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August 29, 2019

Mr. Mark Purcell
Superfund Division (6SF)
U.S. Environmental Protection Agency - Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202

Re: Grants Reclamation Project
2019 Supplemental Background Soil and Groundwater Investigation

Dear Mark,

Homestake hereby submits the Grants Reclamation Project 2019 Supplemental Background Soil and Groundwater Investigation Report prepared by Arcadis U.S., Inc.

If you have questions or comments, please contact me at (775) 397-7215 or dlattin@barrick.com.

Respectfully,

Daniel Lattin, P.E.
Project Evaluation Manager
Homestake Mining Company of California

ARCADIS Design & Consultancy for natural and built assets

HOMESTAKE

Homestake Mining Company of California

SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

Grants Reclamation Project
Cibola County, New Mexico

August 29, 2019

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Grants Reclamation Project
Cibola County, New Mexico

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August 29, 2019

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ACRONYMS AND ABBREVIATIONS

amsl	above mean sea level
Arcadis	Arcadis U.S., Inc.
BCC	Briggs Color Cubing
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	constituent of concern
CSM	conceptual site model
DCM	DCM Science Laboratory
EDS	energy dispersive spectroscopy
ELI	Energy Laboratories, Inc.
ERT	electrical resistivity tomography
HHL	Huffman Hazen Laboratories
Homestake	Homestake Mining Company of California
ICP	inductively coupled plasma
IT^2	Isotope Tracer Technologies
KUT	potassium uranium thorium
LTP	large tailings pile
mg/kg	milligram per kilogram
mg/L	milligram per liter
MS	mass spectrometer
mV	millivolt
NMED	New Mexico Environment Department
ORP	oxidation-reduction potential
project	Grants Reclamation Project, an approximately 1,085-acre former uranium mill site located 5.5 miles north of Milan, Cibola County, New Mexico
PVC	polyvinyl chloride
QEMSCAN	Quantitative Evaluation of Materials by Scanning Electron Microscopy
report	Supplemental Background Soil and Groundwater Investigation Report
RGB	red-green-blue
RI/FS	remedial investigation/feasibility study

SMCB	San Mateo Creek Basin
SRB	sulfate-reducing bacteria
SSE	selective sequential extraction
SSGR	static spectral gamma ray
TDS	total dissolved solids
Th/K	thorium-potassium ratio
Th/U	thorium-uranium ratio
TOC	total organic carbon
USEPA	United States Environmental Protection Agency
USGS	U.S. Geological Survey
Work Plan	Work Plan: 2019 Background Investigation
wt.%	percent by weight
XRD	x-ray diffraction
‰	per mille or per mil
$\delta^{34}S$	difference in per mil between sulfur-32 and sulfur 34
µS/cm	microSiemen per centimeter

EXECUTIVE SUMMARY

This Supplemental Background Soil and Groundwater Investigation Report (report) summarizes data and refines the conceptual site model based upon field and laboratory studies conducted in 2018 and 2019. This report focuses on understanding the occurrence of uranium in groundwater in the alluvial system upgradient of the Grants Reclamation Project, an approximately 1,085-acre former uranium mill site located 5.5 miles north of Milan, Cibola County, New Mexico (project). This investigation extends the work completed by Homestake Mining Company (Homestake) in 2018 on the western edge of the upgradient alluvial channel adjacent to wells DD and DD2 that demonstrated the lithological and mineralogical heterogeneity in alluvial deposits, and the presence of uranium in the unsaturated and saturated zones. The work was completed in accordance to the Work Plan that was reviewed and agreed upon by the United States Environmental Protection Agency (USEPA) and the New Mexico Environment Department (NMED) (Arcadis 2019a) with minor modifications, discussed herein. Per the Work Plan (Arcadis 2019a):

> "*The primary goal of the supplemental background investigation is to refine the CSM for natural uranium distribution and transport by identifying the lithological and hydraulic conductivity heterogeneity as well as the local variation in uranium concentrations across the alluvial channel upgradient (north) of the large tailing pile (LTP).*"

Geochemical and mineralogical examination in 2018 and 2019 showed arkosic sandstone markers of eroded upstream materials. These were transported through fluvial processes during aggradational channel filling during the Quaternary period and deposited on the eroded Chinle Formation bedrock surface. The 2018 and 2019 studies have shown significant local heterogeneity in lithology, soil chemistry, and mineralogy associated with the variable fine- and coarse-grained alluvial sediments. Heterogeneity in the sedimentary materials is attributed to sediment deposition in a braided stream environment and the blending of sediment types at the confluence of the San Mateo and Lobo Creek drainage basins. Lateral heterogeneity was evaluated using a broad range of scales from macroscale (electrical resistivity tomography [ERT] at the kilometer scale) to mesoscale (geologic logging and downhole geophysics at new boreholes positioned west to east across the alluvial channel and one south of this transect), to micro- and nanoscale methods (geochemical/mineralogical analysis of sediments and groundwater).

ERT data revealed higher resistivity alluvium typical of coarse-grained materials between the center and the western edge of the alluvial channel. Coarse-grained sediments may conduct groundwater more effectively through the center-west portion of the alluvium (between well DD and borehole location BK1) compared to the eastern side of the basin (near borehole location BK3 and well ND). Materials at the margins of the alluvial channel have fine-grained characteristics associated with low-energy deposition, while the center of the channel contains coarser, higher-energy deposits. However, the ERT revealed an asymmetrical distribution of fines with greater proportions to the far east than the far west.

Gradual declines in dissolved uranium were observed in the new wells from west to east, consistent with changes in major ion and trace element chemistry. Groundwater is more aggressive and oxidizing in the west, conditions favorable for uranium mobilization. This oxidative character was also observed in the sediment mineralogy, most notably regarding pyrite. Goethite-replaced (oxidized) framboidal pyrite was found at all sample locations, demonstrating active mineral oxidation and providing a mechanism for uranium mobilization out of reducing zones. However, oxidized cubic pyrite was more frequently observed

in the west. Only intact cubic pyrite was observed in the mid-channel and to the fine-grained-sediment-dominated east. The alluvial geology in the east is capable of preserving geochemically reducing conditions in the sediments due to lower transmissivity and high organic carbon content. Uranium leaching analyses yielded soluble uranium from all sediment samples.

The 2019 work verifies the heterogeneity in geochemistry and mineralogy that was observed in 2018 at boreholes DD-BK and DD2-BK and shows a gradual change in uranium content, soil mineralogy, and groundwater chemistry conducive to uranium mobilization from sediments that is greatest in the west and declines to the east. This variability and heterogeneity in the alluvial system upgradient of the project is well captured by the current upgradient (background) well network situated across the alluvial channel and is representative of the range of natural uranium concentration variation in groundwater.

1 BACKGROUND

The Grants Reclamation Project (project) is an approximately 1,085-acre former uranium mill site located 5.5 miles north of Milan, Cibola County, New Mexico (project), owned and operated by Homestake Mining Company of California (Homestake). Milling operations, using an alkaline (sodium carbonate) leach process, took place from 1958 until 1990, depositing tailings in two onsite tailing piles: the small tailings pile and the large tailings pile (LTP). Naturally occurring constituent concentrations contained in the uranium ore are elevated in the tailings. These constituents include uranium, selenium, molybdenum, sulfate, chloride, total dissolved solids, nitrate, vanadium, thorium-230, and radium-226/228. Porewater seepage from the LTP has influenced shallow groundwater quality (alluvial and Chinle aquifers), particularly the alluvial aquifer directly beneath and downgradient of the LTP. The USEPA, NMED, and Nuclear Regulatory Commission agreed to site standards for each constituent of concern (COC) in 2006 based on an evaluation of background water quality (Homestake and Hydro-Engineering 2003). The standards were incorporated into the radioactive materials license via license amendment number 39 as groundwater protection standards. The focus of the project is ongoing work by Homestake to restore groundwater to these background standards.

Since the establishment of the groundwater protection standards, Homestake and the USEPA have pursued a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedial investigation/feasibility study (RI/FS) equivalency evaluation for the project. In 2016, the USEPA initiated a background reassessment study to determine if the approved background standards for the project are appropriate under the CERCLA RI/FS equivalency process (referred to as the 2016 U.S. Geological Survey [USGS] split-sampling event; USEPA 2016). Arcadis U.S., Inc.'s (Arcadis's) evaluation of the results of this study show that the uranium in near upgradient wells, including wells DD and DD2 are likely due to leaching of uranium from naturally occurring uranium-bearing sediment deposited throughout geologic time (at least hundreds of years for shallow alluvial deposits [Leopold and Snyder 1951] and probably thousands for deeper alluvial deposits). To test this hypothesis, borehole development and geophysics programs were conducted in January 2018 near wells DD and DD2 and in May 2019 at locations across the alluvial channel to examine geochemical, mineralogical, and geophysical characteristics of the unsaturated and saturated soils in this area.

This Supplemental Background Soil and Groundwater Investigation Report (report) summarizes the field activities conducted in May 2019 in association with the background assessment of uranium sources at the project. This work is related to and a follow-on to the field event conducted in January 2018 (Arcadis 2018) and Arcadis' interpretation of the results of the geophysics and groundwater assessment performed by the USEPA and USGS in August 2016 and subsequent data released in 2017. This work was implemented to expand the extent of the characterization of alluvial deposits to locations across the alluvial channel to the east of wells DD and DD2 (Arcadis 2019a).

Arcadis' interpretation of the 2016 geophysical data indicated that uranium was present naturally in the alluvial aquifer sediment (soil) and supported the concept that monitoring well locations DD and DD2 exhibit elevated concentrations of uranium in groundwater due to interaction with and the nature of the minerals present in this portion of the aquifer.

The goal of the 2018 and 2019 assessments was to further investigate whether uranium concentrations in groundwater near groundwater monitoring wells across the alluvial channel upgradient (north) of the project are naturally derived or from mining/milling, or other anthropogenic sources. The objectives of this work were to:

- Map alluvial channel geometry and zones containing high permeability coarse-grained materials.
- Estimate the uranium, thorium, and potassium content of the alluvium.
- Obtain lithological, chemical, and mineralogical data of sediments.
- Determine uranium concentrations in groundwater associated with (well screened within) coarse grained, high-permeability and fine-grained, low-permeability sediments.

Additional benefits of this multidisciplinary work include:

- Assessment of lithological variation of uranium in soil and/or weathered bedrock in contact with groundwater and in the unsaturated zone away from groundwater contact.
- Ability to ground truth the interpretation of the geophysics data through collection and direct analysis of geologic core material.
- Correlation of uranium concentrations in soil to uranium concentrations in groundwater.
- Ability to link uranium naturally leaching from soil with areas of elevated groundwater uranium concentration and/or provide evidence of isolated elevated groundwater uranium concentrations away from known mining and milling impacts.
- Assessment of the impact of lithology on concentrations of constituents in groundwater.

This report presents the results of the field activities in the following remaining sections:

- *Section 2 – Activities Completed*. This section discusses borehole and well development, lithological logging, and soil sampling; a mineralogical assessment; a geophysical assessment; and groundwater sampling at the project.
- *Section 3 – Results, Discussion, and Conceptual Site Model.* Presents the assessment results associated with the sampling activities and development of the conceptual site model (CSM) for the origin of uranium in the aquifer.
- *Section 4 – Conclusions*. Provides a summary and conclusions associated with the investigation.
- *Section 5 – References.* Lists the references used to prepare and cited throughout this report.

2 ACTIVITIES COMPLETED

Per the Work Plan: 2019 Background Investigation (Work Plan; Arcadis 2019a), the locations of two well pairs and two boreholes were proposed by Arcadis and agreed upon by Homestake, the USEPA, and the NMED, based upon the results of the electrical resistivity tomography (ERT) survey conducted in April 2019 (Appendix A). The target locations were determined as follows:

- *Wells BK1c and BK1f*. Location BK1 was selected due to its proximity between the DD wells and P wells and because it exhibited both high-resistivity sediments in the shallow saturated portion of the alluvium and low-resistivity sediments in the deep saturated portion of the alluvium. The presence of both types of materials increased the probability that a 5-foot screen could be installed across primarily coarse-grained material in one well (BK1c, where “c” indicates “coarse”), and across fine-grained material in the second well (BK1f, where “f” indicates “fine). Ten soil samples were collected from BK1c.
- *Wells BK2c and BK2f*. Location BK2 was selected due to its proximity between the P wells and well ND and because it exhibited both high-resistivity sediments in the shallow saturated portion of the alluvium and low-resistivity sediments in the deep saturated portion of the alluvium. Ten soil samples were collected from BK2c.
- *Borehole BK3*. Location BK3 was selected due to its proximity to well ND and the need to further investigate the origin of sediments on the eastern side of the alluvial channel. Borehole BK3 was drilled to assess lithology and mineralogy through lithological logging, geophysical logging, and soil sampling and laboratory analysis. Ten soil samples were collected from BK3. BK3 was plugged and abandoned after collection of the target data.
- *Borehole BK4*. Location BK4 was selected to investigate the elevation of Chinle Formation bedrock. BK4 was lithologically and geophysically logged. No soil samples were collected. BK4 was plugged and abandoned after collection of the target data.

The wells and boreholes were advanced using rotosonic drilling methods and were logged by an Arcadis geologist. The wells were installed as 2-inch polyvinyl chloride (PVC) risers with 5-foot screened intervals targeting either coarse or fine sediments. The boreholes were installed as blank wells with solid PVC risers (no screen). Downhole geophysical logging was performed in two stages, described below. The data obtained from lithological logging, geochemical and mineralogical parameters, and geophysics were correlated and used to refine the interpretation of the alluvial materials across the lower San Mateo Creek Basin (SMCB).

Minor deviations to Work Plan (Arcadis 2019a) activities included:

- Movement of location BK2 slightly north of ERT line 2 due to inaccessible terrain directly on top of ERT line 2.
- Well 920 had a 100-year-old windmill in place which prevented logging. Arcadis sought and received permission from the USEPA to log well N-16 in place of well 920.
- Wells 914 and 922 contained steel casing, preventing collection of induction conductivity data.

- The static spectral data collection time range was stated as 10 to 15 minutes in the Work Plan; however, the time range was increased to 15 to 20 minutes to increase data resolution.

2.1 Drilling, Lithological, and Geochemical Assessment

Cascade Drilling, LP conducted the drilling using a Sonic Drill Corporation rotosonic drill rig, overseen by Arcadis. Before advancing with the drill rig, utility clearance activities were conducted, and the upper 5 feet of soil was removed by hand augur. Each well and borehole location was positioned as close to the target location chosen from the ERT transects as was feasible, with the well and borehole locations presented on Figure 1 and listed in Table 1.

Groundwater monitoring wells BK1f, BK1c, BK2f, and BK2c were drilled with a 6-inch-diameter bit. A 2-inch PVC riser with 5-foot screened interval was installed in each well. Sodium bentonite chips were used to seal the base of groundwater monitoring wells BK1c and BK2c because these locations were initially advanced into bedrock to confirm the contact. For all wells, a sand filter pack was placed adjacent to and extended at least 3 feet above the screened interval, topped by 4.5 to 5 feet of sodium bentonite chips, before addition of neat cement grout to the surface.

Boreholes BK3 and BK4 were drilled with a 6-inch-diameter bit. At these locations a temporary 2-inch PVC solid riser with no screen was grouted in place with neat cement in each borehole with plastic centralizers, installed to enable downhole geophysical assessment at each location. Both temporary casings were abandoned following completion of the downhole geophysical assessment by filling the riser with neat cement grout using a tremmie pipe, then cutting the PVC riser off below grade and filling the remaining borehole with neat cement grout to the surface. Boreholes BK3 and BK4, were abandoned on May 30 and 29, 2019, respectively.

2.1.1 Geological Logging and Core Assessment

The soil was geologically logged per the Unified Soil Classification System and was screened with a radiation detector to indicate the presence of radioactive materials in the core. A Ludlum 2241 ratemeter with a 44-9 pancake detector (sensitive to alpha, beta, and gamma radiation) was used to record radioactivity from the core material in the field.

2.1.2 Soil Sampling and Laboratory Analysis

Soil samples were selected based on lithological interpretation and results of the geophysical assessment. Sampling targeted sections of the core with lithologies to highlight differing potential background metals concentrations (principally uranium), in a directed sampling method. The objectives of the sampling program were as follows:

1. Collection of samples across a wide range of lithologies.
2. Collection of samples from both the saturated and unsaturated zones. The saturated zone is where lithology is most influential on groundwater quality. The unsaturated zone experiences or has experienced minimal groundwater interaction, so its lithological characteristics are less likely to affect or be affected by groundwater geochemistry.

3. Collection of samples that showed distinct mineralogical characteristics or geophysical signatures suggestive of uranium mineralization; these samples were selected so that the uranium content would be great enough that it could be imaged/detected through microscopic, spectroscopic, and chemical analytical methods. Nondetect results prevent characterization of the form of uranium in the environment, a primary goal of this work.

The geochemical and mineralogical analysis goals are summarized in Table 2. The samples collected are summarized in Table 3. Ten samples each were collected from BK1c, BK2c, and BK3 as summarized below:

- Samples were selected to cover a wide range of lithologies from fine- to coarse-grained materials, shown in Table 3.
- All soil samples were submitted to Energy Laboratories, Inc. (ELI) for analysis of uranium and metals content, paste pH, oxidation-reduction potential (ORP) on solids, total organic carbon (TOC), and total sulfur. For these samples:
    - Metals/metalloids included: aluminum, calcium, iron, magnesium, manganese, molybdenum, potassium, selenium, silicon, uranium, and vanadium.
    - Two soil sample duplicates and two matrix spike/matrix spike duplicates were collected, at a frequency of one per 20 samples, as per the Quality Assurance Project Plan (Arcadis 2019b).
    - Soil sample equipment blanks were not collected because disposable samplers were used. One sample was collected using a new chisel; the chisel was not used again.
    - A Level II data validation was performed for 100 percent of the standard analytical data.
- Samples were collected for an analysis of the association of major and trace elements with mineral fractions and sent to ACZ Laboratories, Inc. in Steamboat Springs, Colorado. Based on the results of the geochemical analyses conducted by ELI, Arcadis selected five samples per well/borehole for selective sequential extraction (SSE) according to a procedure described in the Work Plan (Arcadis 2019a).
- Samples were collected for mineralogical analysis and sent to DCM Science Laboratory (DCM) located in Lakewood, Colorado. DCM was subcontracted by ELI for this work, and the samples were initially shipped to ELI. Based on the results of the geochemical analyses conducted by ELI, Arcadis selected two to three samples per well/borehole for optical mineralogy and x-ray diffraction (XRD).
- Samples were collected for mineralogical analysis and sent to Huffman Hazen Laboratories (HHL) located in Golden, Colorado. HHL was subcontracted by ELI for this work, and the samples were initially shipped to ELI. Based on the results of the geochemical analyses conducted by ELI, Arcadis selected one sample as a trial sample for analysis by Quantitative Evaluation of Materials by Scanning Electron Microscopy (QEMSCAN).
- Samples were collected for stable sulfur (sulfur-34) and oxygen (oxygen-18) isotope analysis and sent to Isotope Tracer Technologies (IT^2) Laboratory in Waterloo, Ontario, Canada. IT^2 was subcontracted by ELI for this work, and the samples were initially shipped to ELI. Based on the

results of the geochemical analysis conducted by ELI, Arcadis selected two to three samples per well/borehole for stable sulfur isotope analysis. This analysis involved a series of chemical extractions that included:

  - Deionized water to dissolve readily leachable sulfate
  - Bicarbonate to displace sulfate sorbed to soil minerals
  - Nitric acid digestion with a nitrogen-gas purge into a zinc acetate solution to dissolve sulfide minerals and capture them as zinc sulfide.

- The sulfur and oxygen stable isotopes were then analyzed using an inductively coupled plasma-(ICP-) isotope ratio mass spectrometer (MS).

2.1.3 Groundwater Sampling and Laboratory Analysis

Groundwater was collected from each of the new wells to investigate the difference in constituent concentrations in co-located wells screened in fine and coarse material. Sampling was conducted using a bladder pump and low-flow methods. A new bladder and new tubing were used for each well. Minor to no drawdown was recorded during sampling of the wells (Appendix B). Field parameters were allowed to stabilize prior to sampling. Groundwater was collected from each of the four wells along with a duplicate sample and sent to ELI for total (unfiltered) and dissolved (0.45 micrometer filter) metals, alkalinity, major anions, nitrate, ammonia, isotopic uranium, TOC, dissolved organic carbon, and phosphate, and to IT^2 for stable sulfur isotope analysis (analysis of sulfur-34 and oxygen-18 content of sulfate in groundwater). In addition, a HACH ferrous iron field kit was used to measure ferrous iron in the groundwater at the point of sampling.

2.2 Geophysical Assessments

Two scales of geophysical assessment were performed as part of this investigation. First, at a broad scale encompassing more than 1 mile horizontally by several hundred feet in depth, Arcadis performed two transect alignments of ERT to provide a high-level image of the overall geologic conditions of the alluvium and underlying bedrock north of the LTP. Electrical resistivity is generally accepted as a good indicator of lithologic, hydrogeologic, and geochemical conditions at a broad scale. The primary goal of including this type of imaging in the overall investigation is to provide a continuous image of the alluvial channel geometry and the sediment contained within it. If successful, this type of imaging could be valuable in connecting the broadly spaced well borings and guide decisions pertaining to better placement of borings and wells.

The second type of geophysical measurement was made at the borehole scale. Lithologic, mineralogic, and stratigraphic inferences are possible when borehole geophysical measurements are made in consideration of various mineralogical and geochemical results taken at the discrete sample scale. Additionally, borehole geophysical measurements, sharing common attributes with the larger scale surface ERT measurements, guide and constrain the interpretation of the ERT results. As such, borehole geophysical data act as a bridge between the large scale ERT datasets and the small, sample-scale testing results. Each of these assessments is described below.

2.2.1 Electrical Resistivity Tomography Assessment

Arcadis completed an ERT assessment with the objective of mapping the alluvial channel geometry and the internal variations within the alluvium in accordance with the Work Plan (Arcadis 2019a). The preliminary interpreted ERT data were used to inform the drilling phase of the program to determine well positioning and well construction details, including the desired well screen interval (see Preliminary ERT Assessment Results, Revision 1 memo in Appendix A). The preliminary ERT interpretation was completed as rapidly as possible to aid in the progression of the drilling program and was not intended to be a final interpretation. Additional interpretation was completed with the help of drilling and literature data to put the ERT data into context.

The key benefit of including ERT is that it has provided a continuous, broad context for the correlations of highly detailed information derived from individual boreholes. This leads to a more comprehensive and defensible interpretation of the alluvial sediment and underlying bedrock within the stratigraphic constraints associated with the sedimentary basin. These constraints are required to outline heterogeneity and potential preferential flow pathways and variations in sediment type, which are important factors to evaluate the hypothesis that uranium concentrations could be influenced by localized variability in alluvium characteristics and geochemistry tied to the sediment provenance.

Following field data collection, for each line, the datasets were compiled and inverse-modelled to create electrical resistivity in two continuous cross-section views of the alluvial channel. The RES2DINV software program by Geotomo Software was used for inverse modelling of the ERT data. New and existing borehole geophysical data and visual observations were used to constrain the resistivity models and interpretations within.

Figures 2 and 3 are processed ERT cross sections with interpretative annotations. Similar cross sections were provided in the Preliminary ERT Assessment Results, Revision 1 memo (Appendix A). Since the writing of the Preliminary ERT Assessment Results, Revision 1 memo, Arcadis has performed additional smoothing and filtering of the ERT data to suppress unwanted, non-geologic noise. Appendix C contains greater detail on the processing steps that were taken to arrive at the final depictions in Figures 2 and 3.

2.2.2 Borehole Geophysical Assessment

Borehole geophysical logging was included to:

- Quantitatively and graphically contextualize the soil descriptions and geochemical results obtained during this investigation.
- Provide insight into the stratigraphy and allow an objective means of correlating between boreholes including the wells that the USGS logged in 2016. This was particularly important due to the undetailed descriptive information obtained during drilling of existing wells.
- Yield direct, in-situ estimation of the concentration of total uranium in the formation.
- Guide decision making about mineralogical analysis of samples.

The borehole geophysical assessment activities consisted of:

- Collection of geophysical parameters through the operation of borehole geophysical probes at four newly drilled locations and several existing wells across the project and background area

- Post-fieldwork data processing of the raw field data.

For the new BK locations, the types of data obtained included natural gamma ray, spectral gamma ray, and induction conductivity. Natural gamma ray and spectral gamma ray data collection were conducted while the drill rig was in place, through the steel drill casing. Induction conductivity was conducted after final well/borehole installation to avoid metallic interferences.

An Arcadis geophysical specialist collected the borehole geophysical data. The equipment was manufactured by Mount Sopris Instruments. The equipment used to move the probes within the borehole consisted of a mini-winch containing 200 meters of $^{3}/_{16}$-inch-diameter cable and a matrix control console. Depth of the logging probe was quantified with an encoder wheel affixed to the logging unit, which was located immediately downstream of the motorized winch. The logging cable was passed over a centring tripod and pulley, and once a given probe was connected to the cable-head assembly, the top of the probe was aligned with the ground surface and the control console was zeroed. The matrix console modem transmitted both the depth and the serial probe data via USB cable to a laptop computer, which acted as a control interface for the matrix console and probes. The software used for this purpose was Matrix Logger Version 10.

Three separate probes were operated in each borehole. The specifications for the probes are summarized in the table below.

Probe Type	Model	Diameter (inches)	Length (inches)	Sensor Technology
Natural Gamma Ray	2PGA-1000	1.63	31.3	Scintillometer: NaI(Tl) .875"x3.0"
Spectral Gamma Ray	2SNA-1000S	1.5	46.61	Scintillometer: NaI(Tl) .875"x3.0" (temperature compensated)
Induction Conductivity	2EMA-1000	1.44	66.9	Tx-Rx separation of 50 cm, 39.2KHz Operating Frequency

Natural gamma ray logging was completed in one continuous pass at an approximate logging speed of 12 feet per minute or less. The output from natural gamma ray probe, aside from low-pass filtering to suppress high-frequency random noise, generally does not require additional post-processing and is presented as gross counts per second.

Spectral gamma ray logging was performed in two modes: dynamic and static. Dynamic logging is mainly done as a means of selecting specific locations at which to perform static measurements. This is because the statistically random nature of the gamma ray spectrum does not lend itself to dynamic, continuous measurements. To increase confidence, dynamic logging was conducted at a relatively low logging speed of 3 feet per minute and in a downward and then upward pass. This approach provided data for rough estimation of the uranium concentration in the alluvium. The dynamic data were reviewed in the field to select the specific static measurement locations. The static data provided higher accuracy and precision than the dynamic data. Each static measurement was made with the probe at a fixed location over a 15- to 20-minute period to ensure that a statistically significant integrated value would result. The spectral

gamma ray data were modeled after fieldwork in WellCAD to calculate the estimated potassium, uranium, and thorium content at specific fixed locations. The entire 15- to 20-minute record was stacked to maximize wanted signal, and then the data stripping method was used to isolate the potassium, uranium, and thorium signals. A specific calibration model for the logging probe was used to calculate the mass-based concentrations.

For newly drilled locations BK1c, BK2c, BK3, and BK4 and locations drilled in 2018, DD-BK, and DD2-BK, Arcadis also performed additional processing of the spectral gamma data to enhance the interpretability from a stratigraphic correlation standpoint. To create nearly continuous plots, Arcadis used the dynamic spectral gamma data. Mass-based values were calculated from a 155-point window (5-foot vertical) moving operator, which passed through the entire dynamic dataset. The Briggs Color Cubing (BCC) method was applied to the mass-based spectral gamma data using the approach described by Sullivan and Song (2017):

> *Spectral gamma ray data has long been recognized for its usefulness in clay typing and rock typing, including distinguishing organic rich shales and radioactive sands from conventional shales. The use of this data has not been widespread however, possibly because the analysis often involves point-based ternary diagrams and the results are not easily presented in a depth based log.*
>
> *Colour cubing is a technique for turning the portion of the total gamma ray signal that is due to potassium, uranium, and thorium into distinct and meaningful colour patterns. Colour cubing uses the red-green-blue (RGB) colour axes to depict the changing proportions of three attributes (similar to how a colour TV can create any colour from RGB mixing).*
>
> *We have established the convention of scaling the portion of gamma ray due to uranium using the blue axis, potassium on red, and thorium on green. The results are easy to display in a depth-based log by filling the gamma ray track with this colour shading. This depicts both the total value and composition of the gamma ray measurement. We have found this very useful for a variety of applications. It results in a step change improvement in our ability to recognize markers when doing inter-well stratigraphic correlation. Sediments from a common source will have a common mixture of radioactive elements, so layers of sediments rich in potassium, uranium, and thorium appear as distinct blue, red & green bands in cross sections, which greatly eases stratigraphic correlation. Whether diluted or concentrated, if the radioactive mixture does not change, the colour will remain the same, telling us the sediments are likely from the same source.*
>
> *Changing radioactive composition is difficult to distinguish from individual potassium, uranium and thorium (K,U,T) curves that all may be constantly changing but with similar proportion of elements. The similar colours make it clear the proportions have remained the same.*

To show the BCC method, the graphic below portrays the relative color ranges for differing combinations of the potassium (K), uranium (U), and thorium (T).[1] The ratios of the weigh-based proportions of each element to the calculated total gamma ray content were calculated. Then the P10 and P90 values for

[1] Note: Arcadis has followed the color convention used by the USGS of RGB for KUT rather than the convention of the authors.

each ratio was determined. In the BCC process within WellCAD, consistent ranges of ratio values were input as follows:

- *GR_KRAT, P10=0 to P90=0.035*
- *GR_URAT, P10=0 to P90=0.125*
- *GR_THRAT, P10=0 to P90=0.18*

Borehole geophysical graphic logs for BK1c, BK2c, BK3, BK4, DD-BK, and DD2-BK were produced using WellCAD portraying the geophysical results, including the observational and laboratory data. Appendix D1 contains the graphical logs and Appendix D2 contains the unplotted data used to make the graphics. In addition to the BCC analysis, also included in the logs provided in Appendix D1 are:

- Natural gamma ray
- Induction conductivity
- Th/K and Th/U ratios calculated from the dynamic spectral gamma analysis described above
- Static spectral gamma points for potassium and uranium.

Observed in their totality, this suite of logging tracks provides an intuitive and understandable graphic to visualize the stratigraphic sequences, textural variations in the alluvium, variability in sediment source, weathering overprints (mainly in the Chinle Formation), and distribution of total uranium. Figure 4 provides a cross-sectional view of these graphic results for DD-BK, BK1c, BK2c and BK3, aligned with ERT Line 2. Note that total uranium is typically reported at higher concentrations by the spectral gamma analysis as compared to the total metals analysis performed in the laboratory on sediments. There are significant scale differences between the two analyses – the spectral gamma measures the surface of the interior of a borehole, integrating the signal over a number of vertical inches whereas the total metals and SSE analysis is performed on only a couple of grams of sediment. Other less significant factors (as compared to the large difference in volume of sample interrogated by each method) such as the precision of spectral gamma at low levels, and correlation of the logged depths of sediment samples to the spectral gamma tool position, may also contribute.

Arcadis also collected natural gamma, induction conductivity (PVC wells only), and spectral gamma data in the following existing wells: 914, 921, 922, L, N-16, P2, P4, R, and W (see Appendix D3). Dynamic and static spectral gamma data were gathered in five wells previously logged by the USGS (DD, DD2, Q, MV, and ND) in an effort to complete the spectral gamma work in the vadose zone (USGS collected spectral gamma only in saturated materials; see Appendix D4). The goal of collecting these data in Appendices C3 and C4 was primarily to estimate potassium, uranium, and thorium values from the static spectral data, which are summarized in Table 4. Figure 5 presents a map-view portrayal of the static uranium and Th/K versus depth plots for each of the locations logged.

3 RESULTS, DISCUSSION, AND CONCEPTUAL SITE MODEL

This section presents the results of the drilling, geochemical, and geophysical assessments, which are considered individually because each provides specific lines of evidence related to the presence of uranium in the alluvial system. However, when combined, they provide the means to form a robust CSM for the placement and migration of uranium naturally in the alluvial system.

