Test Statistic	0.918	**Shapiro Wilk GOF Test**					
1092					5% Shapiro Wilk Critical Value	0.935	Data Not Normal at 5% Significance Level					
1093					Lilliefors Test Statistic	0.1	**Lilliefors GOF Test**					
1094					5% Lilliefors Critical Value	0.145	Data appear Normal at 5% Significance Level					
1095					**Data appear Approximate Normal at 5% Significance Level**							
1096												
1097					**Background Statistics Assuming Normal Distribution**							
1098			95% UTL with	95% Coverage		2.538					90% Percentile (z)	1.94
1099					95% UPL (t)	2.238					95% Percentile (z)	2.191
1100					95% USL	3.004					99% Percentile (z)	2.661
1101												
1102					**Gamma GOF Test**							
1103					A-D Test Statistic	0.23	**Anderson-Darling Gamma GOF Test**					
1104					5% A-D Critical Value	0.759	Detected data appear Gamma Distributed at 5% Significance Level					
1105					K-S Test Statistic	0.0992	**Kolmogorov-Smirnov Gamma GOF Test**					
1106					5% K-S Critical Value	0.149	Detected data appear Gamma Distributed at 5% Significance Level					
1107					**Detected data appear Gamma Distributed at 5% Significance Level**							
1108												
1109					**Gamma Statistics**							
1110					k hat (MLE)	2.149					k star (bias corrected MLE)	1.988
1111					Theta hat (MLE)	0.491					Theta star (bias corrected MLE)	0.531
1112					nu hat (MLE)	154.7					nu star (bias corrected)	143.1
1113					MLE Mean (bias corrected)	1.056					MLE Sd (bias corrected)	0.749
1114												
1115					**Background Statistics Assuming Gamma Distribution**							
1116			95% Wilson Hilferty (WH) Approx. Gamma UPL			2.549					90% Percentile	2.057
1117			95% Hawkins Wixley (HW) Approx. Gamma UPL			2.661					95% Percentile	2.51
1118			95% WH Approx. Gamma UTL with	95% Coverage		3.159					99% Percentile	3.514
1119			95% HW Approx. Gamma UTL with	95% Coverage		3.373						
1120					95% WH USL	4.285					95% HW USL	4.749
1121												
1122					**Lognormal GOF Test**							
1123					Shapiro Wilk Test Statistic	0.93	**Shapiro Wilk Lognormal GOF Test**					
1124					5% Shapiro Wilk Critical Value	0.935	Data Not Lognormal at 5% Significance Level					
1125					Lilliefors Test Statistic	0.146	**Lilliefors Lognormal GOF Test**					
1126					5% Lilliefors Critical Value	0.145	Data Not Lognormal at 5% Significance Level					
1127					**Data Not Lognormal at 5% Significance Level**							
1128												
1129					**Background Statistics assuming Lognormal Distribution**							
1130			95% UTL with	95% Coverage		4.721					90% Percentile (z)	2.332
1131					95% UPL (t)	3.313					95% Percentile (z)	3.134
1132					95% USL	8.179					99% Percentile (z)	5.457
1133												
1134					**Nonparametric Distribution Free Background Statistics**							

	A	B	C	D	E	F	G	H	I	J	K	L
1135	Data appear Approximate Normal at 5% Significance Level											
1136												
1137	Nonparametric Upper Limits for Background Threshold Values											
1138					Order of Statistic, r	36			95% UTL with 95% Coverage			3.2
1139					Approx, f used to compute achieved CC	1.895	Approximate Actual Confidence Coefficient achieved by UTL					0.842
1140							Approximate Sample Size needed to achieve specified CC					59
1141			95% Percentile Bootstrap UTL with 95% Coverage			3.2			95% BCA Bootstrap UTL with 95% Coverage			3.2
1142					95% UPL	2.869				90% Percentile		1.785
1143					90% Chebyshev UPL	3.155				95% Percentile		2.15
1144					95% Chebyshev UPL	4.105				99% Percentile		3.064
1145					95% USL	3.2						
1146												
1147	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1148	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1149	and consists of observations collected from clean unimpacted locations.											
1150	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1151	represents a background data set and when many onsite observations need to be compared with the BTV.											