3.1 Drilling and Lithological Assessment

The descriptive geologic and well construction logs for wells BK1c, BK1f, BK2c, and BK2f, and descriptive geologic logs for boreholes BK3 and BK4 are presented in Appendix E. Well/borehole installation details are summarized in Table 1. Drilling was conducted with a sonic drilling rig, which produced continuous sediment cores for lithological inspection. The lithology logged indicated that the unconsolidated materials were composed of an irregular and heterogeneous alluvial sequence of clays, silts, silty-sands, sandy-silts, sands with variable amounts of gravel, and occasional gravel layers, detailed in the following section.

3.1.1 Unconsolidated Alluvium

When comparing the descriptive lithological logs for the recent wells and boreholes to the drilling logs of previously drilled adjacent groundwater wells DD, DD2, the P wells, and well ND, the alluvial sequence was described as being significantly more heterogeneous than indicated in previous drilling logs. The difference in detail can be attributed to the contrasting drilling methodologies used. Previous well installations were typically conducted with mud rotary rigs, with sediment or rock chips being logged from mud returns, whereas this investigation was conducted with a sonic drilling rig with the return of intact sediment or rock core that was not affected by drilling fluid. As a result, Arcadis was able to construct a more detailed cross section (A-A'; Figure 6) along a linear transect spanning from Well DD to Well ND, incorporating four existing wells (DD, P2, P4, and ND), one boring drilled in 2018 (DD-BK), and five borings or wells drilled in 2019 for this investigation (BK1c, BK1f, BK2c, BK2f, and BK3), as shown on Figure 6. The same alignment was followed by ERT Line 2 as discussed below.

For construction of the cross section, zones of similar lithology were combined such that alternating thin layers that were mostly silty sand, but containing occasional sand layers, were displayed as a single unit of silty sand or vice versa. This has enabled interpretation of general trends in lithology across the alluvial basin. However, the descriptive geologic logs provide greater localized detail. The general trend in the alluvial basin indicated by Cross-Section A-A' (Figure 6) is that materials at the margins of the alluvial basin have fine-grained characteristics associated with low-energy sediment deposition while the center of the basin contains coarser, higher energy type sediment. This supports the CSM that alluvial materials throughout the basin were deposited through time via transport predominantly by flowing waters of variable velocity and origin that meandered back and forth across the basin. Additionally, the greater proportion of coarse materials in the central portion of the basin may contribute to higher groundwater transmissivity in the center of the basin than at the margins. Figure 3, ERT Line 2, provides a broader perspective on the overall geometry of the alluvial basin.

3.1.1.1 Quantitative Analysis of Alluvial Textures

As an aid to assess the broad lithological trends in the alluvium across the basin, pie charts were produced displaying the dominant lithological groupings (Figure 7). To calculate relative percentages of each major lithological class, each lithology was broken down into its major parts. For example, for core classified as sand and gravel, one-half of the amount was placed in each category. If a lithology was listed as having a substantial minor component (e.g., silty sand), 25 percent was placed in the minor category per foot of core and 75 percent was placed in the major category; the exception to this is clay (e.g., sandy clay), in which case all of the length was placed in the clay category because clay dominates the hydrogeological characteristics of the lithology. These pie charts were also constructed for boreholes DD-BK and DD2-BK, installed in 2018 in the far west side of the alluvial channel, near wells DD and DD2. “Fine-grained” is defined as predominantly silt or clay. “Coarse-grained” is defined as predominantly sand or gravel. In general, boreholes on the western side (i.e., DD, DD2, BK1c, BK1f, BK4) and far eastern side of the alluvial channel (i.e., ND and BK3) contained greater amounts of fine-grained materials than those in the center of the alluvial channel (i.e., P2, P4, BK2c, and BK2f).

Clays and silts made up 36 to 37 percent of the alluvial materials in the far western boreholes (DD-BK and DD2-BK), 39 to 43 percent in the western boreholes (BK1f and BK1c), and 55 percent in the eastern borehole (BK3). Referring to ERT Line 2 (Figure 3), the electrical resistivity data generally support these trends with the highest resistivity zones above bedrock located to the far west and the lowest resistivity alluvium found in the east near ND and BK3 (note that in general clean, coarse materials are the most resistive, fine materials the least). In contrast, only 20 to 24 percent of the alluvial materials at the central portion of the channel (boreholes BK2c and BK2f) were fines. Clay constituted approximately 25 percent of the sediments at far west boreholes DD-BK/DD2-BK and occurred most frequently in 1- to 2-foot intervals in DD-BK; clay layers were thicker in DD2-BK, occurring most frequently in 2- to 5-foot reaches. Clay made up approximately 20 percent of the sediments at western wells BK1c/BK1f and most frequently occurred in 1-foot intervals; thicker clay deposits of 7 to 10 feet were encountered immediately above bedrock. Clay was less abundant at BK2c/BK2f and occurred in sporadic deposits 0.5 foot to 5.5 feet thick. Clay was not encountered near the contact with bedrock at BK2c/BK2f. Clay made up 27 percent of the alluvial materials at BK3 and occurred in frequent intervals of 1 foot to 2.5 feet. Clay located immediately above bedrock at BK3 often incorporated larger clastic materials such as sand and gravel. Material classified as gravel was rare in the boreholes, constituting approximately 2 percent in BK1c/BK1f and BK2c/BK2f, 1 percent in BK3, and 4 percent in BK4.

3.1.1.2 Sediment Composition

Gravel clasts in the alluvium consist of variable rock types including granite, basalt, rhyolitic fragments, and small pieces of dacite porphyry. Other visible features in the core included zones of mineralization and discrete particles and disseminated patches of black, solid, natural organic carbon. Each of these factors locally affects the mineralogical geochemistry and the groundwater geochemistry in the saturated zone. The details concerning the mineral and lithologic composition of the sediments is discussed in the section entitled Mineralogical Assessment.

3.1.2 Chinle Formation Bedrock: shale and sandstone

The entire alluvial basin in the area investigated is underlain by the upper Triassic Chinle Formation. The Chinle Formation is a highly variable terrestrial sedimentary formation consisting mainly of fluvial and lacustrine sediments. Locally, it consists of both shale and sandstone. Only Chinle Formation shale was encountered in the boreholes advanced along Cross-Section A-A' (BK1c, BK1f, BK2c, BK2f, BK3; Figure 6) during this investigation. Bedrock at BK4 consisted of Chinle Formation sandstone underlain by Chinle Formation shale. Specifically, shale was observed as follows:

- 62.5 feet bgs in BK1c/BK1f
- 80-81.5 feet bgs in BK2c/BK2f
- 60 feet bgs in BK3.
- 53.5 feet bgs in BK4

The contact was typically observed to be abrupt between the alluvial materials and underlying shale. A color change to a more reddish tone was frequently noted toward the base of the alluvium, up to several feet in thickness prior to contact with the shale. A variable weathering profile from a couple of feet up to several feet was observed in the upper portion of the shale, with a transition from highly weathered weak, wet rock to dry and more competent rock.

The identification of competent rock for the recent boreholes in 2018 and 2019 typically has matched the Chinle Formation contact for previous boreholes, even though weathered Chinle Formation material was noted above this contact. This indicates that the actual alluvium-Chinle Formation bedrock contact is potentially shallower than previously interpreted at some locations, at least potentially from a geochemical standpoint. When setting groundwater wells during this investigation, care was taken to set the well screen intervals above the weathered zone of the Chinle Formation bedrock, avoiding zones where color change was noted.

To the south of Cross-Section A-A' (Figure 6) and ERT Line 2 was ERT Line 1, which was laid out parallel to the north side of the LTP (see Figure 1). One boring (BK4) was drilled along Line 1 where the resistivity data appeared to suggest relatively shallow bedrock (see discussions in Appendices A and C). Chinle Formation sandstone was encountered in borehole BK4 at 35 feet bgs. This represented a bedrock high in this area as shown on ERT Line 1 (Figure 2), with the surface of the sandstone dry and above the water table. The sandstone was noted to be white to brown, hard, and contained evidence of white mineralization in places. When pieces were worked by hand with water, they yielded sandy clay. Lower portions of the sandstone were wet and indicated water-bearing porosity and permeability, readily absorbing water if dried and rewetted. There is evidence that the sandstone is permeable and that it is not a barrier to groundwater flow in this area. Beneath the sandstone was shale from 53.5 feet bgs to the total depth of the boring.

3.1.3 Alluvial Well Construction and Groundwater Conditions

Well pairs were installed at locations BK1 (BK1f/BK1c) and BK2 (BK2f/BK2c) with the screens of adjacent wells installed across fine and coarse materials, respectively. The well screens were restricted to 5 feet to target the desired zones. However, significant variation in lithology was present in each of the intervals

due to the small thickness of the layers, often less than 1 foot. The groundwater levels for the well pairs were typically similar, indicating limited hydraulic separation.

The association of uranium with fines may influence uranium concentrations in groundwater that is in contact with higher proportions of fine materials. This relationship is supported at the BK1 well pair, where BK1f (screened in fine material) contains a higher concentration of uranium in groundwater than BK1c (screened in coarse material). However, at the BK2 well pair, uranium in groundwater was higher at BK2c (coarse) than BK2f (fine). This is due to the lack of fine-grained materials in the BK2 area, which resulted in well BK2f being screened primarily over sandy material. Additionally, wells may be able to draw water from units above and below the screened interval that are in contact with the sand filter pack (see well construction details in Appendix E). BK2f was screened over the finest material available within the saturated zone, but the sand filter pack expanded this interval to include additional sand. It is expected that BK2c and BK2f are both representative of groundwater associated with coarse materials (Figure 8). While lower uranium concentrations are seen in groundwater associated with well ND (0.03 milligram per liter [mg/L] uranium in 2018 [Homestake and Hydro-Engineering 2019]) where large amounts of fines were logged on the eastern side of the channel, distinct geophysical and XRD data suggest that the origin of the alluvial material is different in this area than in the center or western portion of the alluvial channel.

In 2018, groundwater was encountered at approximately 45 feet bgs at DD-BK and 42 feet bgs at DD2-BK. During the 2019 investigation, groundwater was encountered at 42.5 feet bgs at BK1c/BK1f; 42.5 and 43.5 feet bgs at BK2c and BK2f, respectively; 45 feet bgs at BK3; and approximately 43 feet bgs at BK4. Water levels in wells near the BK2 area (P2 and P4) were approximately 41 and 37 feet bgs, and the water level in well ND near the BK3 area was 40 feet bgs in March 2018 (Homestake and Hydro-Engineering 2019). The shallowest depths that groundwater has ever been measured in wells DD and DD2 were 42 and 42.2 feet below measuring point, respectively, on May 30, 2017 and December 29, 2014, respectively. Thus, samples collected shallower than 42 feet bgs at DD-BK and DD2-BK are considered to be in the unsaturated zone and have not been exposed to groundwater since well DD's installation in 1976 or well DD2's installation in 2008. Samples collected deeper than 42 feet bgs are considered to be in the saturated zone and are exposed or have been exposed to groundwater contact. Similarly, samples collected deeper than 42 feet bgs at BK1, 37 feet bgs at BK2, and 40 feet bgs at BK4 are conservatively considered to be in the saturated zone.

3.2 Geochemical and Mineralogical Assessments

Data from the geochemical, mineralogical, and groundwater assessments are included in Appendix F. Analytical results were within standard quality control limits for all results that are not associated with analytical qualifiers. Qualifiers have been included in the data tables were applicable and Data Validation Reports for standard analyses are included in Appendix F.

3.2.1 Geochemical Assessment

The total metals analysis represents all metals present in a sample that can be digested with nitric acid and hydrogen peroxide and does not include hydrofluoric acid; this includes all mineralogical material except crystalline silicates and possibly some recalcitrant crystalline oxides. The total metals analysis, performed according to EPA Method 3050B, liberates "environmentally available" major and trace elements (USEPA 1996); it simulates a strong chemical weathering environment and provides a

conservative estimate of the leachable major and trace elements. The total metals results are plotted versus depth on Figure 9 and are shown in Table 5. Out of the 30 samples, three contained uranium greater than the reporting limit of 1 milligram per kilogram (mg/kg): two samples from BK1 at 51 to 52 and 52 to 53 feet bgs with 2 mg/kg each, and one from BK3 at 42.5 to 43.5 feet bgs with 1 mg/kg. Similarly, molybdenum was detected in three samples at concentrations greater than 1 mg/kg and selenium not detected at concentrations greater than the reporting limits of 1 and 3 mg/kg in any sample. Vanadium was detected in association with fine-grained materials at BK1 (up to 22 mg/kg) and BK3 (up to 36 mg/kg); this element was present at notably lower concentrations at BK2 (up to 11 mg/kg).

In the SSE, discussed below, uranium, molybdenum, and selenium were detected and quantified at concentrations below 1 mg/kg in the majority of those samples where uranium was not detected by the total metals analysis. Better detection limits are provided by the SSE method due to lower matrix interference – the total metals analysis results in almost complete dissolution of the sediment and the resultant digests have extremely high concentrations of major elements (e.g., sodium, magnesium); this complex matrix makes it difficult for the ICP-MS instrument to resolve low concentrations of trace elements.

Vanadium has been shown to be present in uranium-bearing ores in the region, in minerals such as tyuyamunite and carnotite (Brookins 1982; Meunier 1994; McClemore 2010). Uranium detected at 2 mg/kg at BK1 was associated with elevated vanadium at 18 to 21 mg/kg, as well as the highest concentration of iron measured in the borehole (46,300 mg/kg) and organic carbon (1.2 percent by weight [wt.%]). Uranium, vanadium, iron, and organic carbon were detected at the highest concentrations in this sand/gravel/silt and sandy clay environment at 51 to 53 feet bgs. The mineral environment here is similar to the DD-BK and DD2-BK sediment where uranium was detected at higher concentrations. At BK2, however, these mineralogical markers of uranium-bearing zones were absent, with nondetect uranium, low iron and vanadium concentrations, and low organic carbon. At BK3, the clay at 43 feet bgs revealed high iron (21,600 mg/kg), vanadium, and organic carbon concentrations. This was the only sample that yielded detectable uranium from this borehole. In general, and as expected, constituents such as aluminum and potassium are more abundant in fine-grained samples.

In 2018, borehole DD-BK yielded three samples that exhibited detectable uranium (all at 1 mg/kg). All were clays, and two occurred above groundwater in the unsaturated zone. The remaining seven samples exhibited nondetect uranium; these were coarser-grained materials that ranged from fine to coarse sand to silty sand and gravel. At borehole DD2-BK, eight of the nine samples exhibited detectable uranium ranging from 1 mg/kg (four samples), 2 mg/kg (two samples), 5 mg/kg (one sample), and 10 mg/kg (1 sample). The compositions of these samples ranged from clay to gravelly sand with silt. The highest uranium concentration was measured in a clay in the unsaturated zone at 11 to 12 feet bgs. This sample also exhibited the highest leachability in a bicarbonate extraction solution (Kohler et al. 2004) at 0.179 mg/L. The concentration of vanadium at this depth was 34 mg/kg, the highest measured in soil samples recovered from this borehole. As discussed above, the correlation of uranium with vanadium is a common characteristic of nearby Morrison Formation sandstone tabular uranium-bearing minerals (see, for example, McLemore 2010).

Paste pH values for all samples ranged from 7.9 to 8.5 standard units, indicating that the samples are not acid-bearing or generating. ORP measurements on soil varied from 179 to 325 millivolts, indicating that the samples are predominantly oxidized.

Total carbon and total sulfur were measured via the LECO® Induction Furnace method. Total carbon varied from 0.1 to 1.3 wt.% and in general was highest in fine-grained samples such as silt and clay. Total sulfur varied from less than 0.01 to 0.03 wt.%, indicating that sulfate and sulfide minerals do not constitute a significant portion of the mineralogy by weight; however, pyrite and gypsum were detected via petrography and QEMSCAN. Even in small amounts, pyrite can have local effects on geochemical cycling and should not be ignored.

The stable isotope composition of the sediment was determined for sulfur-34 and oxygen-18 with the results reported in reference to the level of enrichment or depletion of each isotope relative to a standard. Table 5 presents these results for eight sediment samples (Figure 10), along with the results for groundwater in BK1 and BK2 (2019) and upgradient wells DD2, DD, P3, Q, and ND (2016; Figure 11). It is important to note that sedimentary biogenic pyrite is depleted in heavy sulfur (sulfur-34) and enriched in isotopically light sulfur (sulfur-32) because microbial processes preferentially concentrate the light sulfur. Fishman and Reynolds (1982) reported the per mil (‰) ratio between sulfur-32 and sulfur-34 isotopes ($\delta^{34}S$) ranging from -41.6 ‰ to -29.4‰ for pyrite associated with uranium ore samples from New Mexico, and Jensen (1958) demonstrated that sulfur associated with uranium ores had $\delta^{34}S$ values ranging from -48‰ to 12‰; however, most values were strongly negative.

On the west side of the alluvial channel (at BK1), the sulfur-34 content of leachable sulfate, sorbed sulfate, and sulfide is depleted just below the water table (with sediment enriched in sulfur-34 above the water table). Oxidation of sedimentary pyrite leads to the generation of dissolved sulfate and formation of sulfate minerals in soil (e.g., authigenic gypsum) as well as sorbed sulfate. The sulfur-34 signature of this sulfate points to a biogenic source as shown by the depleted $\delta^{34}S$ (less than -20‰). Soluble sulfates sourced from biogenic sulfide have been shown to be highly depleted in sulfur-34 (Kramar et al. 2011). Goethite-replaced framboidal pyrite was seen at BK1, BK2, and BK3, indicating that isotopically light biogenic sulfur was released into the system and either into groundwater or incorporated into other mineral forms like gypsum. Sulfate associated with sediments at BK1 shows greater depletion in sulfur-34 compared to BK2 and BK3 (Figure 10). Where uranium was detected in sediments at BK1, the soluble sulfate $\delta^{34}S$ is depleted (-25.7‰ at 51 to 52 feet bgs) and the $\delta^{34}S$ of mineral sulfides here is -2.9‰. Above the water table, the $\delta^{34}S$ associated with soluble sulfate is positive and likely due to deposition of detrital gypsum. The results for the mineral sulfides at BK1 show that the sulfides are dominated by biogenic sulfides just below the water table and then gradually shift to more abiotic sulfide signature (less depleted in sulfur-34). This could indicate that a significant fraction of the biogenic pyrite has oxidized/weathered (releasing isotopically light sulfate to the sediments, which becomes locked up as gypsum) and the abiogenic pyrite is preserved in the sediment because it is less reactive and more crystalline.

At BK2 (center of channel) in the unsaturated zone, results show almost no fractionation for soluble/ sorbed sulfate and slight negative fractionation for solid sulfides; the soluble/sorbed results may be due to detrital gypsum and the sulfide result may be representative of a mix of biogenic and abiogenic sulfide formation.

The two data points from BK3 in the east show a more depleted signature above the water table than below. The soluble sulfate here is less depleted in sulfur-34, pointing to a source associated with recharge/runoff from Lobo Creek including allochthonous gypsum.

3.2.2 Mineralogical Assessment

3.2.2.1 X-Ray Diffraction, Petrography, and Quantitative Evaluation of Materials by Scanning Electron Microscopy

XRD was completed on 10 samples, with four samples receiving both bulk mineralogy XRD and clay-specific XRD. Data are provided in Appendix F. Table 6 shows XRD results, plus lithologic data and uranium content data for each sample, and Figure 12 shows the data. Samples submitted for XRD ranged in grain size from clay to gravel and included samples from the saturated and unsaturated zones. Presented in order of abundance, coarser grained samples are primarily composed of quartz, potassium feldspar, plagioclase feldspar, and calcite, with minor components of goethite/hematite, illite/mica, kaolinite, and rarely, dolomite. Fine-grained samples (clay-dominated) are primarily composed of quartz and clay minerals including smectite, kaolinite, and illite/mica, with roughly similar amounts of calcite, potassium feldspar, and plagioclase. Clays on the western side of the channel are dominated by smectite, whereas clay from the eastern side of the channel is dominated by illite. Clay content ranged from approximately 4 to less than 14 percent in the coarser grained samples (lithologically logged as sand or gravel) and from 22 to 54 percent in the fine-grained samples (lithologically logged as silt or clay).

Petrography results from the 2018 and 2019 investigations corroborate the XRD results and contribute to our understanding of mineral distribution, grain texture, and association throughout the samples. Coarse-grained samples are primarily composed of angular to well-rounded clasts of quartz, potassium feldspar, and plagioclase, often cemented with clay, iron oxides, or carbonate (Figure 13). Occasional larger clasts consist of quartz sandstone, arkosic sandstone (Figure 13), or igneous rocks including granite, basalt, rhyolite, and dacite porphyry (Figure 14). Organic carbon is visible as black masses in most samples (Figure 13). While not detected greater than 1 wt.% via XRD in 2019, pyrite was visible in most samples as degraded/partially degraded goethite pseudomorphs of pyrite in the west and as undegraded pyrite in the center (BK2) and eastern (BK3) portions of the alluvial channel (Figure 13). Significant findings of the mineralogical analyses are summarized below.

Reduced and oxidized minerals are abundant, indicating heterogeneity in the mineralogical environment, microenvironments, and transitions from reducing to oxidizing conditions, affecting uranium mobility.

The results of the petrography analysis for 2019 samples corroborate the findings of the 2018 DD-BK and DD2-BK results. Almost all samples contain fine-grained material such as clay and silt, all contain iron oxides, and all contain a mixture of oxidized and reduced minerals (e.g., oxides and sulfides). This indicates that the redox conditions to which the alluvial materials are exposed have changed through time, and demonstrates the heterogeneous nature of the alluvial sediments, both in the saturated and unsaturated zones. Clay can create microenvironments by inhibiting water and air movement through the alluvium. Microenvironments in clay can foster the formation and/or preservation of reduced minerals such as pyrite within an oxidizing aquifer.

The majority of the core samples collected in 2018 and 2019 contain metal sulfides, notably as pyrite. Through time in an oxidizing environment, pyrite can transform into iron oxides as seen in samples from DD-BK, DD2-BK, and BK1 (Figure 15). Oxidation of pyrite removes reducing potential from the system and where uranium is present, is often accompanied by oxidation (mobilization) of uranium. Uranium in

systems with degraded or degrading pyrite is likely to be released from its immobile, reduced form to its mobile, oxidized form in groundwater (Descostes et al. 2010). Goethite-replaced framboidal pyrite was seen at BK1, BK2, and BK3. Framboidal pyrite is more easily oxidized than cubic pyrite (Weisener and Weber 2010), acting as an indicator of the redox state. Samples from BK2 and BK3 more commonly showed unaltered cubic pyrite, indicating that abiogenic sulfides here have not undergone oxidation and as a result, uranium concentrations in groundwater due to oxidation of total pyrite are expected to be lower (Figure 15). Groundwater sampled from BK2f was geochemically reducing, demonstrating that the fine-grained material at this location retains significant reducing capacity, whereas at BK1f, a strongly reducing environment was not encountered (further discussed below).

Pyrite formation and degradation are important geochemical markers for the redox state of the alluvial system. Pyrite framboids are particularly relevant for several reasons because they are most often formed by sulfate-reducing bacteria (SRB; Qafoku et al. 2009):

- The formation of pyrite by SRB fractionates sulfur because the SRB preferentially use the lighter sulfur isotope (Krouse and Grinenko 1991).
- Oxidation of pyrite originally formed by SRB releases isotopically light sulfate into groundwater. This can be seen in the light sulfate measured in groundwater throughout the SMCB with a $\delta^{34}S$ of -25.5 to -30.4 per mil (Ulrich et al. 2019; Blake et al. 2019).
- Pyrite is known to be a scavenger of uranium (Qafoku et al. 2009) and the oxidation of pyrite can release uranium to groundwater.
- The presence of pyrite signals that the alluvial materials (whether saturated or unsaturated) are/were reducing, a condition that is more common in fine-grained material such as silt and clay than in coarse-grained material such as gravel.

Stable sulfur isotope analyses on sulfides on 2019 samples show a combination of biogenic and abiogenic pyrite. At BK1, the lightest sulfide material (biogenic signature) appears just below the water table; samples deeper than this become heavier, indicating either abiogenic pyrite formation or that the biogenic pyrite in the deeper samples has degraded to iron oxides as seen in the petrography. As discussed above, very light groundwater signatures were measured at the four new wells, indicating that the sulfate in groundwater originated from the oxidation of very light biogenic pyrite. Only one sample was analyzed from BK2, which showed a sulfur stable isotope signature that is neither indicative of biogenic or abiogenic origin. The two samples from BK3 show behavior opposite of those from BK1, trending lighter above the water table and becoming heavier in the saturated zone.

Clays are mineralogically complex, organic carbon rich, and may be a reservoir for reduced uranium and a source of uranium to groundwater.

The clay mineralogy varies from primarily smectite in the west to illite in the east, reflecting a difference in the source of the fine-grained alluvial materials across the channel. Smectite typically contains ~0.1 to 0.5 wt.% potassium and calcium content up to 6 wt.%, whereas illite has a higher concentration of potassium (up to 8 wt.%) and lower calcium content (approximately 1 wt.%) (Grim 1968). The higher potassium content of illite may account for the higher natural gamma signature on the east side of the sedimentary basin. The lower potassium content of smectite combined with its higher solubility and greater leachability of potassium may contribute to the large Th/K ratios observed on the west side at specific depths. The

clays can be characterized as iron oxide-stained clays with abundant organic inclusions and disseminated metal sulfides including pyrite (iron), chalcopyrite (copper), galena (lead), sphalerite (zinc), and assorted other minor metal sulfides. Calcite is also present and is intermixed with the clay. Calcite can act as a source of locally available alkalinity that can encourage leaching through the formation of highly soluble uranium-carbonate species. Organic carbon and iron oxides are abundant. Uranium is often associated with iron oxides, which can sorb uranium, and with organic carbon, a strong reductant that can reduce, immobilize, and store uranium (Spirakis 1996).

Minerals present in the Morrison Formation are evident in the sediments across the alluvial channel; mineral morphologies indicate water-borne transport and deposition, sometimes large distances from their origin.

The clastic materials range from silty sand to gravely sand and are characterized by angular to rounded quartz silt and sand, angular to sub-rounded feldspars and plagioclase, amorphous iron oxides, and clay coatings on sand grains. The rounded and sub-rounded nature of the clastic grains indicates that they have been transported a significant distance from their source. The mix of angular clastic materials in the alluvial materials reflects either a more proximal source or that larger lithic fragments were transported and broke into smaller fragments closer to the location of their final deposition. The two high-uranium units of the Morrison Formation are the Westwater Canyon Member and the Brushy Basin Member; both units are known to contain claystone, kaolin, and unaltered, angular grains of feldspar (Freeman and Hilpert 1956) and medium- to coarse-grained arkosic sandstones (Santos 1970) such as that seen in many of the samples from DD-BK, DD2-BK, BK1, BK2, and BK3. Igneous lithic fragments of granite, basalt, rhyolite, and dacite porphyry occur in coarser-grained samples, indicating that they were deposited during higher energy geologic events such as floods. These lithic fragments may represent alluvial contributions from nearby igneous deposits of the Mount Taylor volcanic field.

Uranium was detected via QEMSCAN in a sample from the western side of the channel

Uranium was detected in association with thorium in an inclusion in quartz (Figure 16) and in association with xenotime, a yttrium phosphate. Other uranium-bearing minerals (monazite and zircon) were seen throughout the sample, though uranium in these minerals was too low to detect via QEMSCAN-energy dispersive spectroscopy (EDS). Monazite, zircon, and xenotime are essentially insoluble under environmental conditions, and only monazite is partially soluble via common USEPA solids digestion Method 3050B that liberates “environmentally available” elements (USEPA 1996). Uranium was present in these recalcitrant mineral phases at high enough concentrations to detect by QEMSCAN-EDS.

3.2.3 Constituent Distribution in Minerals

A constituent’s leachability is directly related to its distribution between and association with different minerals. SSEs sequentially dissolve more recalcitrant minerals and measure constituent concentrations within those mineral fractions. This program used an SSE based on Tessier, Campbell, and Bisson (1979) with modification, including addition of a deionized water extraction step (Step 1) and replacing the exchangeable fraction with an extraction step targeted at evaluating constituents easily displaced by bicarbonate/carbonate (termed the “adsorbed” fraction; Step 2). Table 7 shows the chemistry employed in each extraction step, which include water soluble, adsorbed, carbonate bound, oxide bound, organic/sulfide bound, and recalcitrant (highly crystalline oxides and silicates).

3.2.3.1 Selective Sequential Extraction

The SSE results (Table 8; Figures 17 through 22) provide a detailed understanding of the chemical forms and mineralogical association of each element in the alluvial sediments; these include the following fractions:

1. *Water soluble*. Soluble in deionized water.
2. *Adsorbed*. Displaced by/soluble in carbonate (0.01/0.003 molar sodium bicarbonate/carbonate).
3. *Carbonate bound*. Associated with carbonate minerals (dilute [1 molar] acetic acid).
4. *Oxide bound*. Associated with iron oxyhydroxide minerals (acidic hydroxylamine hydrochloride).
5. *Organic/sulfide bound*. Associated with organic or sulfide (e.g., iron sulfide) mineral phases (dilute nitric acid/hydrogen peroxide/ammonium acetate).
6. *Residual*. Associated with recalcitrant minerals/silicates (concentrated nitric/hydrofluoric acid).

The concentration of each element is determined in each fraction through sequential steps in the extraction process, with each step employing an extraction fluid with a chemical makeup that targets a specific fraction. Steps 1 through 5 extract the more “labile” forms of the elements, those that are more likely to mobilize into groundwater out of a solid phase in response to the nature of the groundwater geochemical conditions. These phases are generally released in the total metals digestion and analysis (results discussed above) performed using USEPA Method 3050B, which deploys a concentrated nitric acid and hydrogen peroxide extraction fluid. However, the SSE results provide a closer look at the mineralogical/chemical association of each element in this labile pool. The last step (Step 6) is not released in the total metals analysis and represents elements locked in silicate minerals that require a very strong acid to dissolve (Step 6 includes the use of hydrofluoric acid in the acid digestion procedure to dissolve all residual material remaining after Steps 1 through 5).

The sum of Steps 1 through 6 is therefore higher than the total metals analysis (see Table 9 for this comparison of the data). The total metals analysis results are generally greater than the sum of Steps 1 through 5, likely due to some dissolution of moderately crystalline minerals in the concentrated acid used in the digestion (none of the SSE extractants in Steps 1 through 5 are as aggressive as the USEPA Method 3050B digestion). For example, iron minerals such as hematite and magnetite may dissolve in the 3050B digestion but are likely to not completely dissolve in SSE Step 4 (oxide bound). Therefore, SSE Steps 1 through 5 unlock the more highly labile forms of the elements present in soil, and the USEPA Method 3050B digestion is appropriate for determining highly labile and moderately/less labile forms (such as hematite, which would be more readily dissolved under a strongly reducing environment). The elements released in Step 6 are not completely inaccessible to groundwater, but their rate of dissolution is lower and stronger chemical weathering conditions are required for them to become accessible to the groundwater system.

Finally, it is important to note that there can be overlap in terms of elements not fully extracted in a prior step reporting to the subsequent step. The elemental associations that are established are termed “operationally defined” in that they depend upon the chemical composition of the extractant to determine their chemical/mineralogical association.

SSE results are presented for calcium, iron, molybdenum, selenium, uranium, and vanadium in Table 8 and as direct concentration bar plots for all fractions on Figures 17, 18, and 19 and as relative percentages in each of the soluble fractions (Steps 1 through 5) on Figures 20, 21, and 22. Due to the need for significant dilution (1-5,000x and higher) of the Step 6 (residual fraction) extract before introduction into the ICP-MS, the reporting limits associated with the analysis of this fraction were elevated (i.e., as high as 200 mg/kg for iron). Notable observations related to these results are provided below:

- Calcium dissolved preferentially into the carbonate bound fraction in all samples, indicating that it is present most likely as calcium carbonate (calcite) mineral phases in sediments; the highest concentration of calcium carbonate (greater than 5 wt.%) was noted in BK1 in the sand/gravel at 51 to 52 feet bgs. Other boreholes (BK2 and BK3) showed lower concentrations of calcium carbonate. BK3 generally contained greater amounts of calcium in the oxide bound, sulfide bound, and residual fractions, indicating a difference in mineralogy and mineral solubility in BK3. Calcium concentrations in groundwater are higher on the west side of the upgradient alluvial channel as compared to the central and east side, and carbonate minerals on the west side may serve as a source of calcium to groundwater here.
- Iron predominantly dissolved into the residual fraction, followed by the oxide bound fraction. The concentration of soluble iron was greatest in sediment from BK1 versus the other boreholes. This indicates a greater proportion of weathered iron sulfide minerals than at boreholes further east. Oxidized iron sulfides were seen via petrography at BK1 and at boreholes DD-BK and DD2-BK, where iron oxyhydroxides were observed as pyrite pseudomorphs in the petrographic and scanning electron microscopy analysis. A majority of the iron was recovered in the residual phase, pointing to crystalline forms of iron oxides, iron in silicate minerals or clay mineral structure, and possibly pyrite forms that were not released in the organic/sulfide bound fraction.
- Molybdenum was not detected in the total metals analysis (at greater than 1 mg/kg) except for BK1 (39 to 40 feet bgs and 51 to 52 feet bgs) and BK3 (31.5 to 32.5 feet bgs). At BK2, all of the SSE results showed less than 1 mg/kg molybdenum, and at BK3, the molybdenum concentration in the SSE results at 31.5 to 32.5 feet bgs was nearly identical to that of the total metals analysis. Molybdenum, when it was detected, is predominantly associated with the oxide bound and organic/sulfide bound fractions, consistent with molybdenum present sorbed to iron oxyhydroxides or as molybdenum sulfide mineral phases. In all cases, the low concentration of leachable molybdenum is consistent with low concentrations observed in groundwater at BK1c, BK1f, BK2c, and BK2f (see Section 3.2.4).
- Similar to molybdenum, the total metals results for selenium were all nondetect (at less than 1 or 3 mg/kg); the SSE results concurs with these data. Selenium was detected in the SSE at BK1, BK2, and BK3, predominantly in the water soluble fraction of BK1 and BK2. This is likely attributable to selenium in porewater given that the groundwater selenium concentration is greater than 0.2 mg/L at these locations. Selenium was present in the water soluble fraction typically at an order of magnitude higher concentration than uranium (e.g., at BK1-51-52 (fine to coarse sand and gravel with trace silt) the water soluble selenium was 0.0548 mg/L and uranium was 0.0064 mg/L). The remaining selenium was detected at low concentrations in the oxide bound and organic/sulfide bound fractions, with the organic/sulfide bound fraction harboring most

of the selenium (Figures 20-22). Selenium may be present sorbed to iron oxyhydroxides and in association with pyrite; however, based upon the low concentrations of more labile selenium (in the adsorbed, carbonate bound, and oxide bound fractions), it is likely not entirely sourced to groundwater from the sediments.

- The SSE results for uranium demonstrate the ubiquity of soluble uranium in sediments recovered from all locations across the alluvial channel; whereas the total metals results for uranium were frequently nondetect, the SSE results showed labile uranium at all locations. Labile forms of uranium were predominantly detected in the carbonate bound, oxide bound, and organic/sulfide bound fraction at BK1; water soluble uranium was present at very low concentrations, eliminating porewater as the source of uranium in these sediment samples. The total metals analysis and cumulative uranium in Steps 1 through 5 of the SSE roughly concur at BK1 51 to 52 and 52 to 53 feet bgs: 2 mg/kg uranium was detected in the total metals analysis and approximately 0.75 to 1.1 mg/kg was measured in the labile fractions of the SSE results. Uranium was detected at higher concentrations in the SSE at multiple depth intervals at BK1 compared to BK2 and BK3. It is important to note that uranium was detected in groundwater at BK1 at higher concentrations than at BK2.
- The uranium detected in the most labile fractions (carbonate bound, carbonate associated, oxides, and organic/sulfide) represents a significant potential source of uranium to groundwater from these sediments. Uranium may be mobilized from the sediments through interaction with bicarbonate/carbonate in groundwater, and through oxidation by dissolved oxygen and nitrate; as discussed further in this report, the groundwater chemistry on the west side of the upgradient alluvial system has characteristics that promote uranium dissolution versus the middle and east side of the system. A comparison of the lithology with uranium released through the SSE procedure reveals a few important observations:
    - At BK1 (51-52 ft), BK2 (63.5-65 ft) and at BK3 (50.5-52 ft), coarse grained materials are present. All of these sediments contain a significant amount of carbonate bound calcium along with uranium in this fraction – this likely represents calcite minerals deposited in sands that have incorporated uranium.
    - At BK1 at 47-48 ft, 52-53 ft, and 55.5-56.5, clays are present that harbor a higher concentration organic/sulfide bound iron than in the other lithologies here; uranium is also more strongly associated with this fraction in the clays as compared to the coarser sediments demonstrating that the fine-grained lithologies contain a greater proportion of the iron sulfide minerals. In addition, at BK1, the absolute concentration of iron in the oxide fractions is higher at this location than at the other boreholes, showing the degree of iron oxidation here may be higher than at other locations.
- In 2018, the dissolution of uranium from sediments recovered from boreholes DD-BK and DD2-BK was evaluated using the same bicarbonate/carbonate leach solution as employed in SSE Step 2. The procedure used in 2018 involved use of the leach solution in a synthetic precipitation leaching procedure (USEPA Method 1312) extraction (18-hour extraction). This procedure therefore used a longer extraction time compared to the 1-hour extraction in deionized water (Step 1) and 1-hour extraction in the bicarbonate/carbonate leach solution (Step 2) for a total of 2 hours of extraction. Given the dilute nature of the leach solution, it is likely that the dissolution

effect on uranium associated with the sediments is rapid and slow leaching over the 18 hours is minimal. With this caveat, a comparison of these data show that uranium was leached to a greater extent from sediments recovered from DD-BK and DD2-BK (Figure 23) compared to BK1, BK2, and BK3. This is consistent with the concentration of uranium measured in groundwater at the four groundwater well locations associated with these boreholes (highest uranium at DD2-BK, and progressively lower concentrations across the alluvial channel from west to east).

- Vanadium is not generally soluble in the groundwater system at the project; this is confirmed by the relatively low concentration of labile vanadium in sediment. The majority of vanadium resides in the residual fraction and is bound in highly crystalline mineral phases, like silicates. Good correlation was shown for vanadium with uranium. Where vanadium was detected at high concentrations in the residual phase, uranium was too (this correlation was strongest at BK1 and BK2). Vanadium was also detected in the oxide fraction, as was uranium; this could indicate weathering of uranium-vanadium minerals toward more soluble forms.

3.2.4 Groundwater Assessment

New groundwater wells were installed with a short screened interval (5 feet) to target specific lithologies and examine the lithological and mineralogical effects on groundwater geochemistry. Using a short screened interval and paired wells also allows us to examine groundwater chemistry heterogeneity within the aquifer on small spatial scales. The variations in water chemistry of wells installed less than 50 feet apart across the project highlights that the natural variations in lithology and mineralogy can have a profound effect on groundwater geochemistry.

Groundwater samples were collected via low-flow sampling methods using a bladder pump and ensuring that water level in the well did not decrease appreciably during purging or sampling. This is the best method for ensuring laminar groundwater flow within the well to maximize the probability that the pump is sampling water from the lithological units directly next to the pump intake. This method also minimizes pulling of groundwater through higher transmissivity units at rates that are greater than lower transmissivity units, resulting in a groundwater sample that is representative of water flowing under ambient conditions through the well. Wells were purged until field parameters such as pH, conductivity, dissolved oxygen, and ORP stabilized, at which point, samples were collected, field parameters were recorded, and turbidity and ferrous iron measurements were conducted in the field. Groundwater samples were collected on June 10, 2019 and were submitted for analysis of unfiltered (total) and field-filtered (dissolved, less than 0.45 micrometer filter) metals, major cations and anions, uranium isotopes, stable sulfur and oxygen isotopes, and other inorganic parameters such as alkalinity, nitrogen species, and total and dissolved organic carbon. A new bladder and tubing were used at each well and quality control samples such as a field duplicate were collected and submitted for analysis.

Groundwater data are shown in Tables 10 and 11. Groundwater samples from BK1 wells displayed a pH of 7.8, specific conductivity of 2,772 to 2,815 microSiemens per centimeter (µS/cm), and temperature of approximately 13.5 degrees Celsius. High ORP (greater than 130 millivolts [mV]), dissolved oxygen at 2 to 3.5 mg/L, and low ferrous iron concentrations (0.02 to 0.06 mg/L) reflect an oxic groundwater system. The concentration of bicarbonate ion (approximately 300 mg/L), dissolved organic carbon (1.9 mg/L), nitrate (approximately 11 mg/L), and sulfate (approximately 1,400 mg/L) also point to an oxic, relatively

aggressive groundwater system that promotes oxidation and dissolution of uranium (and sulfides) residing in mineral forms.

Samples from BK2 wells displayed a pH of 8.1, specific conductivity of 1,906 to 2,276 µS/cm, and temperature of approximately 14.1 degrees Celsius. Moderate ORP (102 to 115 mV), low dissolved oxygen at 0.48 to 0.72 mg/L, and the presence of ferrous iron (0.19 to 0.48 mg/L) reflect a slightly reducing groundwater system. The lower concentration of bicarbonate ion (189 to 233 mg/L), dissolved organic carbon (1.4 mg/L), nitrate (1.38 mg/L at BK2f), and sulfate (878 mg/L at BK2f) lend further evidence to a more anoxic/anaerobic environment here.

Stiff diagrams were prepared comparing the BK1c, BK1f, BK2c, and BK2f results to data collected from wells DD, P3, and ND during the 2016 USGS split-sampling event (Figure 24). Results show a gradual change in water chemistry across the alluvial channel with groundwater in the west dominated by a calcium sulfate signature and water in the east dominated by a sodium sulfate signature. Samples from wells BK1c, BK1f, BK2c, and BK2f fall in line with major ion chemistry at wells DD and P3, indicating that water chemistry changes across the basin are due to mixing of alluvial water in the main channel with input from the Lobo Creek drainage system in the east.

3.2.4.1 Comparison of BK1 to BK2

Geochemical parameters at BK1 reflected more oxic, and higher conductivity groundwater than groundwater at BK2. Notable characteristics of the groundwater geochemistry are as follows:

- Calcium and magnesium concentrations are higher at BK1, along with bicarbonate ion, while potassium and sodium concentrations are similar between the two wells; the divalent cations are therefore more soluble (and likely sourced in part from local calcite, gypsum, and magnesite minerals) and available for the formation of highly soluble forms of uranium such as $CaUO_2(CO_3)_3^{2-}$ (Dong and Brooks 2006). This follows the channel-wide trend that shows the highest alkalinity, calcium, and uranium on the western side, decreasing with distance eastward across the channel (Figure 25). Although bicarbonate increases in the east at well ND, calcium remains low, possibly preventing the formation of calcium-uranium-carbonate complexes, contributing to low uranium in groundwater.
- Chemical speciation of the form of uranium is included on Figure 25 to show the forms of soluble uranium that predominate across the alluvial valley. Speciation was performed using the USGS software PHREEQCi (version 3.4; Parkhurst and Appelo 1999) and the Minteq.v4 (Peterson et al., 1987) database, updated with thermodynamic constants for uranyl alkaline earth complexes (Dong and Brooks 2006, 2008). The major and trace element composition of groundwater at the four wells shown was obtained from the project's 2018 Annual Monitoring Report (Homestake and Hydro-Engineering 2019). The results of the speciation calculations show that the elevated concentration of calcium in groundwater on the western side of the alluvial channel results in the predominance of the $Ca_2UO_2(CO_3)_3$ aqueous uranium complex here; this is an uncharged species that is highly soluble in groundwater systems and resistant to biogeochemical reduction (Belli et al. 2015). This species is dominant at wells DD5, DD and P. At ND, the charged species, $CaUO_2(CO_3)_3^{-2}$ becomes dominant; this uranium complex is charged and more readily interacts with charged mineral surfaces, resulting in more attenuation/sorption of uranium in groundwater on the eastern side of the alluvial valley. These results highlight the importance of calcium in the

groundwater system and the wide range of concentrations of this element from west to east, and its role in uranium mobility.

- Uranium concentrations are higher at BK1, due to the more oxidizing nature of the groundwater (higher dissolved oxygen and oxidation-reduction potential or ORP) along with the greater abundance of strong complexants for uranium (e.g., calcium, bicarbonate) and higher total dissolved solids (TDS) as indicated by higher groundwater conductivity (Figure 26). The uranium concentrations are higher farther to the west at DD and DD2, and decline across the channel to the east, consistent with a gradual decrease in calcium and bicarbonate noted in groundwater to the east of these wells, and with local sediment mineralogy with less uranium (as discussed above). Although bicarbonate concentrations increase again on the east side of the channel at well ND, uranium concentrations remain low, likely due to lack of calcium, lower dissolved oxygen, ORP, and TDS, and a lower abundance of uranium-bearing minerals to source uranium to the groundwater.
- The concentration of selenium is lower at BK1, consistent with lower concentrations of selenium noted at wells west of the P-wells.

3.2.4.2 Comparison of Data from Wells in Fine- and Coarse-Grained Sediments

In general, uranium levels at BK1 are lower than previously seen on the western side of the alluvial channel at wells DD and DD2. At BK1, uranium is higher in the well screened in the fine-grained sediments than the well screened in coarse-grained sediments. At BK2, uranium is higher in the well screened in the coarse-grained sediments than the well screened in fine-grained sediments. The following features explain these differences:

- BK1f is screened in the fine-grained sediments, and the groundwater system here overall is oxidizing and complexing (relative to uranium). Uranium in the well screened in the fines had a slightly higher dissolved uranium concentration (0.0402 mg/L) versus the dissolved concentration in the well screened in the coarse lithology (0.0353 mg/L).This variation may be due to uranium sourced from the fines and the slightly more oxic, reactive water (0.3 mg/L nitrite) here promoting uranium dissolution.
- There is little local source of selenium (see the total metal and SSE results, above); therefore, the relatively high concentration of selenium is likely due to selenium sourced into groundwater from upgradient; the dissolved concentration of selenium was also slightly higher in the fines (0.251 mg/L versus the dissolved concentration of the well screened in the coarse lithology (0.245 mg/L). Soluble selenium at this well shows that the fine-grained materials here have lost their reducing power compared to at BK2f.
- BK2f shows a strong reducing environment based upon nitrate (1.36 mg/L) and dissolved selenium (0.039 mg/L) at lower concentrations than BK2c (10.8 mg/L nitrate, and 0.318 mg/L dissolved selenium). Selenium, likely present as selenate ($HSeO_3^-$), readily transitions to elemental selenium, and precipitates from groundwater in this reducing environment. Selenate reduction occurs at a higher redox potential than for uranium (Langmuir 1997). The reducing environment also affects uranium concentrations, although to a lesser extent (dissolved uranium was detected at 0.0155 mg/L versus 0.0212 mg/L in the coarse screened interval). This

demonstrates the magnitude of changes in uranium concentration that can arise from variations in local groundwater chemistry/geochemistry, and also points to preservation of the reducing power of minerals in the fines at this location in the alluvial channel. A comparison of BK2f to nearby wells P2 (just west of BK2) and P4 (just east of BK2) shows that the aquifer near the center of the alluvial valley is more oxidizing (P2) and transitions to more reducing (P4) to the east (see Figure 1 for locations). At P4, chloride was measured at 47 mg/L, sulfate at 924 mg/L, and nitrate at 6.7 mg/L in March 2018 (Homestake and Hydro-Engineering 2019). These concentrations are more consistent with BK2f as compared to BK2c, and they are lower than measured at P2 (chloride at 67 mg/L, sulfate at 1390 mg/L, and nitrate at 13.5 mg/L; Homestake and Hydro-Engineering 2019). Well P4 has a long screen (50 ft) as does P2. At BK2, the variation in water quality and redox conditions noted between the two short screened wells indicates that these wells interrogate groundwater that resides in a transition zone of oxic waters to the west and suboxic waters to the east.

- Dissolved selenium at BK2, and noted in BK2c at 0.318 mg/L, is likely not entirely sourced from sediments (based upon the SSE results) and likely has a contribution from local upgradient groundwater. This may represent selenium from upgradient water flowing through the principle coarse-grained sediments with some geochemical reduction/precipitation along this flow path (as observed at BK2f) until the reducing capacity of the sediments becomes exhausted.
- The concentration of molybdenum at BK1c and BK1f was greater in the unfiltered (total) fraction than in the filtered (dissolved) fraction, indicating that the molybdenum is primarily present as a particulate phase. The dissolved molybdenum was 0.004 mg/L at BK1c and 0.001 at BK2c; these are low concentrations and consistent with other established wells in the area. At BK2c and BK2f, the concentration of molybdenum in the total and dissolved fraction was nearly identical and elevated at 0.008 and 0.006 mg/L, respectively.

3.3 Geophysical Assessment

3.3.1 Electrical Resistivity Tomography Assessment

ERT sections are graphical portrayals of estimated electrical resistivity produced from the inversion modeling of raw apparent resistivity data collected in the field. Apparent resistivity is the measured electrical resistivity between two points as if the earth were homogeneous. The goal of the modeling is to estimate a model of the earth in terms of the actual electrical resistivity structure of the earth. Ideally, the ERT process would reveal geologic conditions similar to a cross-section based on visual descriptions. However, in practice, because ERT data is collected from the ground surface, the ability to resolve specific geologic details decreases with the depth of penetration. However, ERT is useful for providing broad context, particularly in distinguishing contrasting geologic units with dramatically differing geoelectric parameters. Notably, ERT can often accurately portray the transition from unsaturated to saturated conditions and the boundary between unconsolidated materials and bedrock. The degree of success in segregating different geologic materials relates to the sharpness and magnitude of the electrical resistivity contrast. As a rule of thumb, the following relationships tend to hold true:

- Dry materials are more resistive than their saturated counterparts.

- Coarse granular materials are more resistive than fine-grained cohesive materials.
- Well-sorted, uniform sands are less resistive than poorly sorted, well-graded sands.
- Sandstones are more resistive than siltstones and shales.
- Saturated clays and shales are the least resistive geologic materials.
- TDS in groundwater is inversely proportional to formation resistivity.

In the vast majority of situations, electrical current associated with ERT measurements flows in the pore spaces rather than the mineral grains and lithic fragments (matrix). Most silicates are electrical insulators, and in contrast to pores filled with conductive groundwater, do not participate in current flow at all. One exception is that some phyllosilicates have a large net surface area and negative electrical surface charge that attracts dissolved cations and anions forming what is called a double layer. This is why some clays appear to be electrically conductive. Aside from clays, only in rare circumstances does the matrix contribute to current flow; examples include some types of sulfide ores and graphitic slates.

After water saturation and water chemistry (i.e., TDS), interconnected porosity is the key parameter that controls electrical resistivity. In unconsolidated materials and sedimentary rocks, this is the primary, intergranular porosity. In massive rock with little or no intergranular porosity, the presence of fracture porosity governs current flow, and subsequently electrical resistivity.

The most important thing to consider when viewing and interpreting electrical resistivity inversion models such as those presented in this report is that several variables go into the net electrical resistivity response. It is unlikely that geological boundaries follow specific electrical resistivity values because there is a great deal of nonuniqueness in any geologic setting. Consequently, the inclusion of ground-truthing is essential to create a reasonable interpretation. For Lines 1 and 2, several boring and well logs were incorporated into the interpretations. Borehole geophysical results, as described in Section 3.3.2, were also instrumental in interpreting the ERT sections, especially in recognition of the contrast between the details available in borehole measurements of electrical conductivity compared to modeled resistivity values. All interpretations are based on a limited amount of information, which is of variable quality and new information may change the interpretations. Factors contributing to the modeling and interpretation of the ERT sections are included in Appendix C and are summarized below:

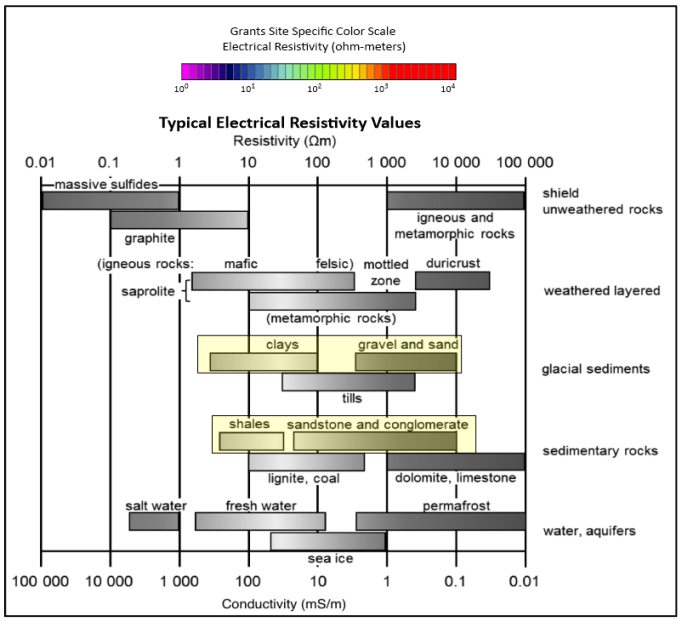
- ERT data processing steps supported by visual graphics
    - Inversion Modeling
        - Step by step explanation of how the raw resistivity and global positioning service (GPS) data were handled in Res2dinvx64, which is the industry standard electrical resistivity inversion modeling software. Assumptions and processing parameters are provided along with an explanation of the quality control procedures.
    - Post-Modeling Data Processing and Graphical Presentation
        - Modeling results were imported into Surfer Version 16 for ERT image visualization. Locations and details of borings and wells were integrated into the ERT images to enable visual correlations. In addition, the ERT data were cleaned up with a low pass filter which greatly improved the ERT image of the geologic setting.

- Correlations between ERT models and borehole data
    - The correlation of the macroscale ERT data with the micro and nanoscale was performed, aided by comparison of the mesoscale borehole geophysics and visual description of core samples. Marriage of the various scales of data in concise plots centered at well or boring locations has provided a general sense of the degree of confidence for interpreting ERT data and provides a basis for appropriate data interpretation.
- Process of interpreting and correlating ERT data between boreholes
    - The process of interpreting the ERT data was done by inclusion of well or boring scale data. There are a limited number of borings and wells were available on or near the ERT lines. However, by creating a digital bedrock elevation model in Surfer, a continuous profile of the top of bedrock was extracted from the grid file. Added to the ERT cross-sections, refinement of the top of bedrock to conform to resistivity patterns was performed in an iterative process.
    - Refinement of the bedrock elevation map was completed using the geologic and geophysical data as controls combined with interpreter's judgment based on significant experience in mapping geologic structures.

3.3.1.1 The final outcome of the interpretation of the ERT data has produced a reasonable and appropriate model of the geologic setting that is consistent with industry standard approaches.Electrical Resistivity Tomography Lines 1 and 2

Figures 2 and 3, ERT Lines 1 and 2, are vertical cross-sectional portrayals of modelled electrical resistivity roughly from the ground surface (between 6,575 and 6,600 feet above mean sea level [amsl]) to an elevation of 6,200 feet amsl. There is a diagonal taper at each end of the cross sections that is related to the nature of the data collection process (longer electrode spacings are required to penetrate to greater depths). As a rule, the sides and bottoms of ERT models have the lowest confidence of the model. The greatest detail and confidence are in the section immediately below the ground surface, and confidence and ability to resolve details declines with depth. Note also there is a 10:1 vertical exaggeration in scale to more concisely present the information.

Within the bounds of each section is the presentation of a color-filled contour plot of the modelled electrical resistivity. There is a color key at the bottom of each figure. The resistivity values range over nearly 4 orders of magnitude from 1 ohm-meter to 10,000 ohm-meters. The scale is base-10 logarithmic because it is well known that resistivity values in nature vary accordingly. Below is an approximate site-specific comparison of lithologies and resistivity responses based on documented ranges.



Each section contains the following elements added after completion of the modelling process:

- Ground surface based on available elevation data.
- Approximate top of the groundwater potentiometric surface based on well gauging within the last year.
- Top of the bedrock based on boring and well data, and interpolation using the trends in the electrical resistivity model between locations.
- Boring and well construction positions based on documentation.
- Locations of well-documented faults (west and east faults) adjusted as needed to conform with interpreted conditions in the Chinle Formation visible on the sections.
- Possible undocumented faults based mainly on appearance of the ERT models.
- Interpretation of Chinle Formation lithologies ground-truthed to available wells where descriptive or geophysical logs were available.

In general, the geologic details revealed by the ERT results within the Chinle Formation are not explicitly relevant to the objectives of this specific investigation. However, it is important to understand the relationships between the alluvium and the various lithologies of the Chinle Formation and the nature of the erosional surfaces and the role they played in the creation of the valley that we see today. The ERT results have greatly enhanced the understanding of the geology in the background area by providing nearly three miles of continuous information, bolstered by excellent descriptive data about the alluvium, the alluvium/bedrock interface, and the Chinle Formation.

Referring to the alluvium on both sections, the electrical resistivity values in the central portion of the alluvium appear to reach a peak in the 1000s of ohm-meters near the far west end of each line and then systematically decline to the east down into the 100s of ohm-meters. There are even portions of the

alluvium that appear to be less than 100 ohm- meters, although these anomalies are noted on the sections as possible out-of-plane responses from shale bedrock.[2] The uppermost portion of the alluvium has a relatively uniform appearance (green to yellow) in the 100 to 1000 ohm-meter range. In general, this material appears to be a mixture of silt, silty sand, and sandy silt. Beneath this upper layer, nearly everywhere the resistivity increases to a peak value at or near the water table, then declines down to the bedrock. The details of the alluvium are not expressed explicitly in the resistivity model per se. However, the clear transition from west to east does warrant interpretation. Based on the distribution of sediment textures noted above, the least amount of silt and clay is found in the central-west part of the basin with a minimum of 20 to 24 percent fines at BK2 with more than double that amount at BK3 with 55 percent.

From this standpoint, as the colors suggest on both sections, there is an asymmetrical distribution of fine-grained sediments with greater amounts of fines to the far east than far west. Noting the faulted characteristics of the Chinle Formation, it appears that a half-graben-type structure is present beneath the alluvial basin. An estimated 200 to 300 feet of down drop on the west fault, and a series of smaller antithetic faults each with less than 100 feet of throw appear to make up the half graben. The high side of the west fault appears to place the Middle Chinle Formation sandstone below the bedrock surface. In fact, on Line 1, BK4 was drilled into a prominent high spot on the Chinle Formation. This physically resistant sandstone unit appears to be related to an elongated, northwest-southeast-oriented rise starting in Section 15 to the northwest of the study area. Geologic mapping indicates this rise is the Chinle Formation. On the down-dropped side of the west fault there appears to be a drop off from sandstone to shale. The thickest portion of the alluvial valley falls within this low-side-of-fault area. After the valley low, the bedrock, which appears to be mainly shale, rises from west to east.

Although electrical resistivity cannot be directly correlated with hydraulic conductivity, it is fair to generalize that the most resistive materials, as a whole, are most likely to contain a higher percentage of hydraulically conductive materials. Therefore, broadly speaking, the zone between 0 and 4,500 feet on Line 1 and the zone between 0 and 4,750 feet on Line 2 both represent the most likely zone of greatest transmissivity. Note that in this observation, the portions of the alluvium that appear to be unsaturated are not included. On Line 1, it appears the bedrock intersects the water table near BK4. As noted, there is sandstone from 35 to 53.5 feet in BK4, and because there is evidence that the sandstone is permeable, groundwater is expected to span this bedrock high without interruption.

3.3.2 Borehole Geophysical Assessment

Arcadis performed a significant amount of borehole geophysical logging data processing for this investigation. The following locations were logged and/or processed (see Appendix D for the complete list of the borehole geophysical data):

- New locations (logged and processed): BK1c, BK2c, BK3 and BK4
- 2018 locations (reprocessed): DD-BK and DD2-BK
- Existing wells (fully logged and processed): 0914, 0921, 0922, N-16, R, P2, P4, W, and L

[2] The ERT line appears to have been oriented along a valley incised into the Chinle bedrock. ERT electric current flows more easily in low-resistivity materials (e.g., shale). Because of this and the oblique (steep) orientation of the shale, the current prefers to travel along the shale outside of the vertical plane of data collection. Therefore, the ERT data in this area likely represent the resistivity of materials near, but not directly beneath the electrodes.

- Existing wells (spectral gamma ray logged and processed, in unsaturated): Q, DD, DD2, MV, and ND.

The six new and 2018 locations were processed to include in the final log:

- Natural gamma
- Induction conductivity
- Static spectral gamma ray (SSGR) at select locations:
    - Total potassium (in percent)
    - Total uranium (in parts per million).
- Dynamic spectral gamma ray throughout boring (155-point window):
    - Th/K ratio
    - Th/U ratio
    - Element to total gamma ratio
    - KUT BCC color plots.

In addition to the individual logs, DD-BK, BK1c, BK2c, and BK3 were laid out in a cross-sectional fashion and annotated interpretations of the Chinle Formation bedrock and identifiable correlative strata were marked in the alluvium provisionally (see Figure 4). The provisional correlations were made using the color cube plots, Th/K and Th/U ratios primarily because these items are most closely related to origin of materials rather than grain size or sorting. It is difficult to carry many of the correlations from west to east due to the differences recorded in the data on the east side, mirroring the observations that sediments in the eastern portion of the basin may be transported by Lobo Creek, whereas the sediments to the west are more likely sourced from the north from San Mateo Creek. One of the most conspicuous features supporting this statement relates to the Th/U ratio. Note the significantly higher number of Th/U peaks in BK3 compared to the other three locations (numerous peaks greater than a ratio of 40 between 23 and 60 feet in BK3 versus fewer peaks in the Th/U ratio range of 0 to 20 in the other borings). It is possible that the high Th/U values can indicate leaching of uranium under highly oxidizing conditions, but this is inconsistent with the geochemical conditions at BK3 where, if anything it is more reducing than the western wells. For this reason, it is suggestive that the sediment in the BK3 area has a different source than the western locations.

The remaining existing wells were logged primarily to obtain the SSGR data for determination of potassium, uranium, and thorium. Table 4 contains the compilation of the SSGR results for:

- The 2016 USGS results
- The 2018 results from the 2018 background study
- New results noted above in new locations and existing wells.

To facilitate review of the SSGR results, a map-view image of two of the key parameters were made into mirror plots for Th/K and uranium (Figure 5). That is, the vertical changes in uranium (green, increasing to the right) and Th/K (magenta, increasing to the left). At a glance, a notable feature of these Th/K-U plots is the persistently high Th/K ratio in the lower portion of the plots in locations mainly west of San Mateo Creek. In most cases this spike in Th/K ratio is coincident with the upper Chinle Formation or lowermost

alluvium. As noted above, the ERT results suggest there is a resistant Chinle Formation sandstone feature associated with the west fault, persisting to the northwest of the project along a topographic rise. The conventional interpretation is that Th/K ratios in excess of 17 could indicate the presence of paleosols (Hampson et al. 2005). It is possible that some of the higher Th/K material in the lower portion of the alluvium in locations such as DD-BK, DD2-BK, BK1c, Q, BK4, and 0922 may be locally reworked, weathered Chinle Formation that has undergone subaerial weathering. Leaching of potassium and uranium in the oxidized portion of the soil column with reprecipitation at the reducing point was possible at the time of paleosol formation. Higher than normal uranium values are observable in the Chinle Formation shale immediately beneath the alluvium such as at DD-BK and BK4. In contrast, note the generally more subdued Th/K response on the eastern side (e.g., ND, L, BK3, R, 0921). This includes readings in or near the Chinle Formation and suggests that no subaerial exposure was present, or that portion of the bedrock has been eroded away.