1152												
1153	Radium-226											
1154												
1155	General Statistics											
1156					Total Number of Observations	29			Number of Distinct Observations			28
1157									Number of Missing Observations			9
1158					Minimum	-0.127			First Quartile			0.115
1159					Second Largest	0.853			Median			0.28
1160					Maximum	1.08			Third Quartile			0.507
1161					Mean	0.326			SD			0.289
1162					Coefficient of Variation	0.887			Skewness			0.809
1163												
1164	Critical Values for Background Threshold Values (BTVs)											
1165					Tolerance Factor K (For UTL)	2.232			d2max (for USL)			2.73
1166												
1167	Normal GOF Test											
1168					Shapiro Wilk Test Statistic	0.941	Shapiro Wilk GOF Test					
1169					5% Shapiro Wilk Critical Value	0.926	Data appear Normal at 5% Significance Level					
1170					Lilliefors Test Statistic	0.136	Lilliefors GOF Test					
1171					5% Lilliefors Critical Value	0.161	Data appear Normal at 5% Significance Level					
1172	Data appear Normal at 5% Significance Level											
1173												
1174	Background Statistics Assuming Normal Distribution											
1175					95% UTL with 95% Coverage	0.971			90% Percentile (z)			0.696
1176					95% UPL (t)	0.826			95% Percentile (z)			0.801
1177					95% USL	1.115			99% Percentile (z)			0.998
1178												
1179	Gamma Statistics											
1180	Gamma Statistics Not Available											
1181												
1182	Dataset Contains Values <= 0 - Cannot Compute Gamma Statistics											
1183												
1184	Dataset Contains Values <= 0 - Cannot Compute Log Statistics											
1185												
1186	Nonparametric Distribution Free Background Statistics											
1187	Data appear Normal at 5% Significance Level											
1188												

	A	B	C	D	E	F	G	H	I	J	K	L
1189	Nonparametric Upper Limits for Background Threshold Values											
1190					Order of Statistic, r	29				95% UTL with	95% Coverage	1.08
1191					Approx, f used to compute achieved CC	1.526	Approximate Actual Confidence Coefficient achieved by UTL					0.774
1192							Approximate Sample Size needed to achieve specified CC					59
1193				95% Percentile Bootstrap UTL with	95% Coverage	1.08				95% BCA Bootstrap UTL with	95% Coverage	1.08
1194					95% UPL	0.967					90% Percentile	0.722
1195					90% Chebyshev UPL	1.208					95% Percentile	0.801
1196					95% Chebyshev UPL	1.607					99% Percentile	1.016
1197					95% USL	1.08						
1198												
1199	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1200	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1201	and consists of observations collected from clean unimpacted locations.											
1202	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1203	represents a background data set and when many onsite observations need to be compared with the BTV.											
1204												
1205	Radium-228											
1206												
1207	General Statistics											
1208					Total Number of Observations	29				Number of Distinct Observations		29
1209										Number of Missing Observations		9
1210					Minimum	-0.169				First Quartile		0.363
1211					Second Largest	1.42				Median		0.539
1212					Maximum	2.23				Third Quartile		0.789
1213					Mean	0.613				SD		0.449
1214					Coefficient of Variation	0.733				Skewness		1.601
1215												
1216	Critical Values for Background Threshold Values (BTVs)											
1217					Tolerance Factor K (For UTL)	2.232				d2max (for USL)		2.73
1218												
1219	Normal GOF Test											
1220					Shapiro Wilk Test Statistic	0.869	Shapiro Wilk GOF Test					
1221					5% Shapiro Wilk Critical Value	0.926	Data Not Normal at 5% Significance Level					
1222					Lilliefors Test Statistic	0.178	Lilliefors GOF Test					
1223					5% Lilliefors Critical Value	0.161	Data Not Normal at 5% Significance Level					
1224	Data Not Normal at 5% Significance Level											
1225												
1226	Background Statistics Assuming Normal Distribution											
1227				95% UTL with	95% Coverage	1.616				90% Percentile (z)		1.189
1228					95% UPL (t)	1.391				95% Percentile (z)		1.352
1229					95% USL	1.84				99% Percentile (z)		1.658
1230												
1231	Gamma Statistics											
1232	Gamma Statistics Not Available											
1233												
1234	Dataset Contains Values <= 0 - Cannot Compute Gamma Statistics											
1235												
1236	Dataset Contains Values <= 0 - Cannot Compute Log Statistics											
1237												
1238	Nonparametric Distribution Free Background Statistics											
1239	Data do not follow a Discernible Distribution (0.05)											
1240												
1241	Nonparametric Upper Limits for Background Threshold Values											
1242					Order of Statistic, r	29				95% UTL with	95% Coverage	2.23

	A	B	C	D	E	F	G	H	I	J	K	L
1243					Approx, f used to compute achieved CC	1.526	Approximate Actual Confidence Coefficient achieved by UTL					0.774
1244							Approximate Sample Size needed to achieve specified CC					59
1245				95% Percentile Bootstrap UTL with	95% Coverage	2.23			95% BCA Bootstrap UTL with		95% Coverage	2.23
1246					95% UPL	1.825					90% Percentile	0.916
1247					90% Chebyshev UPL	1.984					95% Percentile	1.22
1248					95% Chebyshev UPL	2.605					99% Percentile	2.003
1249					95% USL	2.23						
1250												
1251	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1252	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1253	and consists of observations collected from clean unimpacted locations.											