3.4 Conceptual Site Model for Uranium Transport

The data from this work supports the geological CSM for the alluvial system developed based on data from the 2018 investigation of boreholes DD-BK and DD2-BK. The alluvial system at the project consists of rapidly alternating lithology, layers of materials deposited by channelized flow with low energy fringes, and flood events resulting in high and low permeability materials. Generally, the center of the channel contains higher permeability materials and the edges of the channel consist of lower permeability materials. Bedrock contact with Chinle Formation shale is characterized by a weathering profile over several feet from highly weathered wet bedrock to competent dry rock. Based on this and literature on the surrounding regional geology, a CSM was developed for the natural weathering, transport, and deposition of uranium-rich materials and subsequent localized leaching into groundwater. The stages of uranium migration are as follows:

1. Weathering of sedimentary materials from surrounding mountains occurs, some with formations/beds with higher uranium concentrations and some with formations/beds with lower uranium concentrations. For example, the Recapture Member of the Morrison Formation ranges from trace to as much as 1 percent uranium ore, depending on location (McLemore 2010).
2. Sediment transport occurs throughout geologic time (at least hundreds [Leopold and Snyder 1951] and probably thousands of years) down the valley and deposition as distinct layers, with different amounts of clay/silt/sand/gravel and differing amounts of uranium-containing materials. The fine-grained materials are typically more uranium-rich. These materials can be transported further from their source than coarse-grained materials because they stay suspended longer in slowly moving water.
3. Uranium leaches from silt- and clay-rich deposits within the alluvial sequence to groundwater. The leached concentrations depend on:
    a. Chemistry of the groundwater (alkaline water facilitates uranium leaching) or percolating meteoric water
    b. Uranium content in the source material/deposited sediments; these conditions vary across the alluvial channel.

4. Groundwater samples with higher levels of uranium are typically collected from wells screened in silts and clays on a local scale, and where an oxidizing groundwater system persist.
5. Groundwater containing uranium leached from alluvial minerals mixes with groundwater from areas with low mineral-bound uranium and low leached uranium. Due to dispersion and diffusion, blending of high and low uranium waters occurs on a regional scale through time.

4 CONCLUSIONS

Field activities for this investigation focused on assessing whether uranium concentrations in groundwater across the alluvial basin are naturally derived or from mining/milling or other localized anthropogenic inputs. This work provides a technical basis for the occurrence of uranium in groundwater at the far western edge of the alluvial basin at DD and DD2, at concentrations greater than observed near the center or eastern side of the alluvial channel. The findings of this work support the inclusion of all of the background wells in the statistical calculation of background groundwater standards in order to successfully represent the heterogeneous nature of the alluvial sediments and groundwater. Four new wells were installed on the western side and center of the alluvial channel to assess the impact of lithology and mineralogy on groundwater geochemistry. Work was conducted in accordance with the Work Plan (Arcadis 2019a) with the exception of minor deviations described previously; the objectives included therein were achieved. In summary, the following conclusions were reached:

- Sediment cores lithologically logged from boreholes BK1c/BK1f and BK2c/BK2f indicated that the alluvial sequence is an alternating sequence of clays, silts, silty-sands, sandy-silts, sands with various amounts of gravel, and occasional gravel (see Appendix G Photo Log). The sequence is more heterogeneous than previous drilling logs have interpreted. The bedrock contact with the shale indicates a weathering profile over several feet from highly weathered wet bedrock to competent dry rock.
- Discrete depth intervals with elevated radioactivity counts were indicated in alluvial sediments from both the saturated and unsaturated zones, from various lithological types of materials. This indicates the presence of sedimentary materials in the alluvium that contain radioactive constituents deposited differentially as part of the natural depositional sequence.
- A sandstone bedrock high has been identified in the southwestern portion of the alluvial basin, at borehole location BK4, which extends above the water table. There is evidence that the sandstone is permeable and acts as a groundwater conduit.
- Geophysical logging indicates that the alluvium is laterally highly variable even over short distances. The fine-grained materials were often found to correlate with elevated uranium from spectral gamma analysis.
- Geochemical analyses indicate that uranium and vanadium are generally associated with each other.
- The highest uranium encountered in the 2018-2019 investigations was in the unsaturated zone, indicating that uranium in alluvial soils is naturally occurring due to transport and deposition of naturally uranium-rich materials throughout geologic time, not from deposition from uranium-bearing groundwater.
- Mineralogical analyses suggest that the materials encountered at boreholes DD-BK, DD2-BK, BK1, and BK2 are associated with source rock that contains unaltered feldspars, claystones that include kaolin, and arkosic sandstones such as the Westwater Canyon and Brushy Basin Members of the Morrison Formation. Sporadic gravel content of igneous origin suggests that input of weathered igneous deposits occurred periodically.

- Cubic and framboidal pyrite that has been converted to iron oxides indicate that a redox change has occurred since deposition of the alluvial material. A system or microenvironment that was once reduced, supporting the formation and presence of pyrite, is now oxidized. Such a change can result in the release of uranium due to oxidation of low-solubility uranium (IV) to high-solubility/high-mobility uranium (VI). This mechanism is a likely source of leaching of uranium from solid alluvial materials to groundwater. Oxidized pyrite framboids were seen in samples from BK1, BK2, and BK3 and oxidized cubic pyrite was seen at BK1, however, only unaltered pyrite cubes were observed at BK2 and BK3, indicating that redox cycling of solid materials may be less common in the center of the alluvial channel than on the western and far western areas. This may contribute to low uranium concentrations in groundwater in the center of the alluvial channel than in the west.
- Oxidation of authigenic framboidal (biogenic) pyrite releases isotopically light sulfur in sulfate to groundwater, leading to highly depleted groundwater sulfur-34 signatures and concentrating sulfur-34 in sediments. Degradation of biogenic pyrite in situ is the source of the light sulfur isotope signature in the alluvial aquifer system.

A CSM was developed that defines the erosion and subsequent deposition of uranium-rich deposits from geological formations upgradient of the project as part of the formation of the alluvial system via natural processes. These materials were deposited in discrete lithological horizons that exist in both the saturated and unsaturated zones. The uranium-rich lithologies present in the saturated zone have the potential to cause naturally increased localized uranium concentrations. The uranium-rich lithologies present at depths of 11 to 36 feet bgs in the unsaturated zone show that the uranium in alluvial sediments was emplaced, not through precipitation from groundwater, but through natural erosion and deposition of uranium-bearing minerals from bedrock sources lining the basin throughout geologic time.

In summary, the work completed in 2018 demonstrated that the alluvial deposits on the western edge of the alluvial valley are complex in terms of lithological and mineralogical variation and contain uranium in the (current) unsaturated and saturated zones. Geochemical and mineralogical examination showed arkosic sandstone markers of eroded upstream materials likely transported through fluvial processes during channel filling along the bedrock surface. The focus in 2018 was on the western edge of the alluvial valley (at DD-BK and DD2-BK) where the concentration of uranium in groundwater is highest; uranium was shown to be leachable from sediments obtained from these boreholes in a bicarbonate solution. Weathered (oxidized) biogenic pyrite was also observed and a strong correlation of uranium with vanadium. Finally, the downhole geophysics results revealed additional radioactive minerals (thorium) and higher concentrations of uranium (detected through downhole spectral gamma analysis) than identified in the soil chemistry analysis, pointing to significant heterogeneity vertically through the boreholes.

Lateral heterogeneity was evaluated during work in 2019. The ERT transect revealed higher resistivity alluvial materials near the western edge of the valley, consistent with coarser-grained sediments that may conduct groundwater more effectively through this portion of the alluvium than to the east (near BK3 and ND). A profile of groundwater chemistry was completed with gradual changes in dissolved uranium from west to east consistent with changes in major ion and trace element chemistry that reflect a more aggressive chemical composition in the west relative to being favorable for uranium mobilization. The effects of this were observed in the sediment mineralogy, with more oxidized pyrite observed in the west,

versus more intact pyrite in the east (also supported by the stable sulfur isotope results of the sediments in the west). More detailed examination of leachable uranium showed all of the sediment samples could yield soluble uranium.

The heterogeneity across the alluvial channel, in terms of lithological variation, soil mineralogy, and groundwater quality provides a refined CSM for the occurrence of elevated concentrations of uranium detected in groundwater near wells DD and DD2. This is explained by sediments with higher concentrations of uranium in the west, in contact with groundwater with higher TDS, alkalinity, and calcium, and a larger expanse of coarse- to fine-grained contact. The variability and heterogeneity of the alluvial system is therefore captured by the current upgradient (background) well network situated across the basin and represents the range of natural uranium concentration variation in groundwater prior to the alluvial system moving onsite. The location of the monitoring points established to develop the site background groundwater standards is therefore appropriate, as is the numerical approach as it included all of the groundwater quality data at these monitoring points distributed across the alluvial valley.

5 REFERENCES

Arcadis. 2018. Background Borehole Development, Mineralogy, and Geophysics Assessment Report. Prepared for Homestake Mining Company. July.

Arcadis. 2019a. Work Plan: 2019 Background Investigation. Grants Reclamation Project. Prepared for Homestake Mining Company. May.

Arcadis. 2019b. Quality Assurance Project Plan: 2019 Background Investigation, Revision 1. Grants Reclamation Project. Prepared for Homestake Mining Company. May.

Belli, K., T. Dichristina, P. Van Cappellen, and M. Tailefert. 2015. Effects of uranyl speciation on the kinetics of microbial uranium reduction. *Geochimica et Cosmochimica Acta* 157(15): 109-124.

Blake, J.M., P. Harte, K. Becher. 2019. Differentiating anthropogenic and natural sources of uranium by geochemical fingerprinting of groundwater at the Homestake uranium mill, Milan, New Mexico, USA. *Environmental Earth Sciences* 78:384.

Brookins, D.G. 1982. Geochemistry of clay minerals for uranium exploration in the Grants mineral belt, New Mexico. Mineralium Deposita 17: 37-53.

Descostes, M., M.L. Schlegel, N. Eglizaud, F. Descamps, F. Miserque, and E. Simoni. 2010. Uptake of Uranium and Trace Elements in Pyrite (FeS2) Suspensions. *Geochimica et Cosmochimica Acta* 74 (5). Elsevier Ltd: 1551–62. doi:10.1016/j.gca.2009.12.004.

Dong, W., and S.C. Brooks. 2006. Determination of the formation constants of ternary complexes of uranyl and carbonate with alkaline earth metals (Mg^{2+}, Ca^{2+}, Sr^{2+}, and Ba^{2+}) using anion exchange method. *Environmental Science and Technology* 40: 4689-4695.

Dong, W. and S.C. Brooks. 2008. Formation of aqueous $MgUO_2(CO_3)_3^{2-}$ complex and uranium anion exchange mechanism onto an exchange resin. *Environmental Science and Technology* 42(6): 1979-1983.

Fishman, N. and Reynolds, R. 1982. Origin of the Mariano Lake Uranium Deposit, McKinley County, New Mexico. United States Geological Survey Open-File Report 82-888.

Freeman, B.L., and L.S. Hilpert. 1956. Stratigraphy of the Morrison Formation in Part of Northwestern New Mexico. *Geological Survey Bulletin* 1030-J.

Grim, R.E. 1968. Clay Mineralogy, Second Edition. McGraw-Hill, New York. 596 pp.

Hampson, G.J., W. Davies, S.J. Davies, J.A. Howell, and K.R. Adamson. 2005. Use of spectral gamma-ray data to refine subsurface fluvial stratigraphy: late Cretaceous strata in the Book Cliffs, Utah, USA. *Journal of the Geological Society* 162 (4), p 603–621. http://jgs.geoscienceworld.org/cgi/content/abstract/162/4/603

Homestake and Hydro-Engineering. 2003. Grants Reclamation Project, Background Water Quality Evaluation of the Chinle Aquifers. Consulting Report for Homestake Mining Company of California.

Homestake and Hydro-Engineering. 2019. 2018 Annual Monitoring Report/Performance Review for Homestake's Grants Project Pursuant to NRC License SUA-1471 And Discharge Plan DP-200. March.

Jensen, M. 1958. Sulfur isotopes and the origin of sandstone-type uranium deposits [Colorado Plateau and Wyoming]. Economic Geology 53(5):598-616.

Kohler, Matthias, Gary P. Curtis, David E Meece, and James A. Davis. 2004. Methods for Estimating Adsorbed Uranium(VI) and Distribution Coefficients of Contaminated Sediments. *Environmental Science and Technology* 38 (1): 240–47. doi:10.1021/es0341236.

Kramar, S., B. Mirtič, K. Knöller, N. Rogan-Šmuc. 2011. Weathering of the black limestone of historical monuments (Ljubljana, Slovenia): Oxygen and sulfur isotope composition of sulfate salts. *Applied Geochemistry* 26:1632-1638.

Krouse, H.R., and V.A. Grinenko. 1991. Stable Isotopes: Natural and Anthropogenic Sulphur in the Environment. SCOPE 43. John Wiley & Sons, New York.

Langmuir, D. 1997. Aqueous Environmental Geochemistry. Prentice Hall, New Jersey. 600 pp.

Leopold, L.B. and C.T. Snyder. 1951. Alluvial Fills Near Gallup, New Mexico. Contributions to Hydrology, 1948-51. United States Geologic Survey Water-Supply Paper 1110-A.

McLemore, V.T. 2010. The Grants Uranium District, New Mexico: Update on Source, Deposition, and Exploration. *The Mountain Geologist* 48 (1): 23-44.

Meunier, J.D. 1994. The Composition and Origin of Vanadium-Rich Clay Minerals in Colorado Plateau Jurassic Sandstones. Clays and Clay Minerals. 42: 391-401.

Parkhurst, D.L. and C.A.J. Appelo. 1999. User's Guide to PHREEQC (Version 2) – A Computer Program for Speciation, Batch-Reaction, One-Dimensional Transport, and Inverse Geochemical Calculations. United States Geological Survey Water Resources Investigations Report 99-4259.

Peterson, SR., C.J. Hostetler, W.J. Deutsch, and C.E. Cowan. 1987. MINTEQ user's manual: Report NUREG/CR-4808, PNL-6106. U.S. Nuclear Regulatory Commission, Washington, D.C.

Qafoku, Nikolla P., Ravi K. Kukkadapu, James P. McKinley, Bruce W. Arey, Shelly D. Kelly, Chongmin Wang, Charles T. Resch, and Philip E. Long. 2009. Uranium in Framboidal Pyrite from a Naturally Bioreduced Alluvial Sediment. *Environmental Science & Technology* 43 (22): 8528–34.

Santos, E.S. 1970. Stratigraphy of the Morrison Formation and Structure of the Ambrosia Lake District, New Mexico. *Geological Survey Bulletin* 1272-E.

Spirakis, Charles S. 1996. The Roles of Organic Matter in the Formation of Uranium Deposits in Sedimentary Rocks. *Ore Geology Reviews* 11 (1–3): 53–69. doi:10.1016/0169-1368(95)00015-1.

Sullivan, Michael, and Lisa Song. 2017. Briggs Colour Cubing of Spectral Gamma Ray - A Novel Technique for Easier Stratigraphic Correlation and Rock Typing, in proceedings of the Society of Petrophysicists and Well Log Analysts (SPWLA) 58th Annual Logging Symposium, Oklahoma City, Oklahoma, June 17-21, 2017.

Tessier, A., P.G.C. Campbell, and M. Bisson. 1979. Sequential Extraction Procedure for the Speciation of Particulate Trace Metals. *Analytical Chemistry* 51:844-851.

Ulrich, Shannon, Jeffrey Gillow, Shawn Roberts, Gregory Byer, Julie Sueker, and Kathryn Farris. 2019. Hydrogeochemical and mineralogical factors influencing uranium in background area groundwater wells: Grants, New Mexico. *Journal of Hydrology – Regional Studies*. Submitted May 18.

USEPA. 1996. SW-846 Test Method 3050B: Acid Digestion of Sediments, Sludges, and Soils. 12 pp.

USEPA. 2016. Letter to Homestake, Remedial Investigation/Feasibility Study (RI/FS) Equivalency: Re-Assessment of Background Groundwater at Homestake Mining Company Superfund Site. April 18.

Weisener, C.G. and P.A. Weber. 2010. Preferential oxidation of pyrite as a function of morphology and relict texture. *New Zealand Journal of Geology and Geophysics* 53:2-3.

TABLES

Table 1
Boring Locations and Well Construction Details
Supplemental Background Soil and Groundwater Investigation Report
Grants Reclamation Project
Cibola County, New Mexico

ARCADIS Design & Consultancy for natural and built assets

Well ID	Easting	Northing	Elevation (feet amsl)	Total Depth of Borehole (feet bgs)	Well Screen Interval (feet bgs)	Total Depth of Well (feet bgs)	Depth to Groundwater[b] (ft bgs)	Casing Outer Diameter (inches)	Aquifer/Location	Downhole Geophysical Assessment Conducted	Geochemical Soil Sampling Conducted
DD-BK	489059.40	1546956.46	--	85	None	84.5	45	2	Alluvium / Top of Shale	Y	Y
DD2-BK	489349.59	1547523.70	--	100	None	99.5	42.5	2	Alluvium / Top of Shale	Y	Y
BK1c[a]	489728.32	1546811.70	6584	75	47-52	52	42.5	2	Alluvium / Top of Shale	Y	Y
BK1f[a]	489743.28	1546833.52	6584	65	52-57	57	42.5	2	Alluvium / Top of Shale	Y	Y
BK2c[a]	491716.65	1546567.19	6592	92.5	58.5-63.5	83.5	42.5	2	Alluvium / Top of Shale	Y	Y
BK2f[a]	491731.56	1546552.65	6592	85	74-79	79	43.5	2	Alluvium / Top of Shale	Y	Y
BK3[a]	494564.76	1545984.17	6595	73	None	72	45	2	Alluvium / Top of Shale	Y	Y
BK4[a]	489014.20	1545294.24	6578	61	None	61	~43	2	Alluvium / Top of Shale	Y	--

Notes:

1. Temporary wells DD-BK, DD2-BK, BK3, and BK4 were abandoned immediately following the downhole geophysical assessment.

[a] Coordinates and elevation collected in field using Tomstrails application for iPhone

[b] As noted in the field during borehole logging

Coordinate Projection: State Plane Coordinate System, New Mexico West, NAD27, US Survey Feet

Acronyms and Abbreviations:

bgs = below ground surface

Y = analysis conducted

-- = analysis not conducted

Table 2
Geochemical and Mineralogical Analysis Goals
Supplemental Background Soil and Groundwater Investigation Report
Grants Reclamation Project
Cibola County, New Mexico

ARCADIS Design & Consultancy for natural and built assets

Analyte	Method	Supporting Detail and Analysis Goal
Total metals in soil[a] (environmentally accessible)	USEPA 3050B with 6020B	Analysis of total metals in soil is necessary to provide an understanding of the geochemical behavior of constituents of concern in the alluvial aquifer and alluvial sediments. This analysis will provide the concentration of environmentally accessible major and trace elements.
Selective sequential extraction[b]	Custom per Tessier et al. 1979	Selective sequential extraction uses chemical reagents that selectively dissolve individual phases or mineral forms of the target element under investigation, in this case uranium. The reagents range in chemical strength and are progressively stronger in terms of their ability to dissolve mineral phases. The results of this analysis will provide an indication of the leachability of each element based on the phase within which it predominantly resides.
Total organic carbon	LECO induction furnace	This analysis will provide an understanding of the association of uranium with organic carbon and will be performed on a subset of samples that show the highest uranium concentrations. Prior work on soil has shown the presence of particulate organic carbon.
Total sulfur content	LECO induction furnace	This analysis will provide an understanding of the association of uranium with sulfur and will be performed on a subset of samples that show the highest uranium concentrations. Prior work on soil has shown the presence of sulfide minerals.
Precise mineralogy	Petrographic microscopy	Petrographic analysis via light and polarized light microscopy produces a definitive mineralogic assessment of alluvial aquifer sediment, including identification of small mineral grains, which cannot be resolved through x-ray diffraction.
Bulk mineralogy	XRD - scan and search	XRD analysis provided positive identification of a wide variety of mineral constituents in samples. In contrast to petrographic and SEM-EDS analyses, which requires manual microscopic exploration and targeted identification, XRD is most valuable as a bulk assessment of mineralogy and yields essential data about mineralogic variability throughout the alluvial aquifer. Based on previous characterization of uranium in the San Mateo Valley alluvial system, the majority of the uranium was expected to be encountered in coarse-grained sand and possibly silt; thus, the "scan and search" of XRD method was expected to be sufficient. However, if samples that exhibit the highest uranium are predominantly clay, a directed clay XRD analysis must be used instead.
Sulfur stable isotopes in soil	Stable sulfur isotopes as analyzed by Isotope Tracer Technologies, Waterloo, Ontario, Canada	Sulfur stable isotopes related to solid sulfates and sulfides, and to sulfate in groundwater give an indication of the origin of sediment and groundwater that is difficult to achieve through other methods. Sulfur that is more highly depleted in the heavier sulfur isotopes (e.g., sulfur-34) has most likely been through the microbial sulfate reduction process. This process can only occur when a system is significantly reducing and, as a result, represents an environment where uranium reduction, precipitation, and concentration could occur.
Mineralogy and elemental composition	QEMSCAN	QEMSCAN is a rastering scanning electron microscope technique with four energy dispersive spectrometers that uses proprietary software to map the mineral distribution across a sample surface. QEMSCAN can identify areas in a sample that contain concentrated uranium and on which higher resolution analysis can be conducted. QEMSCAN increases the probability of encountering uranium in environmental samples over traditional non-rastering scanning electron microscopy.

Notes:
[a] Analyzed for aluminum, calcium, iron, magnesium, manganese, molybdenum, potassium, selenium, sodium, sulfur, uranium, and vanadium.
[b] Analyzed for aluminum, calcium, iron, magnesium, manganese, molybdenum, potassium, selenium, silica, sodium, uranium, and vanadium. Step 1 will also be analyzed for total alkalinity, sulfate, and orthophosphate. Step 2 will also be analyzed for sulfate and orthophosphate.

Acronyms and Abbreviations:
QEMSCAN = Quantitative Evaluation of Materials by Scanning Electron Microscopy
SEM-EDS = scanning electron microscopy-energy dispersive x-ray spectroscopy
USEPA = United States Environmental Protection Agency
XRD = x-ray diffraction

Reference:
Tessier, A., P.G.C. Campbell, and M. Bisson. 1979. Sequential Extraction Procedure for the Speciation of Particulate Trace Metals. Analytical Chemistry. 51:844-851

Table 3
Summary of Soil Samples Collected
Supplemental Background Soil and Groundwater Investigation Report
Grants Reclamation Project
Cibola County, New Mexico

Borehole	Sample ID	Date (mmddyy)	Time	Depth Range (feet bgs)	Lithology	Laboratory:	Energy Laboratories, Incorporated, Casper, Wyoming			Huffman-Hazen Labs, Golden, Colorado	DCM Science Laboratory, Wheat Ridge, Colorado	IT[2], Waterloo, Ontario, Canada	ACZ Laboratories, Steamboat Springs, Colorado
						Field α-β-γ Survey (cpm)	USEPA 3050B with 6020B[a]	TOC and Total Sulfur	Paste pH and ORP of Solids	QEMSCAN	XRD and Petrography	Stable Sulfur Isotopes	SSE with 6020B[b]
BK1c	BK1-11.5-12.5-052119	05/21/19	12:35	11.5-12.5	Clayey fine sand	67	X	X	X	--	--	--	X
BK1c	BK1-15-15.5-052119[b]	05/21/19	13:15	15-15.5	Silty fine sand	92	X	X	X	--	--	--	--
BK1c	BK1-33.5-34-052119	05/21/19	13:50	33.5-34	Fine to coarse sand	96	X	X	X	--	--	--	--
BK1c	BK1-39-40-052119	05/21/19	14:20	39-40	Fine sandy silt	87	X	X	X	--	X	X	X
BK1c	BK1-41-41.5-052119	05/21/19	16:00	41-41.5	Silty fine sand	95	X	X	X	--	--	--	--
BK1c	BK1-47-48-052119	05/21/19	16:30	47-48	Clay	89	X	X	X	--	X	X	X
BK1c	BK1-48.5-49.5-052119	05/21/19	17:25	48.5-49.5	Silty fine sand	62	X	X	X	--	--	--	--
BK1c	BK1-51-52-052119	05/21/19	17:50	51-52	Fine to coarse sand and gravel with trace silt	93	X	X	X	X	X	X	X
BK1c	BK1-52-53-052119	05/21/19	18:20	52-53	Sandy clay	83	X	X	X	--	X	X	X
BK1c	BK1-55.5-56.5-052219	05/22/19	8:55	55.5-56.5	Clay	104	X	X	X	--	X	X	X
BK2c	BK2-12-13-051519	05/15/19	16:20	12-13	Sandy clay	65-115	X	X	X	--	--	--	--
BK2c	BK2-20-21-051519	05/15/19	16:50	20-21	Fine to medium sand with some silt	60-70	X	X	X	--	--	--	--
BK2c	BK2-35-36-051519	05/15/19	17:40	35-36	Fine sand with some silt	62-82	X	X	X	--	X	X	X
BK2c	BK2-38-39-051519	05/15/19	18:25	38-39	Fine sandy silt	80	X	X	X	--	--	--	--
BK2c	BK2-41.5-42.5-051519	05/15/19	19:20	41.5-42.5	Silt with trace fine sand	95	X	X	X	--	--	--	--
BK2c	BK2-44-44.5-051619	05/16/19	9:30	44-44.5	Silt with trace sand	77	X	X	X	--	--	--	--
BK2c	BK2-59-60-051619	05/16/19	10:55	59-60	Fine to medium sand with some silt	83	X	X	X	--	--	--	X
BK2c	BK2-63.5-64-051619	05/16/19	11:35	63.5-64	Sandy gravel	69	X	X	X	--	X	--	X
BK2c	BK2-72.5-73.5-051619	05/16/19	12:05	72.5-73.5	Sandy silt	83	X	X	X	--	--	--	X
BK2c	BK2-77-77.5-051619	05/16/19	13:45	77-77.5	Silty fine sand	92	X	X	X	--	X	--	X
BK3	BK3-14.5-15-052219	05/22/19	10:35	14.5-15	Silty sand	83	X	X	X	--	--	--	--
BK3	BK3-23-23.5-052219	05/22/19	10:55	23-23.5	Silty sand	79	X	X	X	--	--	--	--
BK3	BK3-26-27-052219	05/22/19	11:15	26-27	Fine sandy silt	77	X	X	X	--	--	--	--
BK3	BK3-31.5-32.5-052219	05/22/19	11:30	31.5-32.5	Clay	114	X	X	X	--	--	--	X
BK3	BK3-35-35.5-052219[b]	05/22/19	12:00	35-35.5	Silty sand	102	X	X	X	--	--	--	--
BK3	BK3-46.5-47.5-052219	05/22/19	12:30	46.5-47.5	Silty fine to coarse sand	88	X	X	X	--	--	--	--
BK3	BK3-47.5-48.5-052219	05/22/19	13:00	47.5-48.5	Gravelly sand	94	X	X	X	--	X	X	X
BK3	BK3-50.5-52-052219	05/22/19	13:20	50.5-52	Sandy clay and silty fine sand	76	X	X	X	--	--	--	X
BK3	BK3-55-56-052219	05/22/19	14:00	55-56	Sandy silt	85	X	X	X	--	--	--	--
BK3	BK3-42.5-43.5-052219	05/22/19	15:05	42.5-43.5	Clay	96	X	X	X	--	X	X	X
DUP	Parent sample BK2-59-60-051619	05/16/19	10:55	59-60	Fine to medium sand with some silt	83	X	X	X	--	--	--	--
DUP-2	Parent sample BK1-41-41.5-052119	05/21/19	16:00	41-41.5	Silty fine sand	95	X	X	X	--	--	--	--

Table 3
Summary of Soil Samples Collected
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Notes:

[a] Analyzed for aluminum, calcium, iron, magnesium, manganese, molybdenum, potassium, selenium, silicon, sodium, uranium, and vanadium.

[b] Matrix spike/matrix spike duplicate conducted.

Acronyms and Abbreviations:

α-β-γ = alpha-beta-gamma radiation
bgs = below ground surface
cpm = counts per minute
DUP = duplicate measurement/sample
ID = identification
IT^2 = Isotope Tracer Technologies
ORP = oxidation-reduction potential
QEMSCAN = Quantitative Evaluation of Materials by Scanning Electron Microscopy
SSE = selective sequential extraction
TOC = total organic carbon
USEPA = United States Environmental Protection Agency
X = sample collected
XRD = x-ray diffraction
-- = no sample collected/sample not analyzed by this method

Table 4
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ARCADIS Design & Consultancy for natural and built assets

Depth (feet)	Location	Logged By	K (%)	U (ppm)	Th (ppm)	Th/K	Th/U	Easting	Northing	Surface Elevation (feet amsl)	Sample Elevation (feet amsl)
3.3	BK1c	AUS	1.57	1.00	6.91	4.40	6.94	489741.0	1546774.4	6587.5	6584.2
15.1	BK1c	AUS	0.22	1.75	0.51	2.38	0.29	489741.0	1546774.4	6587.5	6572.3
26.2	BK1c	AUS	1.58	0.38	5.24	3.31	13.95	489741.0	1546774.4	6587.5	6561.3
31.2	BK1c	AUS	1.47	1.70	5.17	3.51	3.04	489741.0	1546774.4	6587.5	6556.3
33.8	BK1c	AUS	1.45	0.49	6.52	4.51	13.42	489741.0	1546774.4	6587.5	6553.7
39.5	BK1c	AUS	1.60	0.00	7.23	4.52	---	489741.0	1546774.4	6587.5	6548.0
41.0	BK1c	AUS	1.32	3.65	4.42	3.34	1.21	489741.0	1546774.4	6587.5	6546.5
47.5	BK1c	AUS	1.00	2.64	3.59	3.61	1.36	489741.0	1546774.4	6587.5	6540.0
51.5	BK1c	AUS	0.73	1.34	3.33	4.58	2.49	489741.0	1546774.4	6587.5	6536.0
52.5	BK1c	AUS	0.94	1.60	3.70	3.93	2.32	489741.0	1546774.4	6587.5	6535.0
56.1	BK1c	AUS	0.71	6.35	7.41	10.41	1.17	489741.0	1546774.4	6587.5	6531.3
58.3	BK1c	AUS	1.55	0.00	11.95	7.70	---	489741.0	1546774.4	6587.5	6529.2
65.8	BK1c	AUS	0.25	4.78	3.29	13.04	0.69	489741.0	1546774.4	6587.5	6521.6
71.6	BK1c	AUS	0.13	3.40	5.52	43.75	1.63	489741.0	1546774.4	6587.5	6515.8
20.0	BK2c	AUS	0.125	2.527	0.685	5.486	0.271	491662.4	1546475.2	6585.5	6565.5
33.0	BK2c	AUS	1.235	1.439	6.042	4.890	4.198	491662.4	1546475.2	6585.5	6552.5
35.7	BK2c	AUS	0.550	4.884	2.664	4.848	0.546	491662.4	1546475.2	6585.5	6549.8
38.0	BK2c	AUS	1.858	0.136	11.645	6.268	85.392	491662.4	1546475.2	6585.5	6547.5
52.0	BK2c	AUS	1.016	0.367	3.822	3.761	10.427	491662.4	1546475.2	6585.5	6533.5
59.7	BK2c	AUS	0.695	1.436	1.832	2.635	1.275	491662.4	1546475.2	6585.5	6525.8
63.5	BK2c	AUS	1.059	3.100	4.930	4.657	1.590	491662.4	1546475.2	6585.5	6522.0
67.5	BK2c	AUS	0.951	1.559	3.513	3.695	2.254	491662.4	1546475.2	6585.5	6518.0
72.7	BK2c	AUS	0.895	4.749	4.951	5.534	1.042	491662.4	1546475.2	6585.5	6512.8
77.5	BK2c	AUS	1.083	1.370	6.711	6.199	4.897	491662.4	1546475.2	6585.5	6508.0
5.9	BK3	AUS	2.1	4.2	14.8	7.2	3.5	494548.3	1545981.8	6590.5	6584.7
11.0	BK3	AUS	0.8	1.0	4.0	4.7	4.1	494548.3	1545981.8	6590.5	6579.5
14.3	BK3	AUS	1.3	2.2	3.7	2.9	1.7	494548.3	1545981.8	6590.5	6576.2
21.8	BK3	AUS	1.4	1.0	6.5	4.7	6.3	494548.3	1545981.8	6590.5	6568.7
23.2	BK3	AUS	1.5	0.8	9.4	6.2	11.5	494548.3	1545981.8	6590.5	6567.3

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Depth (feet)	Location	Logged By	K (%)	U (ppm)	Th (ppm)	Th/K	Th/U	Easting	Northing	Surface Elevation (feet amsl)	Sample Elevation (feet amsl)
26.8	BK3	AUS	1.5	0.7	7.0	4.8	9.4	494548.3	1545981.8	6590.5	6563.7
32.1	BK3	AUS	1.8	0.0	12.8	7.0	---	494548.3	1545981.8	6590.5	6558.4
35.2	BK3	AUS	0.9	0.8	5.6	6.0	7.2	494548.3	1545981.8	6590.5	6555.4
43.0	BK3	AUS	1.6	5.2	10.0	6.2	1.9	494548.3	1545981.8	6590.5	6547.5
46.9	BK3	AUS	1.4	1.6	10.3	7.6	6.4	494548.3	1545981.8	6590.5	6543.6
48.0	BK3	AUS	0.8	4.7	5.9	7.0	1.3	494548.3	1545981.8	6590.5	6542.5
51.5	BK3	AUS	1.0	3.7	4.9	5.1	1.3	494548.3	1545981.8	6590.5	6539.0
55.5	BK3	AUS	0.9	2.0	4.8	5.5	2.4	494548.3	1545981.8	6590.5	6535.0
60.1	BK3	AUS	1.1	2.1	10.1	9.3	4.8	494548.3	1545981.8	6590.5	6530.4
13.3	BK4	AUS	1.1	0.0	6.2	5.6	---	489049.1	1545287.4	6579.1	6565.8
15.0	BK4	AUS	1.0	0.0	4.9	4.7	---	489049.1	1545287.4	6579.1	6564.1
18.0	BK4	AUS	0.9	2.3	3.2	3.5	1.4	489049.1	1545287.4	6579.1	6561.1
23.6	BK4	AUS	1.8	1.0	8.6	4.7	8.9	489049.1	1545287.4	6579.1	6555.5
25.8	BK4	AUS	1.3	2.9	6.0	4.7	2.0	489049.1	1545287.4	6579.1	6553.3
29.0	BK4	AUS	1.2	1.5	6.0	4.9	4.1	489049.1	1545287.4	6579.1	6550.1
40.6	BK4	AUS	0.6	0.0	8.8	14.0	---	489049.1	1545287.4	6579.1	6538.5
43.4	BK4	AUS	0.3	1.2	6.6	23.8	5.3	489049.1	1545287.4	6579.1	6535.7
51.6	BK4	AUS	0.3	10.3	7.2	24.5	0.7	489049.1	1545287.4	6579.1	6527.5
9.2	DDBK	AUS	1.528	1.149	12.318	8.061	10.724	489059.410	1546956.470	6592.322	6583.122
15.3	DDBK	AUS	0.601	2.743	2.316	3.854	0.844	489059.410	1546956.470	6592.322	6577.022
25.9	DDBK	AUS	1.016	0.371	4.646	4.574	12.535	489059.410	1546956.470	6592.322	6566.422
27.8	DDBK	AUS	1.169	0.379	5.091	4.354	13.418	489059.410	1546956.470	6592.322	6564.522
34.2	DDBK	AUS	1.220	3.858	7.888	6.466	2.045	489059.410	1546956.470	6592.322	6558.122
39.5	DDBK	AUS	1.176	1.540	5.494	4.671	3.567	489059.410	1546956.470	6592.322	6552.822
46.9	DDBK	AUS	0.929	0.252	5.576	6.003	22.144	489059.410	1546956.470	6592.322	6545.422
53.5	DDBK	AUS	1.557	0.134	11.692	7.509	87.235	489059.410	1546956.470	6592.322	6538.822
55.3	DDBK	AUS	1.324	1.650	12.271	9.271	7.435	489059.410	1546956.470	6592.322	6537.022
63.4	DDBK	AUS	0.947	3.821	6.021	6.358	1.576	489059.410	1546956.470	6592.322	6528.922
65.8	DDBK	AUS	0.866	2.206	7.060	8.149	3.201	489059.410	1546956.470	6592.322	6526.522

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74.9	DDBK	AUS	0.218	1.312	7.342	33.606	5.596	489059.410	1546956.470	6592.322	6517.422
81.4	DDBK	AUS	0.693	6.175	11.628	16.769	1.883	489059.410	1546956.470	6592.322	6510.922
10.6	DD2BK	AUS	1.3	1.9	10.5	8.4	5.4	489349.6	1547523.7	6593.8	6583.1
11.4	DD2BK	AUS	0.9	2.4	5.7	6.2	2.4	489349.6	1547523.7	6593.8	6582.4
25.3	DD2BK	AUS	0.8	2.4	3.2	4.1	1.3	489349.6	1547523.7	6593.8	6568.5
29.8	DD2BK	AUS	1.0	2.3	4.4	4.4	1.9	489349.6	1547523.7	6593.8	6563.9
36.4	DD2BK	AUS	1.2	1.2	9.7	7.9	7.9	489349.6	1547523.7	6593.8	6557.4
38.7	DD2BK	AUS	1.4	4.3	9.5	6.6	2.2	489349.6	1547523.7	6593.8	6555.1
43.4	DD2BK	AUS	0.4	4.7	5.8	12.9	1.2	489349.6	1547523.7	6593.8	6550.4
47.0	DD2BK	AUS	1.1	0.0	5.4	4.8	---	489349.6	1547523.7	6593.8	6546.8
50.0	DD2BK	AUS	1.2	1.7	6.0	5.1	3.6	489349.6	1547523.7	6593.8	6543.8
51.3	DD2BK	AUS	1.0	1.8	6.2	6.0	3.5	489349.6	1547523.7	6593.8	6542.4
53.3	DD2BK	AUS	0.7	2.3	4.1	5.9	1.8	489349.6	1547523.7	6593.8	6540.5
60.9	DD2BK	AUS	1.1	3.4	9.3	8.2	2.8	489349.6	1547523.7	6593.8	6532.8
67.8	DD2BK	AUS	1.4	0.8	9.2	6.8	11.6	489349.6	1547523.7	6593.8	6525.9
75.0	DD2BK	AUS	1.2	3.7	8.4	6.7	2.3	489349.6	1547523.7	6593.8	6518.7
82.1	DD2BK	AUS	1.1	4.0	11.6	10.3	2.9	489349.6	1547523.7	6593.8	6511.6
91.1	DD2BK	AUS	1.1	5.7	11.3	10.6	2.0	489349.6	1547523.7	6593.8	6502.7
12.5	0914	AUS	1.530	6.914	10.183	6.655	1.473	500850.0	1555500.0	6640.7	6628.2
22.0	0914	AUS	1.661	4.190	7.047	4.243	1.682	500850.0	1555500.0	6640.7	6618.7
27.5	0914	AUS	1.343	3.804	5.463	4.069	1.436	500850.0	1555500.0	6640.7	6613.2
42.0	0914	AUS	1.163	3.212	4.866	4.185	1.515	500850.0	1555500.0	6640.7	6598.7
47.5	0914	AUS	0.584	2.402	5.583	9.562	2.325	500850.0	1555500.0	6640.7	6593.2
56.0	0914	AUS	0.707	1.298	4.379	6.191	3.372	500850.0	1555500.0	6640.7	6584.7
59.0	0914	AUS	0.699	1.458	5.431	7.768	3.725	500850.0	1555500.0	6640.7	6581.7
73.0	0914	AUS	1.170	1.756	9.661	8.260	5.500	500850.0	1555500.0	6640.7	6567.7
79.0	0914	AUS	1.050	1.749	10.452	9.956	5.975	500850.0	1555500.0	6640.7	6561.7
84.5	0914	AUS	0.843	2.899	8.055	9.554	2.779	500850.0	1555500.0	6640.7	6556.2
6.2	0921	AUS	2.7	3.7	12.3	4.6	3.3	495800.0	1555400.0	6622.1	6615.9

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14.7	0921	AUS	1.4	5.9	6.2	4.3	1.1	495800.0	1555400.0	6622.1	6607.4
16.0	0921	AUS	1.6	4.6	7.4	4.5	1.6	495800.0	1555400.0	6622.1	6606.1
23.5	0921	AUS	1.3	2.9	3.2	2.4	1.1	495800.0	1555400.0	6622.1	6598.6
32.5	0921	AUS	2.0	3.8	4.9	2.5	1.3	495800.0	1555400.0	6622.1	6589.6
40.5	0921	AUS	1.4	3.4	5.5	3.8	1.6	495800.0	1555400.0	6622.1	6581.6
50.5	0921	AUS	1.7	4.1	9.1	5.3	2.2	495800.0	1555400.0	6622.1	6571.6
55.5	0921	AUS	2.0	7.1	9.5	4.8	1.4	495800.0	1555400.0	6622.1	6566.6
8.5	0922	AUS	2.032	2.660	8.303	4.087	3.122	492500.0	1555200.0	6620.0	6611.5
10.0	0922	AUS	1.483	4.457	9.939	6.704	2.230	492500.0	1555200.0	6620.0	6610.0
19.5	0922	AUS	1.467	2.018	6.033	4.112	2.990	492500.0	1555200.0	6620.0	6600.5
38.7	0922	AUS	0.939	4.837	7.510	8.001	1.552	492500.0	1555200.0	6620.0	6581.3
51.3	0922	AUS	0.603	2.952	6.536	10.833	2.214	492500.0	1555200.0	6620.0	6568.7
59.0	0922	AUS	0.000	8.620	0.298	---	0.035	492500.0	1555200.0	6620.0	6561.0
67.0	0922	AUS	0.175	0.243	3.384	19.376	13.911	492500.0	1555200.0	6620.0	6553.0
79.0	0922	AUS	0.763	2.365	8.089	10.605	3.420	492500.0	1555200.0	6620.0	6541.0
86.5	0922	AUS	0.230	2.197	6.547	28.457	2.979	492500.0	1555200.0	6620.0	6533.5
13.5	L	AUS	2.094	3.896	13.990	6.681	3.591	492149.6	1538970.1	6574.2	6560.7
26.5	L	AUS	1.989	6.960	11.095	5.579	1.594	492149.6	1538970.1	6574.2	6547.7
29.5	L	AUS	1.317	5.226	7.789	5.912	1.490	492149.6	1538970.1	6574.2	6544.7
33.0	L	AUS	1.465	6.251	8.101	5.531	1.296	492149.6	1538970.1	6574.2	6541.2
41.0	L	AUS	1.367	4.711	5.683	4.157	1.206	492149.6	1538970.1	6574.2	6533.2
54.0	L	AUS	1.521	1.984	6.247	4.108	3.148	492149.6	1538970.1	6574.2	6520.2
5.4	N-16	AUS	2.544	5.208	14.250	5.602	2.736	498623.570	1555894.720	6637.800	6632.400
6.6	N-16	AUS	1.347	8.882	7.042	5.229	0.793	498623.570	1555894.720	6637.800	6631.200
17.0	N-16	AUS	0.707	3.169	5.140	7.273	1.622	498623.570	1555894.720	6637.800	6620.800
30.8	N-16	AUS	0.983	5.313	4.099	4.170	0.772	498623.570	1555894.720	6637.800	6607.000
36.1	N-16	AUS	0.947	4.863	6.240	6.590	1.283	498623.570	1555894.720	6637.800	6601.700
52.9	N-16	AUS	0.923	4.746	8.409	9.111	1.772	498623.570	1555894.720	6637.800	6584.900
57.9	N-16	AUS	0.890	1.605	4.757	5.347	2.964	498623.570	1555894.720	6637.800	6579.900

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Depth (feet)	Location	Logged By	K (%)	U (ppm)	Th (ppm)	Th/K	Th/U	Easting	Northing	Surface Elevation (feet amsl)	Sample Elevation (feet amsl)
60.7	N-16	AUS	0.862	4.147	3.136	3.639	0.756	498623.570	1555894.720	6637.800	6577.100
66.3	N-16	AUS	1.318	2.912	6.826	5.177	2.344	498623.570	1555894.720	6637.800	6571.500
11.0	P2	AUS	1.896	1.733	6.194	3.267	3.575	490912.140	1546554.840	6588.890	6577.890
32.0	P2	AUS	2.547	1.064	8.172	3.208	7.678	490912.140	1546554.840	6588.890	6556.890
44.5	P2	AUS	1.218	1.645	4.332	3.556	2.634	490912.140	1546554.840	6588.890	6544.390
62.5	P2	AUS	1.189	3.010	4.668	3.925	1.551	490912.140	1546554.840	6588.890	6526.390
69.0	P2	AUS	1.208	4.694	3.739	3.094	0.797	490912.140	1546554.840	6588.890	6519.890
86.0	P2	AUS	1.450	7.692	7.329	5.056	0.953	490912.140	1546554.840	6588.890	6502.890
91.5	P2	AUS	1.219	7.902	8.371	6.867	1.059	490912.140	1546554.840	6588.890	6497.390
99.5	P2	AUS	1.648	3.978	22.017	13.364	5.535	490912.140	1546554.840	6588.890	6489.390
11.0	P4	AUS	0.6	4.4	13.4	23.5	3.1	491899.2	1546504.3	6585.9	6574.9
13.5	P4	AUS	0.6	5.6	12.9	22.1	2.3	491899.2	1546504.3	6585.9	6572.4
20.5	P4	AUS	1.2	2.3	5.8	4.9	2.5	491899.2	1546504.3	6585.9	6565.4
27.0	P4	AUS	2.0	1.6	9.1	4.6	5.6	491899.2	1546504.3	6585.9	6558.9
47.0	P4	AUS	0.6	3.4	2.5	4.3	0.7	491899.2	1546504.3	6585.9	6538.9
52.0	P4	AUS	0.8	2.8	9.3	11.1	3.4	491899.2	1546504.3	6585.9	6533.9
66.5	P4	AUS	0.7	2.3	3.2	4.9	1.4	491899.2	1546504.3	6585.9	6519.4
72.5	P4	AUS	0.9	2.0	6.2	7.1	3.1	491899.2	1546504.3	6585.9	6513.4
78.7	P4	AUS	0.7	2.3	14.3	20.9	6.2	491899.2	1546504.3	6585.9	6507.2
86.5	P4	AUS	1.1	4.0	9.0	8.4	2.3	491899.2	1546504.3	6585.9	6499.4
6.0	R	AUS	1.8	3.5	8.3	4.6	2.4	494513.7	1550371.8	6603.7	6597.7
11.0	R	AUS	1.2	2.8	4.9	4.0	1.8	494513.7	1550371.8	6603.7	6592.7
28.9	R	AUS	1.1	8.5	5.6	5.1	0.7	494513.7	1550371.8	6603.7	6574.8
36.6	R	AUS	1.3	4.6	4.8	3.5	1.0	494513.7	1550371.8	6603.7	6567.1
41.7	R	AUS	1.0	0.8	4.8	5.0	6.4	494513.7	1550371.8	6603.7	6562.0
47.1	R	AUS	1.4	3.2	8.0	5.5	2.5	494513.7	1550371.8	6603.7	6556.6
59.1	R	AUS	1.3	0.2	5.5	4.3	24.7	494513.7	1550371.8	6603.7	6544.6
72.0	R	AUS	1.4	1.9	7.3	5.4	3.7	494513.7	1550371.8	6603.7	6531.7
79.6	R	AUS	1.7	4.2	9.5	5.4	2.3	494513.7	1550371.8	6603.7	6524.1

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Depth (feet)	Location	Logged By	K (%)	U (ppm)	Th (ppm)	Th/K	Th/U	Easting	Northing	Surface Elevation (feet amsl)	Sample Elevation (feet amsl)
83.3	R	AUS	1.6	4.4	9.0	5.5	2.1	494513.7	1550371.8	6603.7	6520.4
4.3	W	AUS	1.6	5.8	5.2	3.2	0.9	487297.5	1542301.7	6571.8	6567.5
13.8	W	AUS	1.4	3.4	4.1	2.9	1.2	487297.5	1542301.7	6571.8	6558.0
24.9	W	AUS	2.0	2.3	9.0	4.4	3.8	487297.5	1542301.7	6571.8	6546.9
35.0	W	AUS	1.6	4.0	8.8	5.6	2.2	487297.5	1542301.7	6571.8	6536.8
47.5	W	AUS	1.4	2.5	8.7	6.1	3.5	487297.5	1542301.7	6571.8	6524.3
62.6	W	AUS	1.2	3.1	4.7	3.9	1.5	487297.5	1542301.7	6571.8	6509.2
80.6	W	AUS	0.8	9.5	4.1	5.3	0.4	487297.5	1542301.7	6571.8	6491.2
94.7	W	AUS	1.3	5.3	10.3	8.0	2.0	487297.5	1542301.7	6571.8	6477.1
99.5	W	AUS	1.7	5.0	6.5	3.9	1.3	487297.5	1542301.7	6571.8	6472.3
101.7	W	AUS	1.9	2.5	11.0	5.7	4.4	487297.5	1542301.7	6571.8	6470.1
7.5	DD	AUS	2.771	7.857	9.486	3.423	1.207	488943.410	1546988.920	6590.690	6583.190
13.0	DD	AUS	1.806	3.203	6.557	3.631	2.047	488943.410	1546988.920	6590.690	6577.690
23.0	DD	AUS	1.459	2.911	2.806	1.924	0.964	488943.410	1546988.920	6590.690	6567.690
34.0	DD	AUS	2.147	6.081	10.329	4.810	1.699	488943.410	1546988.920	6590.690	6556.690
34.0	*DD*	*USGS*	*2.467*	*5.094*	*17.000*	*6.891*	*3.337*	*488943.410*	*1546988.920*	*6590.690*	*6556.690*
36.0	DD	AUS	1.208	8.179	8.403	6.955	1.027	488943.410	1546988.920	6590.690	6554.690
44.0	DD	AUS	1.049	6.138	3.624	3.455	0.590	488943.410	1546988.920	6590.690	6546.690
44.0	*DD*	*USGS*	*0.602*	*5.814*	*4.091*	*6.795*	*0.704*	*488943.410*	*1546988.920*	*6590.690*	*6546.690*
46.0	*DD*	*USGS*	*0.889*	*0.749*	*4.364*	*4.910*	*5.825*	*488943.410*	*1546988.920*	*6590.690*	*6544.690*
66.0	*DD*	*USGS*	*1.818*	*0.000*	*17.727*	*9.750*	---	*488943.410*	*1546988.920*	*6590.690*	*6524.690*
8.3	DD2	AUS	1.652	3.469	14.614	8.847	4.213	489421.800	1547489.410	6591.280	6582.980
16.7	DD2	AUS	1.821	2.674	7.183	3.944	2.686	489421.800	1547489.410	6591.280	6574.580
23.2	DD2	AUS	1.269	0.044	4.883	3.849	111.518	489421.800	1547489.410	6591.280	6568.080
29.8	DD2	AUS	1.357	1.665	4.306	3.173	2.586	489421.800	1547489.410	6591.280	6561.480
32.0	DD2	AUS	1.434	6.090	5.987	4.175	0.983	489421.800	1547489.410	6591.280	6559.280
38.9	DD2	AUS	1.429	4.919	10.251	7.174	2.084	489421.800	1547489.410	6591.280	6552.380
42.4	DD2	AUS	1.691	4.531	9.642	5.701	2.128	489421.800	1547489.410	6591.280	6548.880
52.0	*DD2*	*USGS*	*0.399*	*7.282*	*3.000*	*7.519*	*0.412*	*489421.800*	*1547489.410*	*6591.280*	*6539.280*

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57.5	*DD2*	*USGS*	*0.572*	*7.552*	*3.545*	*6.196*	*0.469*	*489421.800*	*1547489.410*	*6591.280*	*6533.780*
66.5	*DD2*	*USGS*	*0.982*	*0.420*	*6.727*	*6.851*	*16.035*	*489421.800*	*1547489.410*	*6591.280*	*6524.780*
88.0	*DD2*	*USGS*	*1.105*	*3.776*	*8.545*	*7.733*	*2.263*	*489421.800*	*1547489.410*	*6591.280*	*6503.280*
4.9	MV	AUS	1.92	1.55	19.54	10.19	12.57	484417.8	1542617.6	6568.5	6563.6
7.2	MV	AUS	1.22	5.92	17.37	14.28	2.94	484417.8	1542617.6	6568.5	6561.3
17.5	MV	AUS	0.76	7.33	7.82	10.31	1.07	484417.8	1542617.6	6568.5	6551.0
22.2	MV	AUS	0.00	12.40	1.76	---	0.14	484417.8	1542617.6	6568.5	6546.3
31.7	MV	AUS	0.56	1.39	8.41	14.98	6.03	484417.8	1542617.6	6568.5	6536.8
40.0	MV	AUS	0.87	0.99	2.24	2.58	2.25	484417.8	1542617.6	6568.5	6528.5
54.2	MV	AUS	0.89	1.20	2.26	2.53	1.88	484417.8	1542617.6	6568.5	6514.3
61.4	MV	AUS	0.70	1.64	1.59	2.27	0.97	484417.8	1542617.6	6568.5	6507.1
84.0	*MV*	*USGS*	*0.65*	*2.28*	*1.09*	*1.69*	*0.48*	*484417.8*	*1542617.6*	*6568.5*	*6484.5*
95.5	*MV*	*USGS*	*2.10*	*0.00*	*9.36*	*4.47*	---	*484417.8*	*1542617.6*	*6568.5*	*6473.0*
6.0	ND	AUS	1.6	7.1	12.7	7.8	1.8	494872.3	1545927.1	6591.8	6585.8
12.5	ND	AUS	1.7	1.7	5.2	3.1	3.0	494872.3	1545927.1	6591.8	6579.3
17.7	ND	AUS	1.7	6.2	4.5	2.6	0.7	494872.3	1545927.1	6591.8	6574.1
21.5	ND	AUS	1.1	7.3	6.7	6.0	0.9	494872.3	1545927.1	6591.8	6570.3
32.4	ND	AUS	1.4	9.0	4.7	3.3	0.5	494872.3	1545927.1	6591.8	6559.4
34.8	ND	AUS	1.6	4.4	3.7	2.3	0.8	494872.3	1545927.1	6591.8	6557.0
34.8	*ND*	*USGS*	*1.925*	*0.180*	*6.182*	*3.212*	*34.381*	*494872.330*	*1545927.140*	*6591.790*	*6556.990*
40.7	ND	AUS	1.5	0.9	5.2	3.5	6.1	494872.3	1545927.1	6591.8	6551.1
52.5	*ND*	*USGS*	*1.739*	*0.000*	*11.000*	*6.324*	---	*494872.330*	*1545927.140*	*6591.790*	*6539.290*
56.7	*ND*	*USGS*	*1.436*	*6.683*	*7.000*	*4.875*	*1.047*	*494872.330*	*1545927.140*	*6591.790*	*6535.090*
13.5	Q	AUS	1.8	3.0	7.7	4.2	2.6	492152.8	1548693.1	6591.5	6578.0
17.5	Q	AUS	1.5	3.5	4.6	3.1	1.3	492152.8	1548693.1	6591.5	6574.0
32.7	Q	AUS	1.7	0.8	6.1	3.7	7.6	492152.8	1548693.1	6591.5	6558.8
47.5	Q	AUS	1.5	0.6	7.6	4.9	11.8	492152.8	1548693.1	6591.5	6544.0
62.0	Q	AUS	1.1	3.7	5.5	4.9	1.5	492152.8	1548693.1	6591.5	6529.5
81.0	*Q*	*USGS*	*2.270*	*0.000*	*17.273*	*7.610*	---	*492152.760*	*1548693.110*	*6591.520*	*6510.520*

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Depth (feet)	Location	Logged By	K (%)	U (ppm)	Th (ppm)	Th/K	Th/U	Easting	Northing	Surface Elevation (feet amsl)	Sample Elevation (feet amsl)
84.0	Q	AUS	1.4	8.1	6.5	4.5	0.8	492152.8	1548693.1	6591.5	6507.5
84.0	*Q*	*USGS*	*0.367*	*17.471*	*7.636*	*20.822*	*0.437*	*492152.760*	*1548693.110*	*6591.520*	*6507.520*
93.0	*Q*	*USGS*	*0.626*	*7.012*	*5.000*	*7.988*	*0.713*	*492152.760*	*1548693.110*	*6591.520*	*6498.520*

Acronyms and Abbreviations:

amsl = above mean sea level

AUS = Arcadis U.S., Inc.

italics = USGS data

K = potassium

ppm = parts per million

Th = thorium

U = uranium

USGS = U.S. Geological Survey

% = percent

--- = not measured

Table 5
Geochemical Results Summary - Soil
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Sample ID	Total Metals (mg/kg dry mass)												Moisture (weight %)	Paste pH (s.u.)	Total Sulfur (weight %)	Total Organic Carbon (weight %)	ORP on Solids (mV)	δ34S Dissolved SO_4 (‰ VCDT)		δ18O Dissolved SO_4 (‰ VSMOW)		δ34S Adsorbed SO_4 (‰ VCDT)		δ18O Adsorbed SO_4 (‰ VSMOW)		δ34S Sulfide (‰ VCDT)	
	Al	Ca	Fe	Mg	Mn	Mo	K	Se	Na	Si	U	V						Result	Analysis repeat	Result	Analysis repeat	Result	Analysis repeat	Result	Analysis repeat	Result	Analysis repeat
BK1-11.5-12.5-052119	2290	2770	3860	787	59	<1 U	409	<3 U	43	648 J	<1 U	5	1.6	8.2	0.02	0.1	276	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK1-15-15.5-052119	1350	2460	2680	459	28	<1 U	286	<3 U	<40	726 J	<1 U	<5 U	0.6	8.5	0.02	0.1	232	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK1-33.5-34-052119	3350	5840	7210	1120	96	<1 U	678	<3 U	111	825 J	<1 U	9	2.7	8.1	0.02	0.3	254	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK1-39-40-052119	3390	8760	8320	1060	148	1	844	<3 U	228	878 J	<1 U	9	6.8	8.3	0.02	0.4	218	6.0	5.6	9.6	9.2	6.0	NA	8.6	NA	3.1	NA
BK1-41-41.5-052119	1730	4560	4480	518	80	<1 U	452	<3 U	119	765 J	<1 U	5	1.8	8.4	0.02	0.2	186	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK1-47-48-052119	7810	22400	14200	3500	325	<1 U	1260	<3 U	235	1920 J	<1 U	13	13.6	7.9	0.03	0.7	267	-22.1	NA	2.8	NA	-14.8	-15.5	6.7	5.6	-16.1	NA
BK1-48.5-49.5-052119	1640	18500	7740	748	272	<1 U	317	<3 U	100	942 J	<1 U	8	11.6	8.2	0.02	0.3	275	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK1-51.5-52.5-052119	2500	21200	46300	1090	1520	2	317	<3 U	211	769 J	2	21	7.6	8.0	0.02	1.2	262	-25.7	-25.3	1.7	NA	-10.1	NA	NES	NA	-2.9	1.1
BK1-52-53-052119	10800	32700	17500	4010	406	<1 U	1780	<3 U	347	2170 J	2	18	18.3	7.9	0.02	1.0	294	-20.3	NA	2.2	NA	-15.2	-14.9	7.2	6.7	1.4	1.4
BK1-55.5-56.5-052219	20000	24100	14100	8750	550	<1 U	1810	<3 U	328	2110 J	<1 U	22	13.8	8.0	0.01	0.8	268	-20.9	NA	6.9	6.6	-10.3	-9.6	6.1	7.3	10.4	NA
BK2-12-13-051519	5620	19600	6950	1880	185	<1 U	935 J	<1 U	167	397 J	<1 U	9	2.5	7.9	<0.01 U	0.9	325	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK2-20-21-051519	2110	3150	6870	699	105	<1 U	504 J	<1 U	147	437 J	<1 U	9	8.2	8.1	0.01	0.2	229	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK2-35-36-051519	1620	5630	4750	510	92	<1 U	433 J	<1 U	130	320 J	<1 U	6	3.1	8.3	0.01	0.2	179	-0.5	-0.1	7.9	8.3	0.0	NA	NES	NA	-7.7	NA
BK2-38-39-051519	2200	5000	5850	627	105	<1 U	625 J	<1 U	180	462 J	<1 U	6	0.3	8.4	0.01	0.2	274	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK2-41.5-42.5-051519	6150	15600	8700	3190	165	<1 U	1120 J	<1 U	259	345 J	<1 U	11	6.1	8.0	<0.01 U	0.9	258	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK2-44-44.5-051619	5260	13900	8930	2740	138	<1 U	927 J	<1 U	210	335 J	<1 U	10	7.3	7.9	<0.01 U	0.6	247	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK2-59-60-051619	1670	19800 J	6480	723	152	<1 U	338 J	<1 U	104	387 J	<1 U	6	8.7	8.2	<0.01 U	0.4	252	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK2-63.5-64-051619	3010	40100	8840	1300	317	<1 U	547 J	<1 U	144	332 J	<1 U	10	4.5	8.0	<0.01 U	1.0	272	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK2-72.5-73.5-051619	3130	11000	4290	1900	113	<1 U	642 J	<1 U	120	326 J	<1 U	7	6.0	8.0	<0.01 U	0.8	267	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK2-77-77.5-051619	3910	10800	5780	1980	112	<1 U	772 J	<1 U	144	373 J	<1 U	8	7.7	8.0	<0.01 U	0.6	274	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK3-14.5-15-052219	2340 J	7390 J	4250	1170	95 J	<1 U	617	<1 UJ	107	312 J	<1 UJ	10	4.1	8.3	0.02	0.3	209	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK3-23-23.5-052219	6340 J	8300 J	9600	2130	187 J	<1 U	1620	<1 UJ	382	420 J	<1 UJ	16	2.5	8.2	0.02	0.2	319	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK3-26-27-052219	7920 J	37500 J	8300	3770	220 J	<1 U	1910	<1 UJ	456	671 J	<1 UJ	12	2.5	8.0	0.02	1.3	309	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK3-31.5-32.5-052219	6680 J	15100 J	9290	3190	186 J	1	1250	<3 UJ	436	1140 J	<1 UJ	13	3.4	8.3	0.02	0.6	256	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK3-35-35.5-052219	2760 J	9360 J	6800	1380	116 J	<1 U	575	<3 UJ	234	754 J	<1 UJ	10	16.7	8.5	0.02	0.3	245	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK3-46.5-47.5-052219	2420 J	12800 J	10800	1190	205 J	<1 U	476	<3 UJ	202	792 J	<1 UJ	13	10.9	8.5	0.02	0.4	228	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK3-47.5-48.5-052219	3010 J	10300 J	11700	1420	152 J	<1 U	597	<3 UJ	220	1230 J	<1 UJ	14	10.1	8.5	0.01	0.4	212	-4.1	NA	5.2	NA	-2.0	NA	NA	1.7	-2.7	-1.9
BK3-50.5-52-052219	7370 J	9570 J	7910	2370	123 J	<1 U	1490	<3 UJ	341	1520 J	<1 UJ	13	10.8	8.3	0.02	0.4	256	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK3-55-56-052219	6250 J	24700 J	6530	2050	195 J	<1 U	1160	<3 UJ	358	1330 J	<1 UJ	13	9.9	8.5	0.02	1.0	226	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BK3-42.5-43.5-052219	31900 J	33100 J	21600	10400	413 J	<1 U	6370	<3 UJ	1150	1760 J	1 J	36	13.6	8.1	0.02	1.1	255	-14.8	NA	5.5	5.8	-5.5	-5.4	5.6	5.2	-19.2	NA
DUP (BK2-59-60-051619)	1720	10100 J	7390	672	144	<1 U	331	<3 U	118	889 J	<1 U	7	8.5	8.2	0.02	0.4	288	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DUP-2 (BK1-41-41.5-052119)	1680	6470	3950	521	87	<1 U	386	<3 U	115	601 J	<1 U	<5 U	1.6	8.6	0.02	0.2	237	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note:
1. Nondetect values and samples that were not analyzed are presented in gray.