1254	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1255	represents a background data set and when many onsite observations need to be compared with the BTV.											
1256												
1257	**Selenium**											
1258												
1259	**General Statistics**											
1260					Total Number of Observations	38	Number of Missing Observations					0
1261					Number of Distinct Observations	25						
1262					Number of Detects	28	Number of Non-Detects					10
1263					Number of Distinct Detects	23	Number of Distinct Non-Detects					3
1264					Minimum Detect	1.2	Minimum Non-Detect					1
1265					Maximum Detect	228	Maximum Non-Detect					3
1266					Variance Detected	4682	Percent Non-Detects					26.32%
1267					Mean Detected	53.43	SD Detected					68.42
1268					Mean of Detected Logged Data	2.727	SD of Detected Logged Data					1.802
1269												
1270	**Critical Values for Background Threshold Values (BTVs)**											
1271					Tolerance Factor K (For UTL)	2.132	d2max (for USL)					2.846
1272												
1273	**Normal GOF Test on Detects Only**											
1274					Shapiro Wilk Test Statistic	0.76	**Shapiro Wilk GOF Test**					
1275					5% Shapiro Wilk Critical Value	0.924	Data Not Normal at 5% Significance Level					
1276					Lilliefors Test Statistic	0.312	**Lilliefors GOF Test**					
1277					5% Lilliefors Critical Value	0.164	Data Not Normal at 5% Significance Level					
1278	**Data Not Normal at 5% Significance Level**											
1279												
1280	**Kaplan Meier (KM) Background Statistics Assuming Normal Distribution**											
1281					KM Mean	39.64	KM SD					62.12
1282					95% UTL95% Coverage	172.1	95% KM UPL (t)					145.8
1283					90% KM Percentile (z)	119.2	95% KM Percentile (z)					141.8
1284					99% KM Percentile (z)	184.1	95% KM USL					216.4
1285												
1286	**DL/2 Substitution Background Statistics Assuming Normal Distribution**											
1287					Mean	39.57	SD					63
1288					95% UTL95% Coverage	173.9	95% UPL (t)					147.2
1289					90% Percentile (z)	120.3	95% Percentile (z)					143.2
1290					99% Percentile (z)	186.1	95% USL					218.9
1291	**DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons**											
1292												
1293	**Gamma GOF Tests on Detected Observations Only**											
1294					A-D Test Statistic	1.764	**Anderson-Darling GOF Test**					
1295					5% A-D Critical Value	0.81	Data Not Gamma Distributed at 5% Significance Level					
1296					K-S Test Statistic	0.236	**Kolmogorov-Smirnov GOF**					

	A	B	C	D	E	F	G	H	I	J	K	L
1297				5% K-S Critical Value		0.175	Data Not Gamma Distributed at 5% Significance Level					