Acronyms and Abbreviations:

Al = aluminum
Ca = calcium
Fe = iron
ID = identification
K = potassium
Mg = magnesium
mg/kg = milligram per kilogram
Mo = molybdenum
Mn = manganese
mV = millivolt
Na = sodium
NA = not analyzed
NES = not enough sample
ORP = oxidation-reduction potential
Se = selenium
Si = silica
SO_4 = sulfate
s.u. = standard units
U = uranium
V = vanadium
VCDT = Vienna-Canyon Diablo Troilite
VSMOW = Vienna-Standard Mean Ocean Water
< = less than
‰ = per mil
$\delta^{34}S$ = per mil difference between stable sulfur isotopes ^{32}S and ^{34}S
% = percent

Qualifier:
J = estimated value
U = not detected; method detection limit shown

Table 6
X-Ray Diffraction Results Summary
Supplemental Background Soil and Groundwater Investigation Report
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Cibola County, New Mexico

Sample Type	Sample ID:	BK1-39-40-052119	BK1-47-48-052119	BK1-51-52-052119	BK1-52-53-052119	BK1-55.5-56.5-052219	BK2-35-36-051519	BK2-63.5-64-051619	BK2-77-77.5-051619	BK3-42.5-43.5-052219	BK3-47.5-48.5-052219
	Borehole	BK1	BK1	BK1	BK1	BK1	BK2	BK2	BK2	BK3	BK3
	Lithology:	Fine Sandy Silt	Clay	Fine to Coarse Sand and Gravel with Trace Silt	Sandy Clay	Clay	Fine Sand with Some Silt	Sandy Gravel	Silty Fine Sand	Clay	Gravelly Sand
	Total Uranium (mg/kg)[a]:	<1	<1	2	2	<1	<1	<1	<1	1	<1
	Hydrostratigraphic Zone[b]:	Unsaturated	Saturated	Saturated	Saturated	Saturated	Unsaturated	Saturated	Saturated	Saturated	Saturated
Bulk sample	Quartz	72	29	53	40	51	76	77	70	30	63
	Calcite	3	5	16	7	7	2	5	4	10	3
	Plagioclase	8	6	8	6	8	5	4	6	5	7
	K-Feldspar	11	6	9	7	6	9	7	9	5	18
	Goethite/Hematite	3	-	2	3	1	1	-	-	-	-
	Illite/Mica	-	8	3	5	5	2	3	3	22	3
	Kaolinite	-	15	6	12	4	2	2	3	9	2
	Smectite	-	31	<5*	20	13	-	-	-	19	-
	Dolomite	-	-	-	-	3	-	-	2	-	2
	Unaccounted	<5	-	<5	-	-	<5	<5	<5	-	<5
	Total clay	NA	54	NA	37	22	NA	NA	NA	50	NA
Clay fraction <2µm	Smectite	NA	58	NA	55	60	NA	NA	NA	37	NA
	Illite	NA	15	NA	14	22	NA	NA	NA	44	NA
	Kaolinite	NA	28	NA	31	17	NA	NA	NA	18	NA

Notes:
1. Data are from x-ray diffraction analysis by DCM Science Laboratory in Lakewood, Colorado unless otherwise noted.
2. Non-detect values and samples that were not analyzed are presented in gray.

[a] Data from Energy Laboratories, Inc.
[b] Groundwater was encountered in BK1c, BK2c, and BK3 at 42.5, 42.5, and 45 feet below ground surface, respectively.

Acronyms and Abbreviations:
ID = identification
mg/kg = milligram per kilogram
NA = not analyzed
* = may be present
< = less than
- = not detected greater than 1 percent
µm = micrometer

Table 7
Selective Sequential Extraction Protocol
Supplemental Background Soil and Groundwater Investigation Report
Grants Reclamation Project
Cibola County, New Mexico

ARCADIS Design & Consultancy for natural and built assets

Step	Targeted Fraction	Extraction Solution	Extraction Volume	Protocol
I	Water soluble	Distilled water	30 mL	1. Prepare sample by drying at 105 °C and grinding in agate mortar.
				2. Weigh 2.0 grams of soil into 50 mL centrifuge tube.
				3. Add 30 mL deionized H_2O.
				4. Shake for 1 hour.
				5. Centrifuge at 12,000 g for 30 minutes.
				6. Pipette supernatant into plastic syringe and filter through 0.45 µm pore-size syringe filter.
				7. Analyze supernatant for U, V, Se, Mo, Ca, Mg, Na, Al, Fe, Mn, Si, sulfate, carbonate, phosphate
II	Adsorbed	0.0144M $NaHCO_3$ / 0.0028 M Na_2CO_3	16 mL	1. Add 16 mL of 0.0144 M $NaHCO_3$ / 0.0028 M Na_2CO_3 solution.
				2. Shake for 1 hour.
				3. Centrifuge @ 12,000 g for 30 minutes.
				4. Pipette supernatant into plastic syringe and filter through 0.45 µm pore-size syringe filter.
				5. Analyze supernatant for U, V, Se, Mo, Ca, Mg, Na, Al, Fe, Mn, Si, sulfate, phosphate
				6. Add 16 mL deionized H_2O into centrifuge tube containing the solid sample and hand shake for 1 minute.
				7. Centrifuge @ 12,000 g for 30 minutes.
				8. Pipette and discard supernatant.
III	Carbonate bound	1 M NaOAc (pH = 5.0)	16 mL	1. Add 16 mL of 1 M NaOAc (adjusted to pH = 5 with HOAc).
				2. Shake for 2.5 hours.
				3. Repeat Steps 3 through 8 in Extraction Step II.
IV	Oxide bound	0.04 M $NH_2OH{\cdot}HCl$ in 25% (v/v) HOAc	40 mL	1. Add 40 mL of 0.04 M $NH_2OH{\cdot}HCl$ in 25% (v/v) HOAc (pH ≈ 2).
				2. Hand shake for 1 minute.
				3. Place in oven at 96 ± 3 °C for 6 hours. Hand shake every 1 hour.
				4. After 6 hours, remove from oven and hand shake.
				5. Repeat Steps 3 through 8 in Extraction Step II.
V	Organic bound	0.02 M HNO_3 / 3.2 M NH_4OAc	40 mL	1. Add 6 mL of 0.02 M HNO_3.
				2. Add 10 mL of 30% H_2O_2 adjusted to pH = 2 with HNO_3.
				3. Hand shake for 1 minute.
				4. Place into oven at 85 ± 2 °C for 2 hours.
				5. Hand shake for 1 minute after 1 hour and 2 hours.
				6. Add 6 mL H_2O_2 (pH = 2 with HNO_3) and hand shake for 1 minute.
				7. Heat to 85 ± 2 °C for 3 hours. Shake for 1 minute each hour.
				8. Allow sample to cool to room temperature.
				9. Add 10 mL of 3.2 M NH_4OAc in 20% (v/v) HNO_3.
				10. Add 8 mL deionized H_2O.
				11. Shake for 30 minutes.
				12. Repeat Steps 3 through 8 in Extraction Step II.
VI	Residual	HF/HNO_3		1. Digest final residue using USEPA Method 3052.
				2. Analyze digest for U, V, Se, Mo, Ca, Mg, Na, Al, Fe, Mn, Si.

Note:

1. Protocol modified from Tessier, A., P.G.C. Campbell, and M. Bisson. 1979. Sequential Extraction Procedure for the Speciation of Particulate Trace Metals. Analytical Chemistry. 51:844-851

Acronyms and Abbreviations:

Al = aluminum	NaOAc = sodium acetate
Ca = calcium	$NaHCO_3$ = sodium bicarbonate
Fe = iron	Na_2CO_3 = sodium carbonate
g = times gravity force	$NH_2OH{\cdot}HCl$ = hydroxylamine hydrochloride
HF = hydrofluoric acid	NH_4OAc = ammonium acetate
HNO_3 = nitric acid	Se = selenium
HOAc = acetic acid	Si = silica
M = molar	U = uranium
Mg = magnesium	USEPA = United States Environmental Protection Agency
mg/kg = milligram per kilogram	V = vanadium
mL = milliliter	v/v = volume by volume
Mn = manganese	% = percent
Mo = molybdenum	µm = micrometer
Na = sodium	°C = degrees Celsius

Table 8
Selective Sequential Extraction Results
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Sample ID	Lithology	Selective Sequential Extraction Step	Selective Sequential Extraction (mg/kg)													
			Al	Ca	Fe	Mg	Mn	Mo	Se	Si	Na	U	V	Bicarbonate alkalinity (as $CaCO_3$)	Sulfate	Orthophosphate
BK1-11.5-12.5-052119	Clayey fine sand	water soluble	3.0 J	76	20.3	14 J	< 0.30 U	0.0182	< 0.003 U	73	< 6 U	0.0046 J	< 0.15 U	304 J	20 J	0.46 J
		adsorbed	< 2.4 U	18 J	12	< 8 U	< 0.40 U	0.016 J	< 0.004 U	51	2972	0.0113 J	< 0.24 U	NA	8.9 J	0.40 J
		carbonate bound	8 J	3004	13 J	105 J	13	< 0.032 U	0.016 J	40 J	173279	0.057 J	< 0.80 U	NA	NA	NA
		oxide bound	263	364	1419	223 J	32	0.081	0.0243	709	1275	0.0628	2.0 J	NA	NA	NA
		organic/sulfide bound	239	51 J	51	20 J	2.4 J	0.040 J	0.020 J	336	< 20 U	< 0.020 U	< 0.60 U	NA	NA	NA
		recalcitrant	19700	700 J	3600	< 1000 U	< 50 U	< 3 U	< 1 U	421000 J	5000	< 1 U	< 30 U	NA	NA	NA
		total extracted	20213	4213	5115	362	47	0.16	0.060	422209	182526	0.14	2.0	304	29	0.86
BK1-39-40-052119	Fine sandy silt	water soluble	16	121	24.8	13 J	< 0.32 U	0.0596	< 0.0097 UB	89	73	0.0097 J	< 0.16 U	537 J	122 J	< 0.16 UR
		adsorbed	9.5	14 J	20	< 9 U	< 0.43 U	0.043	0.0069 J	64	3119	0.0258	< 0.26 U	NA	27 J	0.95 J
		carbonate bound	146	10311	437	206 J	100	0.043 J	0.026 J	189	189044	0.129	< 0.90 U	NA	NA	NA
		oxide bound	709	838	3050	301 J	37	0.537	0.0473	816	1461	0.232	< 2.1 U	NA	NA	NA
		organic/sulfide bound	318	95	26	< 21 U	1.7 J	0.752	0.129	501	43 J	0.043 J	0.90 J	NA	NA	NA
		recalcitrant	24100	1800 J	10500	< 1000 U	130 J	< 3 U	< 1 U	421000 J	10000	< 1 U	< 30 U	NA	NA	NA
		total extracted	25299	13179	14058	520	269	1.43	0.21	422659	203740	0.44	0.90	537	149	0.95
BK1-47-48-052119	Clay	water soluble	3.5 J	116	14.5	22 J	< 0.35 U	0.0208	0.0415 J	102	170	0.0052 J	< 0.17 U	462 J	372 J	0.87 J
		adsorbed	< 2.8 U	44	5.5	< 9 U	< 0.46 U	0.009 J	< 0.0046 U	47	2676	0.0221 J	< 0.28 U	NA	71 J	0.65 J
		carbonate bound	< 9 U	20669	29	581	133	< 0.037 U	0.028 J	55 J	187313	0.166 J	< 0.90 U	NA	NA	NA
		oxide bound	346	2999	1582	1084	32	0.046 J	0.060 J	992	6067	0.2284 J	2.3 J	NA	NA	NA
		organic/sulfide bound	789	1269	148	507	13	< 0.046 U	0.115 J	602	138	0.069 J	< 0.70 U	NA	NA	NA
		recalcitrant	55300	800 J	19100	4000 J	130 J	< 3 U	< 1 U	363000 J	11000	2 J	60 J	NA	NA	NA
		total extracted	56439	25897	20879	6194	308	0.08	0.24	364798	207364	2.49	62.3	462	443	1.52
BK1-51-52-052119	Fine to coarse sand and gravel with trace silt	water soluble	< 1.6 U	135	1.8 J	21 J	< 0.32 U	0.0306	0.0548	34	121	0.0064 J	< 0.16 U	322 J	425 J	0.48 J
		adsorbed	< 2.6 U	14 J	4.3	< 9 U	< 0.43 U	0.017 J	< 0.0043 UB	22 J	2947	0.0498	< 0.26 U	NA	52 J	1.1 J
		carbonate bound	< 9 U	48980	52	438	292	< 0.034 U	0.043	43 J	164984	0.361	< 0.90 U	NA	NA	NA
		oxide bound	365	3673	2213	666	331	0.086	0.0559	644	1976	0.275	4.3 J	NA	NA	NA
		organic/sulfide bound	425	636	43	129	29	0.129	0.086	408	43 J	0.021 J	1.9 J	NA	NA	NA
		recalcitrant	41200	2500 J	29300	2000 J	290 J	< 3 U	< 1 U	374000 J	14000	1 J	50 J	NA	NA	NA
		total extracted	41990	55938	31614	3254	942	0.26	0.24	375151	184071	1.71	56	322	477	1.6
BK1-52-53-052119	Sandy clay	water soluble	8.7	168	6.1	33 J	< 0.35 U	0.0311	0.0675 J	73	266	0.0138 J	0.17 J	462 J	670 J	0.87 J
		adsorbed	< 2.8 U	63	< 1.8 U	9 J	< 0.46 U	0.018 J	0.0055 J	29	2602	0.0729	< 0.28 U	NA	113 J	0.74 J
		carbonate bound	9 J	29250	19	812	177	< 0.037 U	0.018 J	65 J	190081	0.378	< 0.90 U	NA	NA	NA
		oxide bound	406	4014	1776	1200	118	0.046 J	0.083 J	1149	6690	0.3737	5.5	NA	NA	NA
		organic/sulfide bound	994	1882	235	646	40	< 0.046 U	0.300 J	738	161	0.208	< 0.70 U	NA	NA	NA
		recalcitrant	68100	1800 J	30300	6000	200 J	< 3 U	< 1 U	331000 J	12000	2 J	70 J	NA	NA	NA
		total extracted	69518	37177	32336	8700	535	0.10	0.47	333054	211800	3	76	462	783	1.61
BK1-55.5-56.5-052219	Clay	water soluble	58	104	7.8	19 J	< 0.34 U	0.017	0.0255	85	218	0.0051 J	< 0.17 U	455 J	323 J	0.51 J
		adsorbed	8.2 J	45	4.5	9 J	< 0.45 U	0.009 J	< 0.0045 U	48	2588	0.020 J	< 0.27 U	NA	51 J	0.45 J
		carbonate bound	18 J	18888	14 J	617	298	< 0.018 U	0.027	73 J	155278	0.145	< 0.90 U	NA	NA	NA
		oxide bound	313	3019	831	1158	68	0.045 J	0.045	731	6765	0.1952	3.4	NA	NA	NA
		organic/sulfide bound	879	1832	79	772	29	0.045 J	0.068	613	182	0.045 J	2.3	NA	NA	NA
		recalcitrant	57800	900 J	24900	10000	150 J	< 3 U	< 1 U	348000 J	10000	2 J	70 J	NA	NA	NA
		total extracted	59076	24788	25836	12575	545	0.12	0.17	349550	175031	2	76	455	374	0.96

Table 8
Selective Sequential Extraction Results
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Sample ID	Lithology	Selective Sequential Extraction Step	Selective Sequential Extraction (mg/kg)													
			Al	Ca	Fe	Mg	Mn	Mo	Se	Si	Na	U	V	Bicarbonate alkalinity (as $CaCO_3$)	Sulfate	Orthophosphate
BK2-35-36-051519	Fine sand with some silt	water soluble	14	93	14	< 6 U	< 0.31 U	0.0635	0.0031 J	56	57	0.0062 J	0.15 J	414 J	56 J	0.46 J
		adsorbed	26	9 J	13	< 8 U	< 0.41 U	0.041	< 0.0041 U	39	3256	0.0132 J	< 0.25 U	NA	82 J	0.74 J
		carbonate bound	58	5942	131	58 J	54	0.017 J	< 0.008 U	83	156198	0.074 J	< 0.80 U	NA	NA	NA
		oxide bound	440	438	1769	124	28	0.269	0.0248	587	599	0.103	2.1	NA	NA	NA
		organic/sulfide bound	174	35 J	17	< 21 U	< 1.0 U	0.331	0.021 J	291	21 J	< 0.021 U	1.0 J	NA	NA	NA
		recalcitrant	16200	900 J	4800	< 1000 U	60 J	< 3 U	< 1 U	418000 J	7000	< 1 U	< 30 U	NA	NA	NA
		total extracted	16912	7417	6744	182	142	0.72	0.05	419056	167131	0.1964	3.3	414	138	1.20
BK2-59-60-051619	Fine to medium sand with some silt	water soluble	7 J	110	4.3	8 J	< 0.33 U	0.0148 J	0.0721	31	84	< 0.0033 U	< 0.16 U	328 J	251 J	0.16 J
		adsorbed	13	6 J	3.5	< 9 U	< 0.44 U	0.009 J	0.0061 J	20 J	3305	0.017 J	< 0.26 U	NA	< 874 UR	0.26 J
		carbonate bound	< 9 U	10142	40	52 J	78	< 0.017 U	0.017 J	< 26 U	146885	0.087	< 0.90 U	NA	NA	NA
		oxide bound	275	872	1123	240	21	0.044 J	0.0284	402	634	0.1202	1.7 J	NA	NA	NA
		organic/sulfide bound	179	74	22	< 22 U	3.9 J	0.087 J	0.022 J	216	22 J	0.022 J	1.0 J	NA	NA	NA
		recalcitrant	20500	1400 J	12300	< 1000 U	180 J	< 3 U	< 1 U	408000 J	8000	< 1 U	< 30 U	NA	NA	NA
		total extracted	20974	12604	13493	300	283	0.2	0.15	408669	158930	0.2462	2.7	328	251	0.42
BK2-63.5-64-051619	Sandy gravel	water soluble	5 J	144	2.8 J	12 J	< 0.31 U	0.025	0.0827 J	41	117	0.0062 J	< 0.16 U	312 J	381 J	0.16 J
		adsorbed	5 J	12 J	3.3	< 8 U	< 0.42 U	0.017 J	< 0.0058 UB	28	2772	0.0325	< 0.25 U	NA	38 J	0.42 J
		carbonate bound	17 J	27971	75	200 J	246	< 0.033 U	0.025 J	33 J	174818	0.441	< 0.80 U	NA	NA	NA
		oxide bound	312	1831	1145	562	25	< 0.083 U	0.062 J	562	1998	0.312	< 2.1 U	NA	NA	NA
		organic/sulfide bound	418	354	48	125	5.6 J	0.083 J	0.062 J	379	42 J	0.042 J	1.0 J	NA	NA	NA
		recalcitrant	31400	1100 J	14200	1000 J	170 J	< 3 U	< 1 U	389000 J	8000	< 1 U	< 30 U	NA	NA	NA
		total extracted	32157	31412	15474	1899	447	0.13	0.23	390043	187747	0.8337	1.0	312	419	0.58
BK2-72.5-73.5-051619	Sandy silt	water soluble	11	100	19	10 J	< 0.32 U	0.0382	0.0812	81	115	0.0127 J	< 0.16 U	530 J	215 J	0.48 J
		adsorbed	26	20 J	8.5	< 8 U	< 0.42 U	0.017 J	0.0272	49	2845	0.0433	< 0.25 U	NA	27 J	0.59 J
		carbonate bound	8 J	12229	13 J	255	93	< 0.034 U	0.059	34 J	179193	0.204	< 0.80 U	NA	NA	NA
		oxide bound	340	2569	1221	1189	32	< 0.085 U	0.085 J	552	2293	0.234	< 2.1 U	NA	NA	NA
		organic/sulfide bound	403	361	72	170	4.7 J	0.064 J	0.594	346	21 J	0.106	1.0 J	NA	NA	NA
		recalcitrant	29700	600 J	7500	< 1000 U	70 J	< 3 U	< 1 U	418000 J	9000	< 1 U	< 30 U	NA	NA	NA
		total extracted	30488	15879	8834	1624	200	0.12	0.85	419062	193467	0.6000	1.0	530	242	1.07
BK2-77-77.5-051619	Silty fine sand	water soluble	13	96	22	11 J	< 0.32 U	0.0337	0.0626	114	140	0.0096 J	< 0.16 U	429 J	214 J	0.64 J
		adsorbed	15	24 J	11	< 9 U	< 0.43 U	0.009 J	0.0188	61	2827	0.0317	< 0.26 U	NA	32 J	0.69 J
		carbonate bound	17 J	13876	19	325	112	< 0.034 U	0.043	43 J	182441	0.223	< 0.90 U	NA	NA	NA
		oxide bound	385	2634	1400	1178	39	< 0.086 U	0.086 J	685	3704	0.214	2.1 J	NA	NA	NA
		organic/sulfide bound	488	435	79	236	6.6	0.043 J	0.193	405	64 J	0.086 J	1.0 J	NA	NA	NA
		recalcitrant	36300	1000 J	11400	2000 J	100 J	< 3 U	< 1 U	406000 J	9000	1 J	40 J	NA	NA	NA
		total extracted	37218	18065	12931	3750	258	0.09	0.40	407308	198176	2	43.1	429	246	1.33
BK3-31.5-32.5-052219	Clay	water soluble	11	60	18.8	8 J	< 0.31 U	0.371	0.0278	107	311	0.0093 J	< 0.15 U	618 J	233 J	0.46 J
		adsorbed	6.6 J	21 J	8.2	< 8 U	< 0.41 U	0.140	< 0.0041 U	54	2801	0.0157 J	< 0.25 U	NA	29 J	0.33 J
		carbonate bound	74	13100	147	420	108	< 0.033 U	0.033 J	115	171370	0.115	< 0.80 U	NA	NA	NA
		oxide bound	391	2575	2010	1112	27	0.515	< 0.041 U	700	4016	0.206	2.1 J	NA	NA	NA
		organic/sulfide bound	583	558	109	247	6.2	0.041 J	0.062 J	501	82 J	0.041 J	1.0 J	NA	NA	NA
		recalcitrant	35500	1600 J	13900	2000 J	110 J	< 3 U	< 1 U	390000 J	9000	< 1 U	50 J	NA	NA	NA
		total extracted	36566	17914	16193	3787	251	1.07	0.12	391477	187580	0.39	53	618	262	0.79

Table 8
Selective Sequential Extraction Results
Supplemental Background Soil and Groundwater Investigation Report
Grants Reclamation Project
Cibola County, New Mexico

Sample ID	Lithology	Selective Sequential Extraction Step	Selective Sequential Extraction (mg/kg)													
			Al	Ca	Fe	Mg	Mn	Mo	Se	Si	Na	U	V	Bicarbonate alkalinity (as $CaCO_3$)	Sulfate	Orthophosphate
BK3-42.5-43.5-052219	Clay	water soluble	44	118	22.6	22 J	< 0.34 U	0.0202	0.0321	169	553	0.0287	0.51 J	1125 J	607 J	6.7 J
		adsorbed	2.7 J	60	< 1.8 U	< 9 U	< 0.45 U	0.009 J	< 0.0045 U	41	2547	0.0459	< 0.27 U	NA	55 J	1.0 J
		carbonate bound	18 J	30866	< 7.2 U	990	166	< 0.036 U	0.036 J	117	187177	0.333	< 0.90 U	NA	NA	NA
		oxide bound	337	4297	794	1305	92	< 0.090 U	0.067 J	1170	8751	0.369	6.7 J	NA	NA	NA
		organic/sulfide bound	1129	2857	54	1057	41.8	< 0.045 U	0.135	936	337	0.090 J	4.9	NA	NA	NA
		recalcitrant	67600	3000	33000	8000	250 J	< 3 U	< 1 U	334000 J	10000	2 J	80 J	NA	NA	NA
		total extracted	69131	41198	33871	11374	550	0.03	0.27	336433	209365	3	92	1125	662	7.7
BK3-47.5-48.5-052219	Gravelly sand	water soluble	10	57	21.1	< 7 U	< 0.33 U	0.0283	0.0200	112	230	0.0067 J	0.33 J	445 J	171 J	0.83 J
		adsorbed	6.2 J	16 J	8	< 9 U	< 0.44 U	0.009 J	< 0.0044 U	48	3152	0.016 J	< 0.27 U	NA	20 J	0.44 J
		carbonate bound	18 J	10566	36	178 J	81	< 0.036 U	0.036 J	27 J	189123	0.089	< 0.90 U	NA	NA	NA
		oxide bound	333	1842	1427	777	16 J	< 0.089 U	< 0.044 U	622	1798	0.155 J	4.4 J	NA	NA	NA
		organic/sulfide bound	371	291	60	111	3.1 J	0.067 J	< 0.044 U	364	44 J	0.022 J	1.1 J	NA	NA	NA
		recalcitrant	31300	8900	12500	2000 J	180 J	< 3 U	< 1 U	395000 J	11000	< 1 U	30 J	NA	NA	NA
		total extracted	32038	21672	14052	3066	280	0.1	0.06	396173	205347	0.29	36	445	191	1.27
BK3-50.5-52-052219	Sandy clay and silty fine sand	water soluble	18	61	17.2	7 J	< 0.33 U	0.301	< 0.0066 UB	121	321	0.0099 J	0.33 J	772 J	189 J	1.5 J
		adsorbed	8.8	24 J	14	< 9 U	< 0.44 U	0.097	< 0.0044 U	65	2937	0.0159 J	< 0.26 U	NA	< 88 UR	0.53 J
		carbonate bound	26 J	15347	30	370	79	< 0.035 U	0.035 J	79 J	188754	0.132	< 0.90 U	NA	NA	NA
		oxide bound	243	1521	908	595	29	0.110 J	< 0.044 U	662	3991	0.132 J	4.6 J	NA	NA	NA
		organic/sulfide bound	628	708	86	287	9.5	0.088 J	0.132	529	110	0.044 J	2.0 J	NA	NA	NA
		recalcitrant	26400	900 J	9300	< 1000 U	100 J	< 3 U	< 1 U	403000 J	8000	< 1 U	< 30 U	NA	NA	NA
		total extracted	27324	18561	10355	1259	218	0.60	0.17	404456	204113	0.33	6.9	772	189	2.0

Notes:

1. Non-detect values and samples that were not analyzed are presented in gray.
2. Results provided from ACZ Laboratories, Inc. in units of mg/l for Steps 1-5 were converted to mg/kg by multiplying the result by the volume of extraction fluid and dividing by the mass of sample (2 grams).
3. The total extracted value is the sum of steps 1-6, excluding non-detect data.

Acronyms and Abbreviations:

Al = aluminum
Ca = calcium
$CaCO_3$ = calcium carbonate
Fe = iron
ID = identification
Mg = magnesium
mg/kg = milligram per kilogram
mg/l = milligram per liter
Mn = manganese
Mo = molybdenum
Na = sodium
NA = not analyzed
Se = selenium
Si = silica
U = uranium
V = vanadium
< = less than

Qualifier:

J = estimated value
U = not detected; method detection limit shown
UB = qualified as not detected due to blank contamination
UR = not detected; rejected result

Table 9
Comparison of Selective Sequential Extraction to Total Metals Results
Supplemental Background Soil and Groundwater Investigation Report
Grants Reclamation Project
Cibola County, New Mexico

ARCADIS Design & Consultancy for natural and built assets

Sample ID	Calcium (mg/kg)			Iron (mg/kg)			Molybdenum (mg/kg)			Selenium (mg/kg)			Uranium (mg/kg)			Vanadium (mg/kg)		
	Total Metal by 3050B	Sum of SSE Steps 1-5	Sum of SSE Steps 1-6	Total Metal by 3050B	Sum of SSE Steps 1-5	Sum of SSE Steps 1-6	Total Metal by 3050B	Sum of SSE Steps 1-5	Sum of SSE Steps 1-6	Total Metal by 3050B	Sum of SSE Steps 1-5	Sum of SSE Steps 1-6	Total Metal by 3050B	Sum of SSE Steps 1-5	Sum of SSE Steps 1-6	Total Metal by 3050B	Sum of SSE Steps 1-5	Sum of SSE Steps 1-6
BK1-11.5-12.5	2770	3513	4213	3860	1515	5115	< 1	0.19	3.19	< 3	0.07	1.07	< 1	0.16	1.16	5	3.8	33.8
BK1-39-40	8760	11378	13178	8320	3557	14057	1	1.43	4.43	< 3	0.22	1.22	< 1	0.44	1.44	9	4.3	34.3
BK1-47-48	22400	25097	25897	14200	1779	20879	< 1	0.16	3.16	< 3	0.25	1.25	< 1	0.49	2.49	13	4.4	64.4
BK1-51-52	21200	53438	55938	46300	2314	31614	2	0.30	3.30	< 3	0.24	1.24	2	0.71	1.71	21	7.5	57.5
BK1-52-53	32700	35377	37177	17500	2039	32339	< 1	0.18	3.18	< 3	0.47	1.47	2	1.05	3.05	18	7.6	77.6
BK1-55.5-56.5	24100	23888	24788	14100	936	25836	< 1	0.14	3.14	< 3	0.17	1.17	< 1	0.41	2.41	22	7.0	70.0
BK2-35-36	5630	6517	7417	4750	1943	6743	< 1	0.72	3.72	< 1	0.06	1.06	< 1	0.22	1.22	6	4.1	34.1
BK2-59-60	19800	11204	12604	6480	1193	13493	< 1	0.17	3.17	< 1	0.15	1.15	< 1	0.25	1.25	6	3.7	33.7
BK2-63.5-64	40100	30311	31411	8840	1274	15474	< 1	0.24	3.24	< 1	0.24	1.24	< 1	0.83	1.83	10	4.8	34.8
BK2-72.5-73.5	11000	15279	15879	4290	1334	8834	< 1	0.24	3.24	< 1	0.85	1.85	< 1	0.60	1.60	7	4.4	34.4
BK2-77-77.5	10800	17065	18065	5780	1532	12932	< 1	0.21	3.21	< 1	0.40	1.40	< 1	0.56	1.56	8	4.3	44.3
BK3-31.5-32.5	15100	16314	17914	9290	2294	16194	1	1.10	4.10	< 3	0.17	1.17	< 1	0.39	1.39	13	4.32	54.3
BK3-42.5-43.5	10300	38199	41199	11700	880	33880	< 1	0.20	3.20	< 3	0.28	1.28	< 1	0.87	2.87	14	13.4	93.4
BK3-47.5-48.5	9570	12772	21672	7910	1553	14053	< 1	0.23	3.23	< 3	0.15	1.15	< 1	0.29	1.29	13	7.04	37.0
BK3-50.5-52	33100	17662	18562	21600	1056	10356	< 1	0.63	3.63	< 3	0.22	1.22	1	0.33	1.33	36	8.09	38.1

Note:

1. Identification of nondetect values:

At least one nondetect result (as the method detection limit) is included in summation of Steps 1 through 5.

Step 6 value is nondetect; method detection limit included in summation.

Acronyms and Abbreviations:

ID = identification

mg/kg = milligram per kilogram; converted from mg/L result from SSE Steps 1-5.

SSE = selective sequential extraction

< = less than

Table 10
Geochemical Results Summary - Groundwater Metals
Supplemental Background Soil and Groundwater Investigation Report
Grants Reclamation Project
Cibola County, New Mexico

ARCADIS Design & Consultancy for natural and built assets

Sample ID	Sample Date	Sample Time	Depth to Water (feet bgs)	Temp.[a] (°C)	pH[a] (s.u.)	Specific Conductivity[a] (µS/cm)	ORP[a] (mV)	Dissolved Oxygen[a] (mg/L)	Turbidity[a] (NTU)	Ferrous Iron[a] (mg/L)	Fraction	Metals (mg/L)												
												Ca	Mg	Mn	K	Si	Na	Al	Fe	Mo	Se	Si	U	V
BK1c	6/10/2019	11:48	44.30	13.8	7.88	2815	130.1	3.34	7.53	0.02	T	349	87	0.55	5	22.3	300	0.09	0.04	0.034	0.225	22.3	0.0319	< 0.01 U
											D	345	85	0.56	5	20.5	272	< 0.03 U	< 0.02 U	0.004	0.245	20.5	0.0353	< 0.01 U
BK1f	6/10/2019	9:22	44.91	13.4	7.83	2772	174.5	2.37	1.15	0.06	T	339	84	0.022	5	23.1	308	0.04	< 0.03 U	0.03	0.207 J	23.1	0.0366 J	< 0.01 U
											D	330	82	0.024	5	21.5	276	< 0.03 U	0.03	0.001	0.251 J	21.5	0.0402 J	< 0.01 U
BK2c	6/10/2019	15:20	40.35	14.1	8.12	2276	114.5	0.48	9.62	0.48	T	259	43	0.27	5	19.1	290	< 0.03 U	0.05 J	0.008	0.323 J	19.1	0.0219	< 0.01 U
											D	248	42	0.26	5	17.4	263	< 0.03 U	< 0.02 U	0.008	0.318 J	17.4	0.0212	< 0.01 U
BK2f	6/10/2019	13:35	40.25	14.1	8.13	1906	102.2	0.72	14.5	0.19	T	182	34	0.41	4	19.0	265	0.26	0.2 J	0.006	0.038 J	19.0	0.0159	< 0.01 U
											D	174	33	0.38	4	16.6	242	< 0.03 U	< 0.02 U	0.006	0.039 J	16.6	0.0155	< 0.01 U
DUP-GW (BK2c)	6/10/2019	15:30	40.35	14.1	8.12	2276	114.5	0.48	9.62	0.48	T	260	44	0.27	5	19.2	294	< 0.03 U	< 0.03 UJ	0.008	0.324 J	19.2	0.0218	< 0.01 U
											D	248	42	0.25	5	17.4	259	< 0.03 U	< 0.02 U	0.007	0.365 J	17.4	0.021	< 0.01 U

Note:
[a] Field measurement
1. Non-detect values and samples that were not analyzed are presented in gray.

Acronyms and Abbreviations:

Al = aluminum
bgs = below ground surface
Ca = calcium
D fraction = dissolved (0.45 micron filtered)
Fe = iron
ID = identification
K = potassium
Mg = magnesium
mg/L = milligram per liter
Mn = manganese
Mo = molybdenum
mV = millivolt
Na = sodium
NTU = nephelometric turbidity unit
ORP = oxidation reduction potential
Se = selenium
Si = silica
s.u. = standard unit
T fraction = total
U = uranium
V = vanadium
°C = degrees Celsius
µS/cm = microSiemens per centimeter
< = less than

Qualifiers:
D = sample diluted prior to analysis
U = not detected; reporting limit shown

Table 11
Geochemical Results Summary - Groundwater Other
Supplemental Background Soil and Groundwater Investigation Report
Grants Reclamation Project

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Sample ID	Sample Date	Sample Time	Phosphate, Total	Chloride	Fluoride	Sulfate	Nitrogen, Ammonia as N	Nitrogen, Ammonium	Nitrate/ Nitrite	Nitrogen, Nitrate as N	Nitrite	Alkalinity (as $CaCO_3$)	Bicarbonate (as HCO_3)	Carbonate (as $CaCO_3$)	Organic Carbon, Dissolved	Organic Carbon, Total	Phosphorus as P	Uranium 234	Uranium 234 MDC	Uranium 234 Precision (±)	Uranium 235	Uranium 235 MDC	Uranium 235 Precision (±)	Uranium 238	Uranium 238 MDC	Uranium 238 Precision (±)	$\delta^{34}S$ of SO_4 (‰ VCDT)		$\delta^{18}O$ of SO_4 (‰ VSMOW)	
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(pCi/L)	(pCi/L)	(pCi/L)	(pCi/L)	(pCi/L)	(pCi/L)	(pCi/L)	(pCi/L)	(pCi/L)	Result	Analysis repeat	Result	Analysis repeat
BK1c	6/10/2019	11:48	0.04	69	0.3	1410	0.06	0.08	11.2	11.0	0.13	246	300	< 5 U	1.9	1.9	0.012	14.9	0.4	2.9	0.7	0.3	0.3	11.4	0.2	2.2	-26.1	NA	1.4	NA
BK1f	6/10/2019	9:22	0.05	70	0.3	1380	<0.05 U	<0.06 U	11.4	11.1	0.3	253	309	< 5 U	1.9	1.8	0.016	16.5	0.2	3.2	0.5	0.2	0.2	13	0.2	2.5	-24	-24.3	3.6	1.0
BK2c	6/10/2019	15:20	< 0.03 U	53	0.5	1130	0.06	0.07	10.8	10.8	0.04	155	189	< 5 U	1.6	1.4	0.008	10.2	0.2	2.0	0.4	0.2	0.2	7.1	0.2	1.4	-23.8	NA	2.6	NA
BK2f	6/10/2019	13:35	0.04	47	0.5	878	0.06	0.08	1.38	1.36	0.02	191	233	< 5 U	1.3	NA[a]	0.014	8.7	0.3	1.7	0.3	0.2	0.2	5.9	0.2	1.2	-23.7	NA	3.5	NA
DUP-GW (BK2c)	6/10/2019	15:30	< 0.03 U	53	0.5	1120	0.06	0.07	10.8	10.8	0.02	152	186	< 5 U	1.5	1.4	0.007	10.7	0.2	2.1	0.3	0.1	0.2	7.0	0.1	1.4	NA	NA	NA	NA

Note:

[a] Bottle broke in transit to laboratory.

1. Non-detect values and samples that were not analyzed are presented in gray.

Acronyms and Abbreviations:

$CaCO_3$ = calcium carbonate

HCO_3 = bicarbonate

ID = identification

MDC = minimum detectable concentration

mg/L = milligram per liter

NA = not analyzed

pCi/L = picoCurie per liter

SO_4 = sulfate

VCDT = Vienna-Canyon Diablo Troilite

VSMOW = Vienna-Standard Mean Ocean Water

$\delta^{34}S$ = per mil difference between stable sulfur isotopes ^{32}S and ^{34}S

‰ = per mil

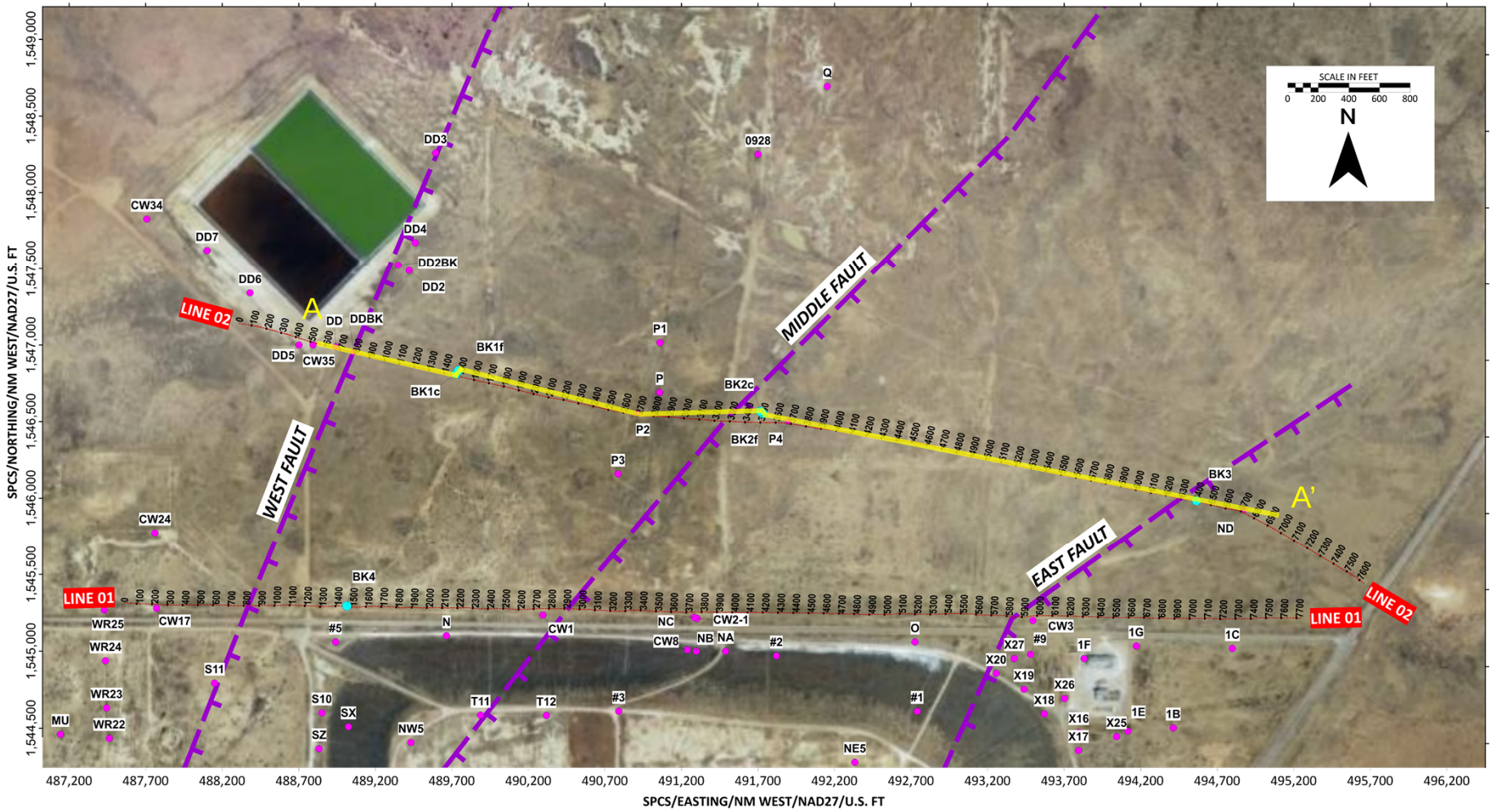
< = less than

Qualifiers:

D = sample diluted prior to analysis

U = not detected; reporting limit shown

FIGURES



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GRANTS RECLAMATION PROJECT

SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

SITE LOCATION MAP SHOWING ERT LINES

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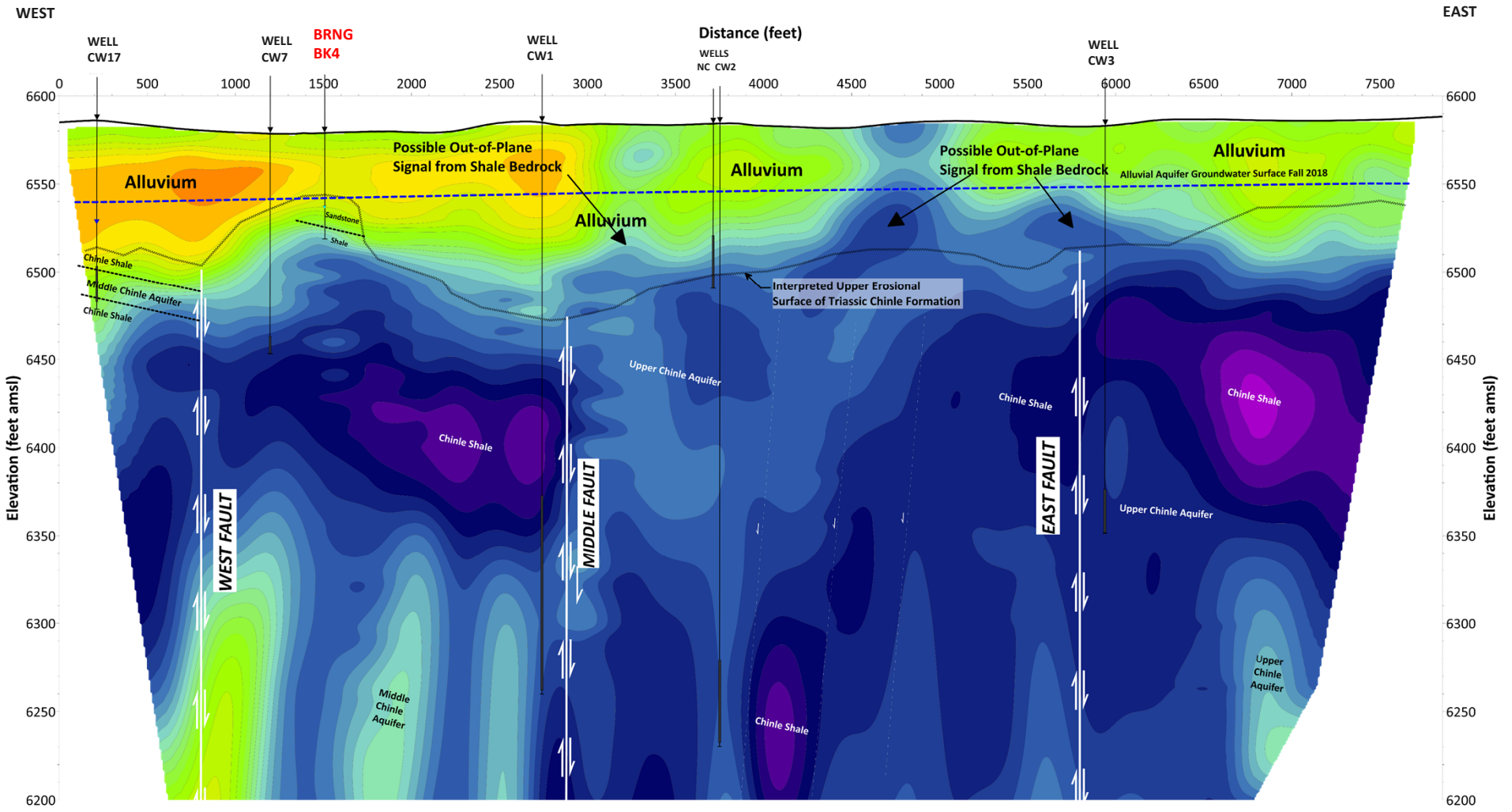
FIGURE 1



VERTICAL EXAGGERATION = 10X

ELECTRICAL RESISTIVITY (OHM-METERS)

1 10 100 1000 10,000

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SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

ERT LINE 1
2D INVERSION MODEL

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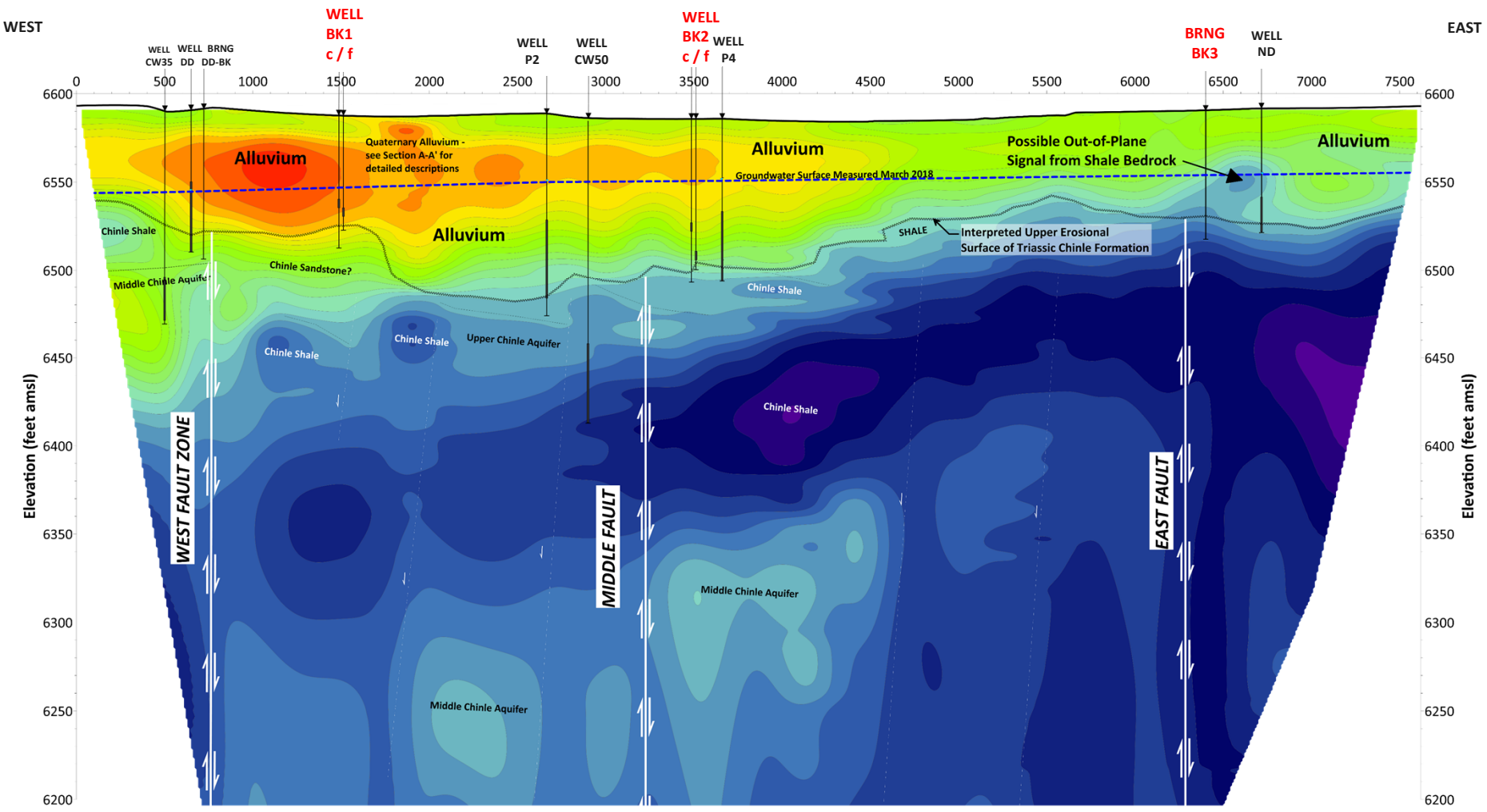
FIGURE
2



VERTICAL EXAGGERATION = 10X

ELECTRICAL RESISTIVITY (OHM-METERS)

1 10 100 1000 10,000

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SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

ERT LINE 2
2D INVERSION MODEL

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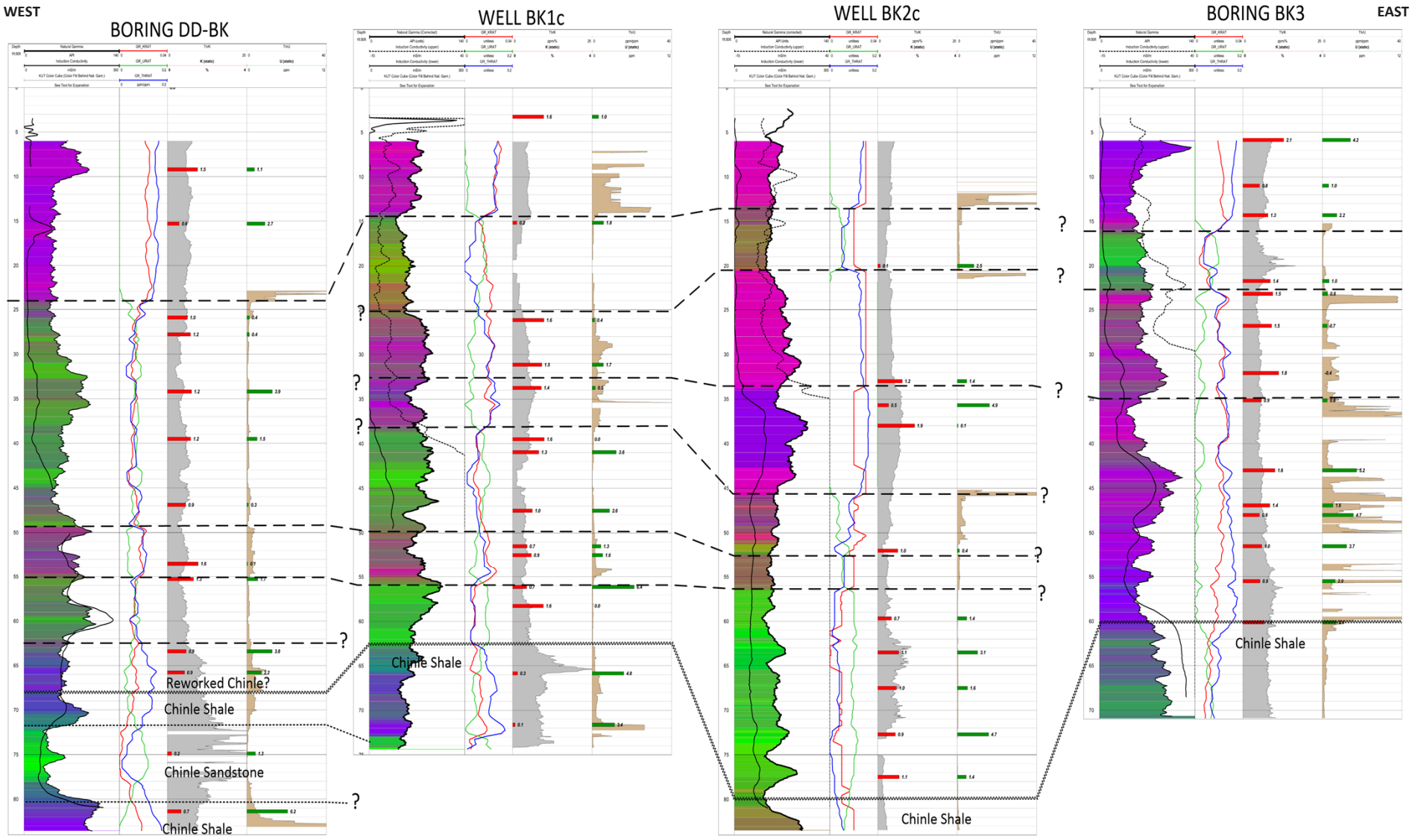
FIGURE
3



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SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

GEOPHYSICAL LOG SECTION ALONG LINE 2 FROM DD-BK TO BK3

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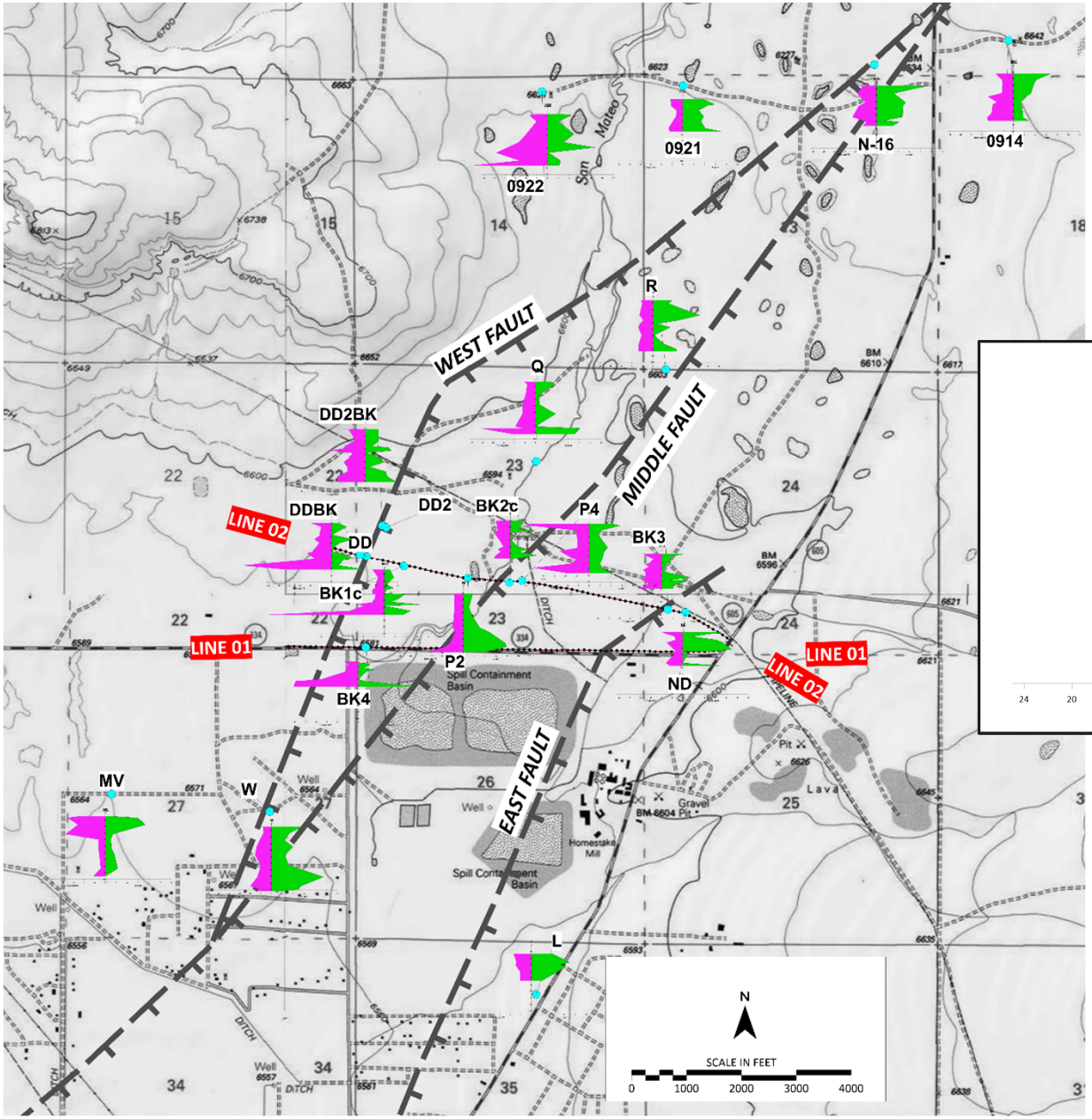
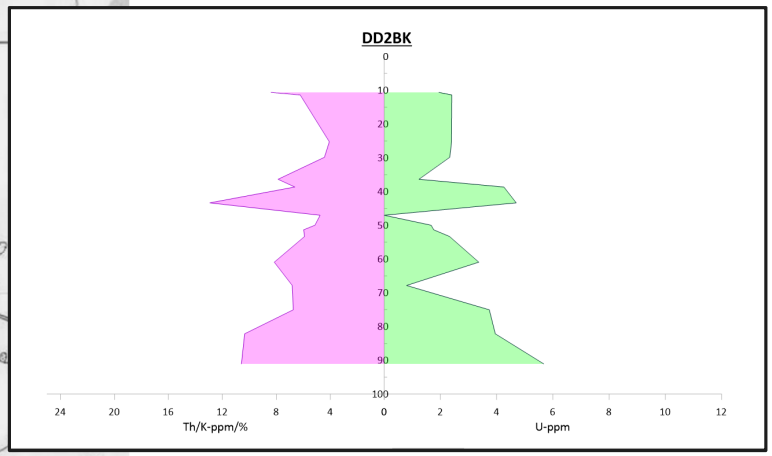
FIGURE

4





LEGEND

Data used for creating these plots is provided in Table 9, Static Spectral Gamma Ray Analysis Results.

Fault – bar indicates direction of throw.