1298	**Data Not Gamma Distributed at 5% Significance Level**											
1299												
1300	**Gamma Statistics on Detected Data Only**											
1301				k hat (MLE)		0.506			k star (bias corrected MLE)			0.476
1302				Theta hat (MLE)		105.5			Theta star (bias corrected MLE)			112.2
1303				nu hat (MLE)		28.36			nu star (bias corrected)			26.66
1304				MLE Mean (bias corrected)		53.43						
1305				MLE Sd (bias corrected)		77.43			95% Percentile of Chisquare (2kstar)			3.722
1306												
1307	**Gamma ROS Statistics using Imputed Non-Detects**											
1308	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
1309	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
1310	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
1311	This is especially true when the sample size is small.											
1312	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
1313				Minimum		0.01			Mean			39.37
1314				Maximum		228			Median			4.65
1315				SD		63.12			CV			1.603
1316				k hat (MLE)		0.247			k star (bias corrected MLE)			0.245
1317				Theta hat (MLE)		159.1			Theta star (bias corrected MLE)			160.4
1318				nu hat (MLE)		18.8			nu star (bias corrected)			18.65
1319				MLE Mean (bias corrected)		39.37			MLE Sd (bias corrected)			79.47
1320				95% Percentile of Chisquare (2kstar)		2.389			90% Percentile			118.3
1321				95% Percentile		191.6			99% Percentile			387.2
1322	**The following statistics are computed using Gamma ROS Statistics on Imputed Data**											
1323	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
1324					WH	HW					WH	HW
1325				95% Approx. Gamma UTL with 95% Coverage	251.1	312.1			95% Approx. Gamma UPL		166.3	188.3
1326				95% Gamma USL	452.2	647.8						
1327												
1328	**Estimates of Gamma Parameters using KM Estimates**											
1329				Mean (KM)		39.64			SD (KM)			62.12
1330				Variance (KM)		3858			SE of Mean (KM)			10.26
1331				k hat (KM)		0.407			k star (KM)			0.393
1332				nu hat (KM)		30.95			nu star (KM)			29.84
1333				theta hat (KM)		97.33			theta star (KM)			101
1334				80% gamma percentile (KM)		63.84			90% gamma percentile (KM)			112.3
1335				95% gamma percentile (KM)		165.8			99% gamma percentile (KM)			300.4
1336												
1337	**The following statistics are computed using gamma distribution and KM estimates**											
1338	**Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods**											
1339					WH	HW					WH	HW
1340				95% Approx. Gamma UTL with 95% Coverage	219.7	242.2			95% Approx. Gamma UPL		150.7	156
1341				95% KM Gamma Percentile	141.6	145.2			95% Gamma USL		379.4	463.3
1342												
1343	**Lognormal GOF Test on Detected Observations Only**											
1344				Shapiro Wilk Test Statistic		0.876	**Shapiro Wilk GOF Test**					
1345				5% Shapiro Wilk Critical Value		0.924	Data Not Lognormal at 5% Significance Level					
1346				Lilliefors Test Statistic		0.207	**Lilliefors GOF Test**					
1347				5% Lilliefors Critical Value		0.164	Data Not Lognormal at 5% Significance Level					
1348	**Data Not Lognormal at 5% Significance Level**											
1349												
1350	**Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects**											

	A	B	C	D	E	F	G	H	I	J	K	L
1351					Mean in Original Scale	39.47					Mean in Log Scale	1.687
1352					SD in Original Scale	63.06					SD in Log Scale	2.384
1353					95% UTL95% Coverage	871.1					95% BCA UTL95% Coverage	228
1354					95% Bootstrap (%) UTL95% Coverage	228					95% UPL (t)	317.8
1355					90% Percentile (z)	114.7					95% Percentile (z)	272.6
1356					99% Percentile (z)	1384					95% USL	4782
1357												
1358					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
1359					KM Mean of Logged Data	2.019					95% KM UTL (Lognormal)95% Coverage	458.1
1360					KM SD of Logged Data	1.927					95% KM UPL (Lognormal)	202.8
1361					95% KM Percentile Lognormal (z)	179.1					95% KM USL (Lognormal)	1814
1362												
1363					Background DL/2 Statistics Assuming Lognormal Distribution							
1364					Mean in Original Scale	39.57					Mean in Log Scale	1.909
1365					SD in Original Scale	63					SD in Log Scale	2.087
1366					95% UTL95% Coverage	576.9					95% UPL (t)	238.7
1367					90% Percentile (z)	97.8					95% Percentile (z)	208.7
1368					99% Percentile (z)	865.3					95% USL	2561
1369					DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.							
1370												
1371					Nonparametric Distribution Free Background Statistics							
1372					Data do not follow a Discernible Distribution (0.05)							
1373												
1374					Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)							
1375					Order of Statistic, r	38					95% UTL with95% Coverage	228
1376					Approx, f used to compute achieved CC	2					Approximate Actual Confidence Coefficient achieved by UTL	0.858
1377					Approximate Sample Size needed to achieve specified CC	59					95% UPL	213.8
1378					95% USL	228					95% KM Chebyshev UPL	313.9
1379												
1380					Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.							
1381					Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers							
1382					and consists of observations collected from clean unimpacted locations.							
1383					The use of USL tends to provide a balance between false positives and false negatives provided the data							
1384					represents a background data set and when many onsite observations need to be compared with the BTV.							
1385												
1386	Thallium											
1387												
1388					General Statistics							
1389					Total Number of Observations	38					Number of Missing Observations	0
1390					Number of Distinct Observations	4						
1391					Number of Detects	0					Number of Non-Detects	38
1392					Number of Distinct Detects	0					Number of Distinct Non-Detects	4
1393					Minimum Detect	N/A					Minimum Non-Detect	0.1
1394					Maximum Detect	N/A					Maximum Non-Detect	3
1395					Variance Detected	N/A					Percent Non-Detects	100%
1396					Mean Detected	N/A					SD Detected	N/A
1397					Mean of Detected Logged Data	N/A					SD of Detected Logged Data	N/A
1398												
1399					Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!							
1400					Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!							
1401					The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).							
1402												
1403					The data set for variable Thallium was not processed!							
1404												

	A	B	C	D	E	F	G	H	I	J	K	L
1405												