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SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

TH/K AND U VS. DEPTH PLOTS FOR SELECT WELLS

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FIGURE
5

A

A'

6600

6550

6500

ELEVATION - FEET ABOVE MEAN SEA LEVEL

DD(well)
DDBK(borehole)
BK1f
BK1c
P2
BK2f
BK2c
P4
BK3
ND

ML
SM
SP
CL
SW/GW

65
75
85
111
85
92.5
95
73
70

0
1000
2000
3000
4000
5000
6000

HORIZONTAL DISTANCE IN FEET

SW/GW SAND AND GRAVEL
SP - SAND
SM - SILTY SAND
CL - CLAY (SOME SILT LAYERS)
ML - SILT/SANDY SILT

GROUNDWATER ELEVATION
SCREEN
95 BOREHOLE/WELL DEPTH IN FEET BELOW GROUND SURFACE

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SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

GEOLOGIC CROSS SECTION A-A'

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FIGURE
6

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*OFF=*REF*
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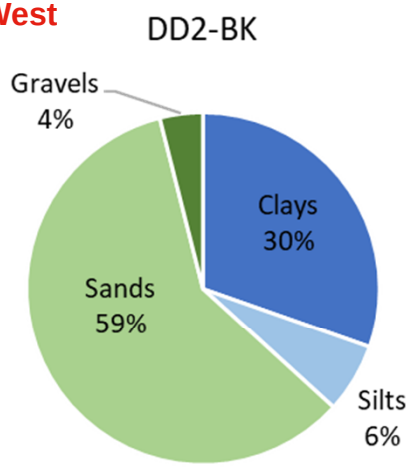
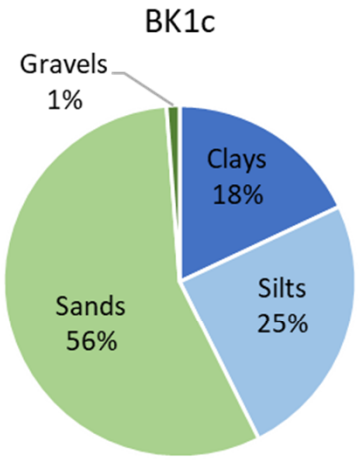
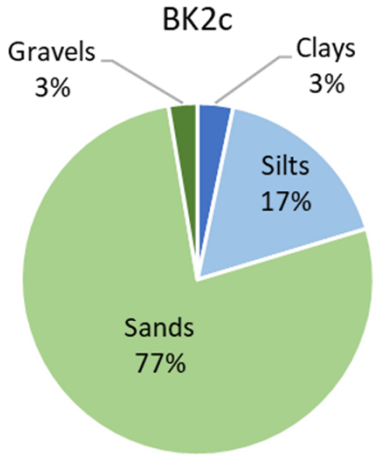
West

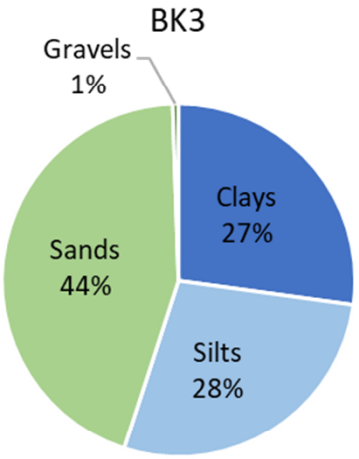
North

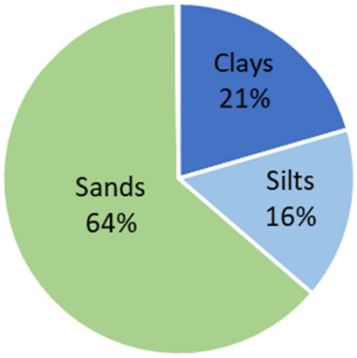
East

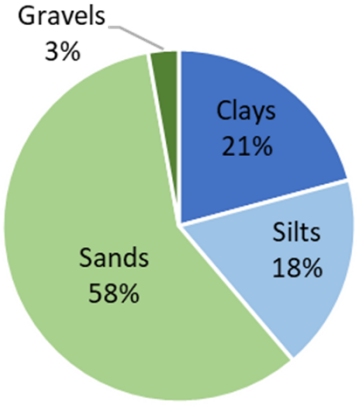


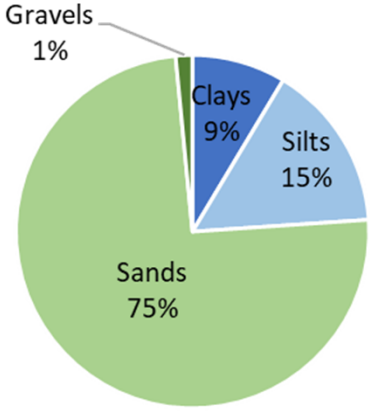


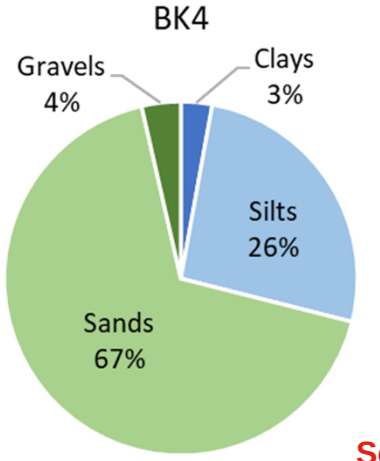












South

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SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

SUMMARIZED LITHOLOGY PER BOREHOLE

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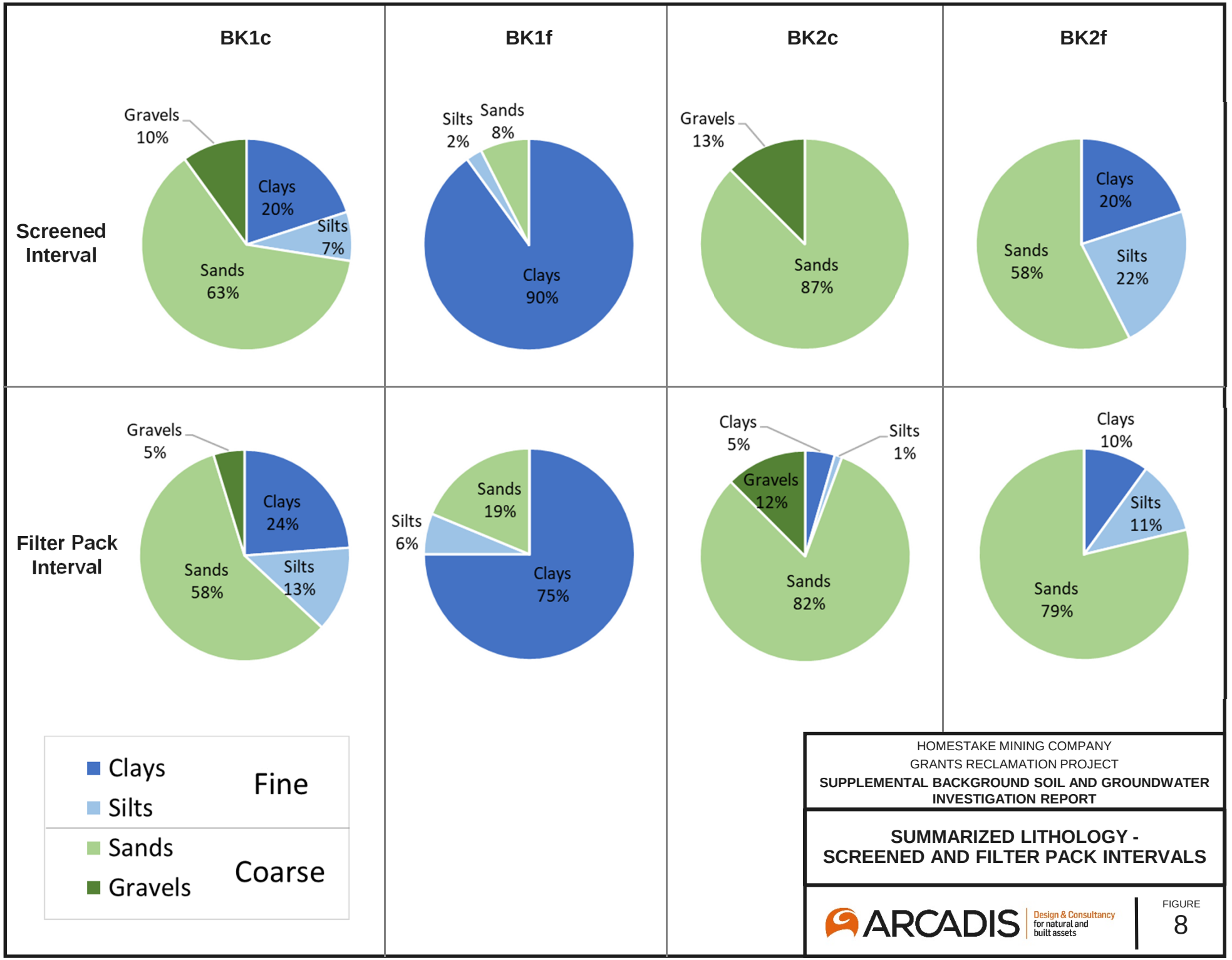
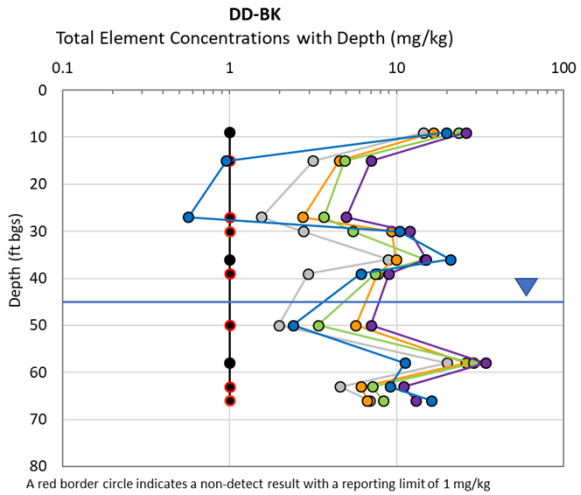
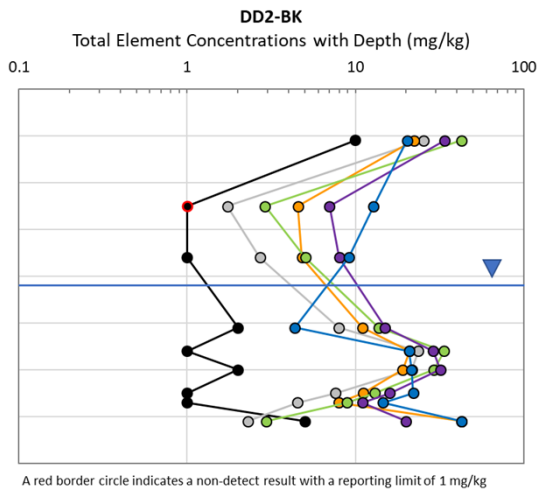
FIGURE 7

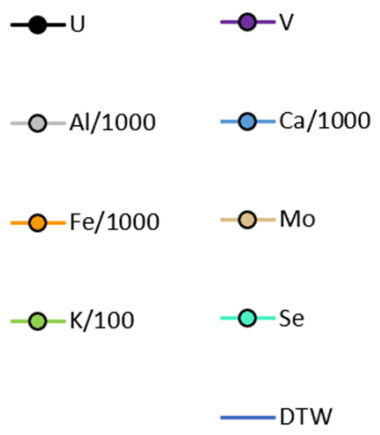

BK1c
BK1f
BK2c
BK2f
Screened Interval
Filter Pack Interval
Gravels 10%
Clays 20%
Silts 7%
Sands 63%
Silts 2%
Sands 8%
Clays 90%
Gravels 13%
Sands 87%
Clays 20%
Sands 58%
Silts 22%
Gravels 5%
Clays 24%
Sands 58%
Silts 13%
Sands 19%
Silts 6%
Clays 75%
Clays 5%
Silts 1%
Gravels 12%
Sands 82%
Clays 10%
Silts 11%
Sands 79%
Clays
Silts
Fine
Sands
Gravels
Coarse
HOMESTAKE MINING COMPANY
GRANTS RECLAMATION PROJECT
SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT
SUMMARIZED LITHOLOGY - SCREENED AND FILTER PACK INTERVALS
ARCADIS Design & Consultancy for natural and built assets
FIGURE 8

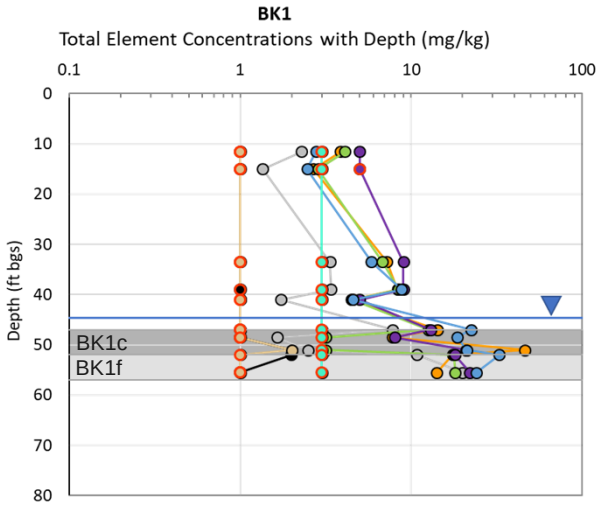


A red border circle indicates a non-detect result with a reporting limit of 1 mg/kg

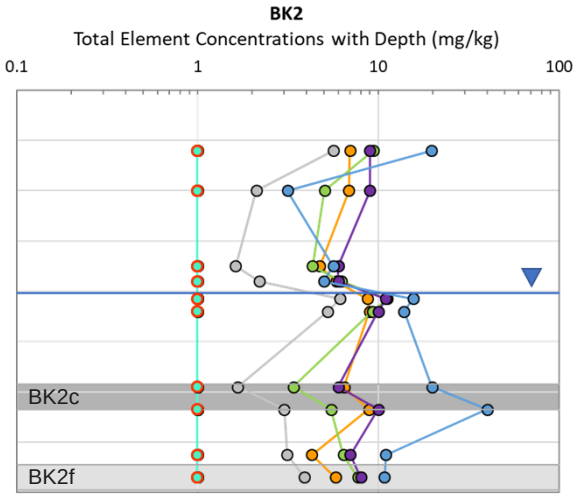


A red border circle indicates a non-detect result with a reporting limit of 1 mg/kg

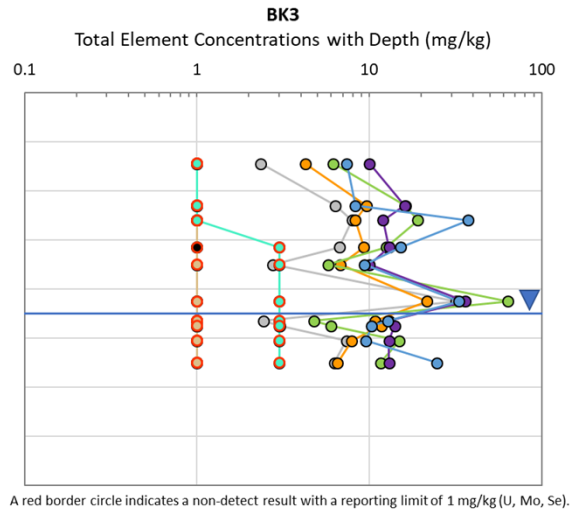




A red border circle indicates a non-detect result with a reporting limit of 1 mg/kg (U, Mo), 3 mg/kg (Se), and 5 mg/kg (V).



A red border circle indicates a non-detect result with a reporting limit of 1 mg/kg (U, Mo, Se). U, Mo, and Se results are non-detect at all depths.



A red border circle indicates a non-detect result with a reporting limit of 1 mg/kg (U, Mo, Se). U, Mo, and Se results are non-detect at all depths.

Notes

Concentrations of individual elements may be scaled by a factor or 100 or 1000 to facilitate plotting.

DTW – depth to water

bgs – feet below ground surface

ft – feet

mg/kg – milligrams per kilogram

Al – aluminum

Ca – calcium

Fe – iron

K – potassium

Mg – magnesium

Mn – manganese

Mo – molybdenum

Se – selenium

Si – silica

U – uranium

V – vanadium

Fine grain well screened interval

Coarse grain well screened interval

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SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

SOIL CONCENTRATIONS BY DEPTH

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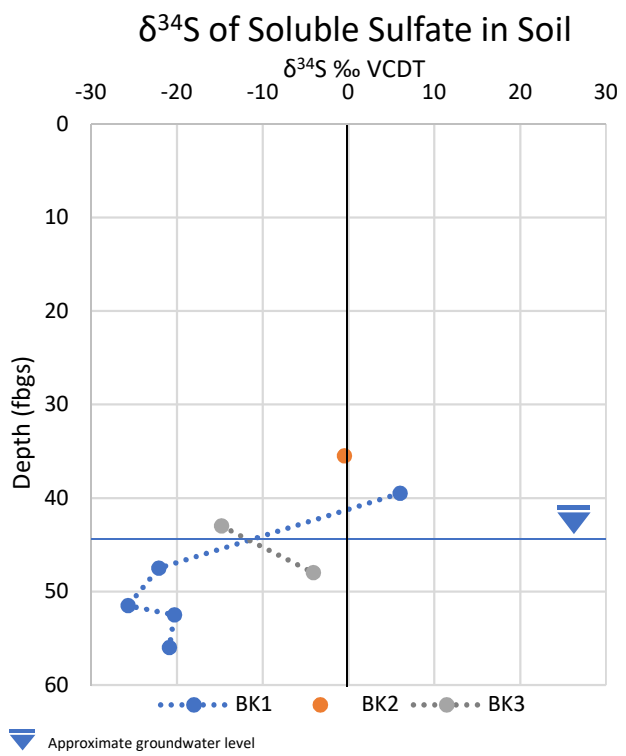
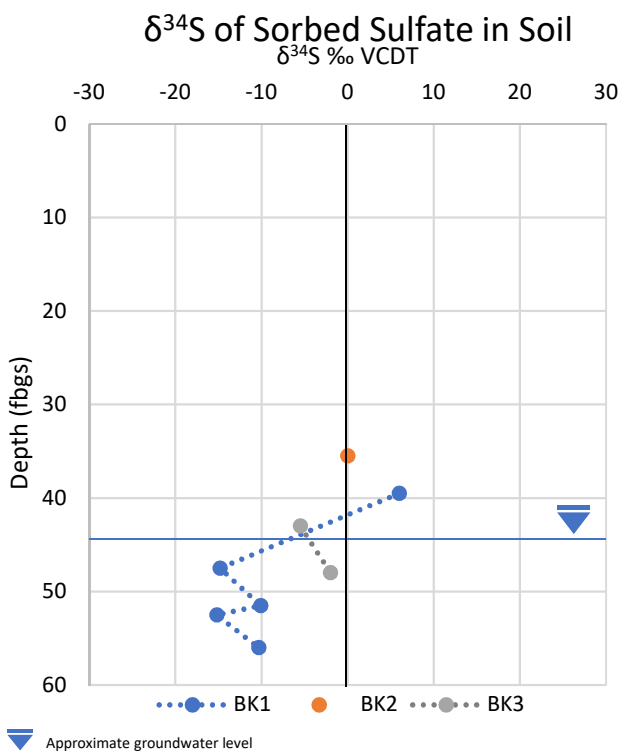
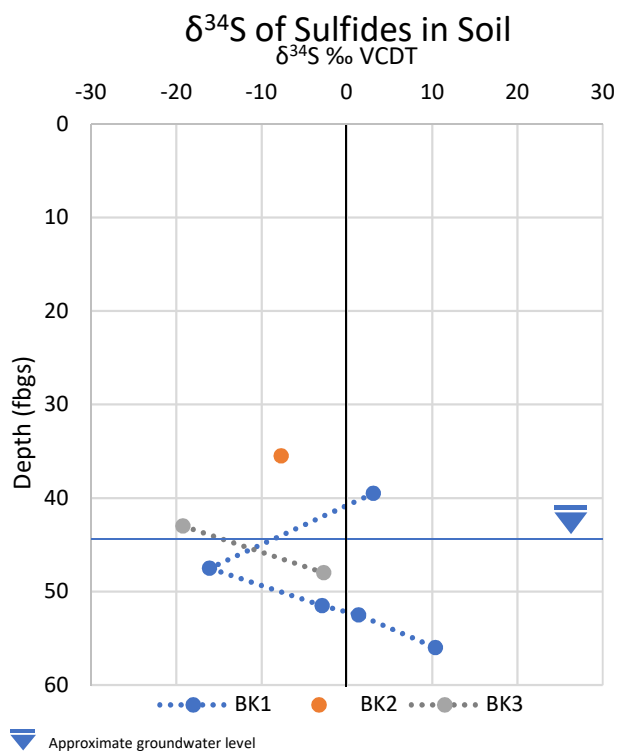
FIGURE 9







Notes
‰ – per mil
δ – delta
VCDT – Vienna-Canyon Diablo Troilite

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SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

STABLE SULFUR ISOTOPES IN ALLUVIAL SEDIMENTS

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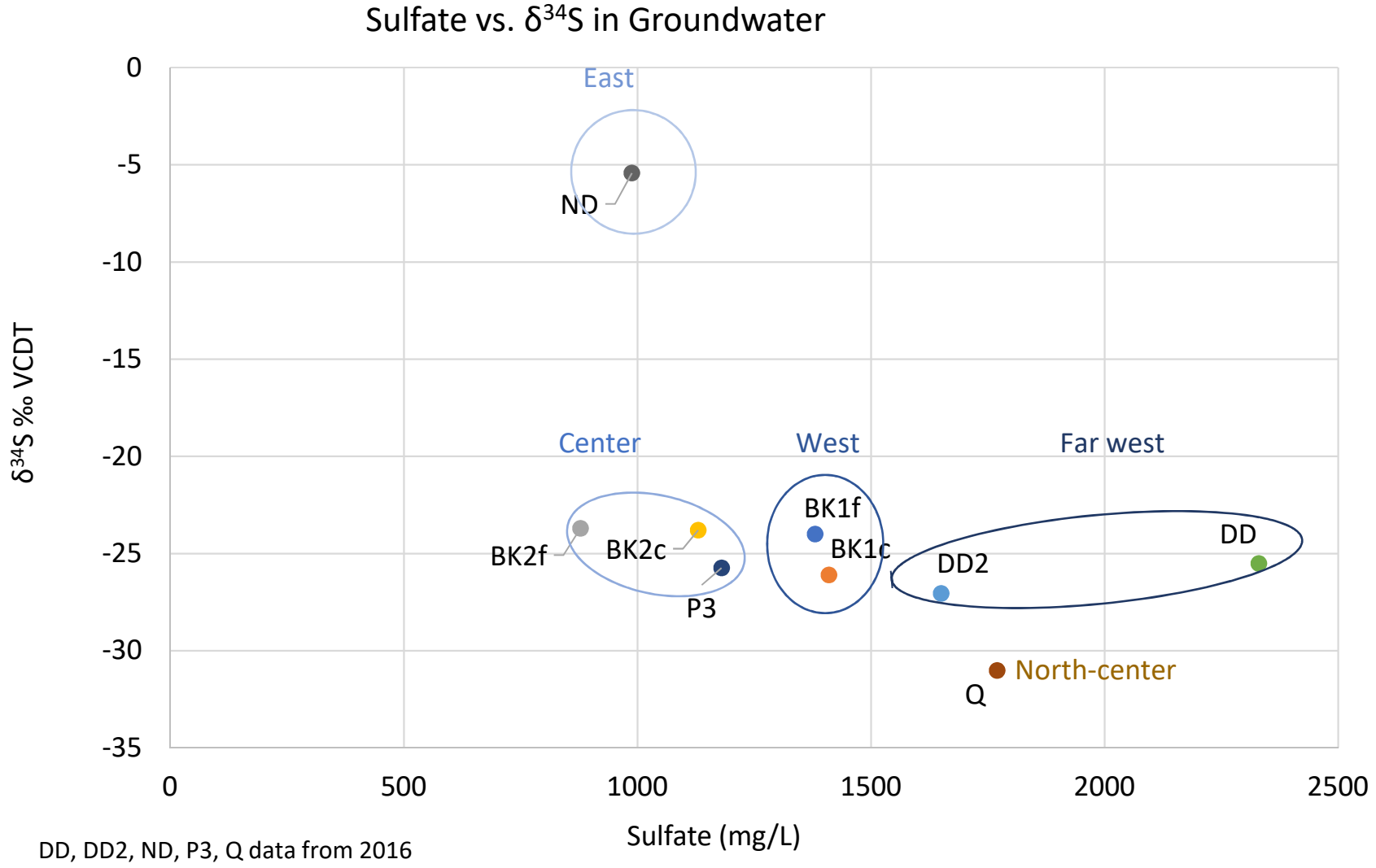
FIGURE
10



DD, DD2, ND, P3, Q data from 2016

Notes
‰ – per mil
δ – delta
mg/L – milligram per liter
VCDT – Vienna-Canyon Diablo Troilite

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SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

STABLE SULFUR ISOTOPES IN GROUNDWATER

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FIGURE
11

BK1

BK1-39-40-052119
Fine sandy silt

BK1-47-48-052119
Clay

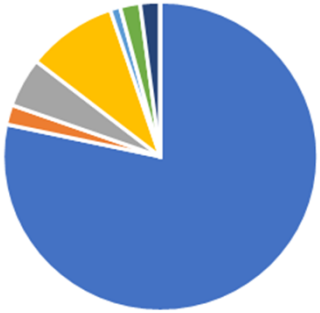
BK1-51-52-052119
Sand + gravel with trace silt

BK1-52-53-052119
Sandy clay

BK1-55.5-56.5-052219
Clay

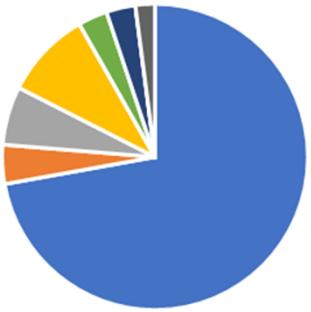
BK2

BK2-35-36-051519
Fine sand with some silt



BK2-63.5-64-051619
Sandy gravel

BK2-77-77.5-051619
Silty fine sand



BK3

BK3-42.5-43.5-052219
Clay

BK3-47.5-48.5-052219
Gravelly sand

- Quartz
- Calcite
- Plagioclase
- K-Feldspar
- Goethite/Hematite
- Illite/Mica
- Kaolinite
- Smectite
- Dolomite
- Unaccounted

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SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

X-RAY DIFFRACTION RESULTS

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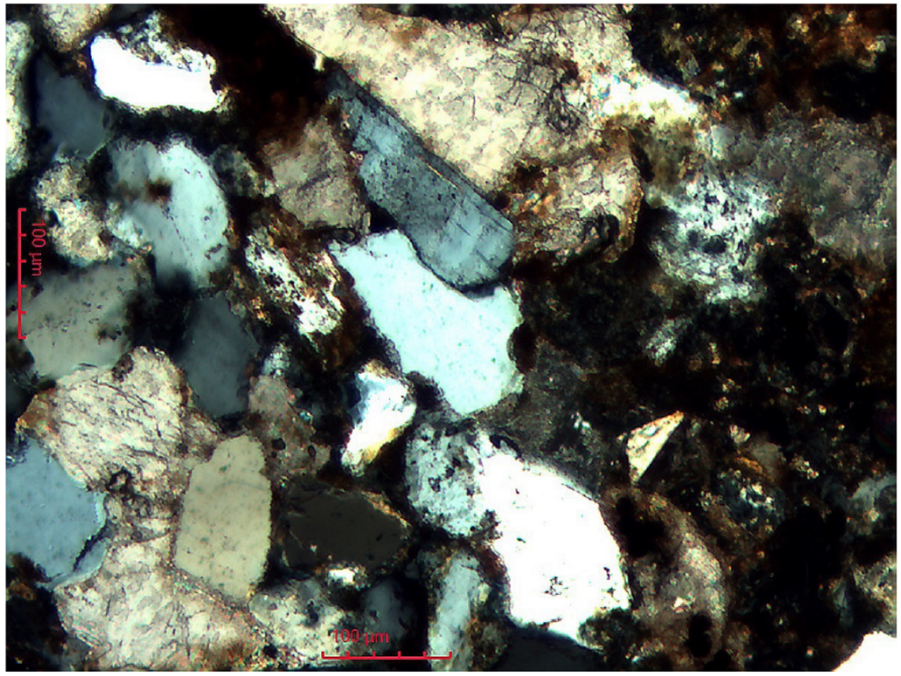
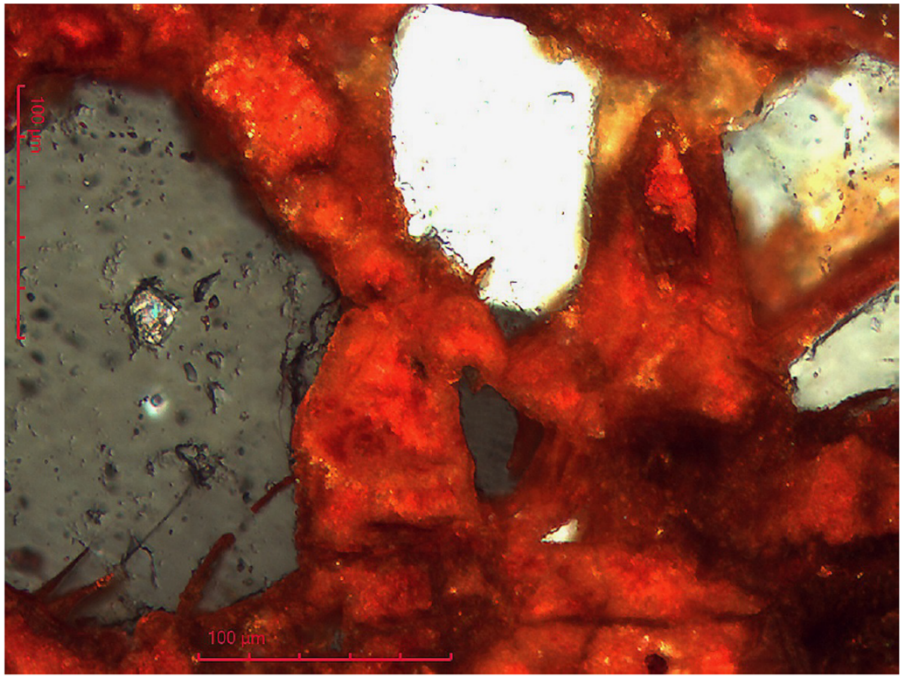
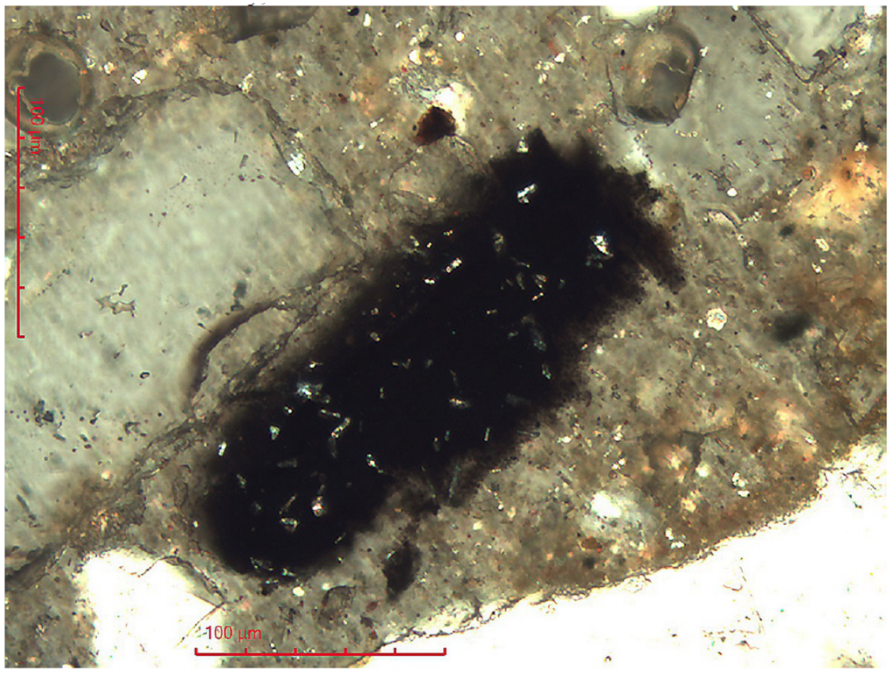
FIGURE
12



Client Sample No.: **BK1-51-52-052119**
Fragment of calcite cemented arkose – 100X PL



Client Sample No.: **BK1-52-53-052119**
Iron oxide cementing quartz fragments – 200X RL



Client Sample No.: **BK1-39-40-052119**
Black carbon with quartz/feldspar – 200X PL

Notes

µm – micrometer
PL – polarized light
RL – reflected light

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COMMON MINERAL CONSORTIA

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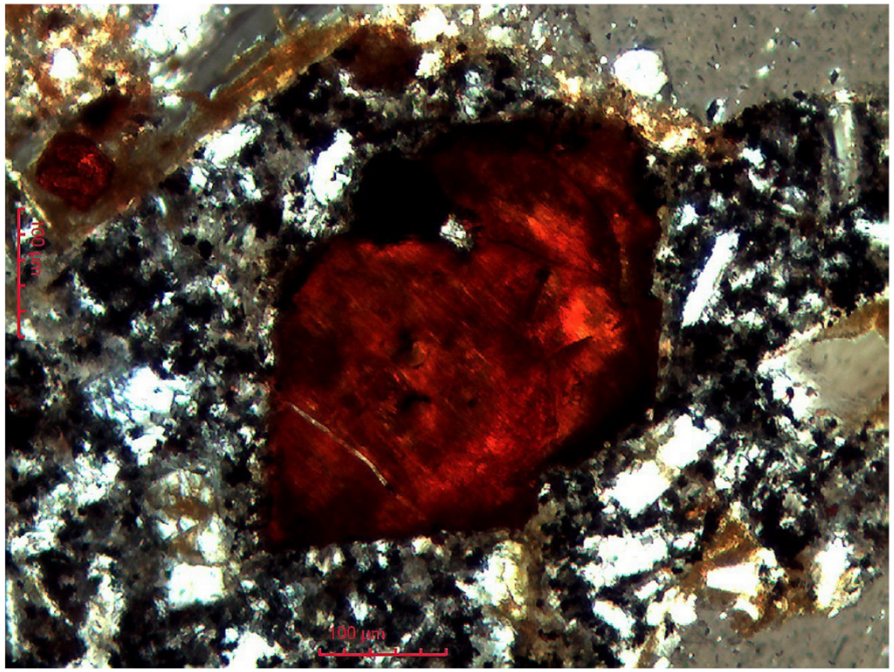
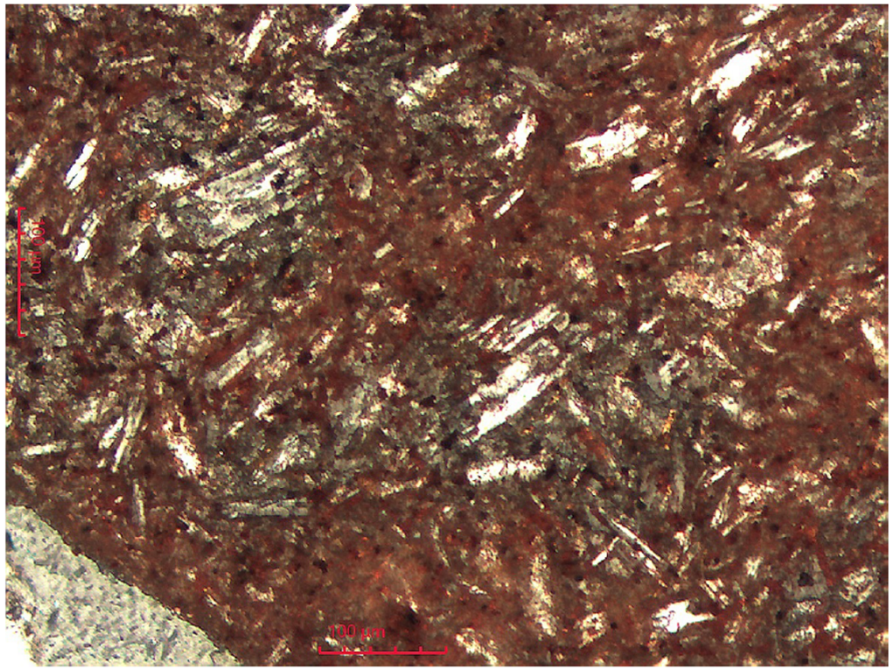
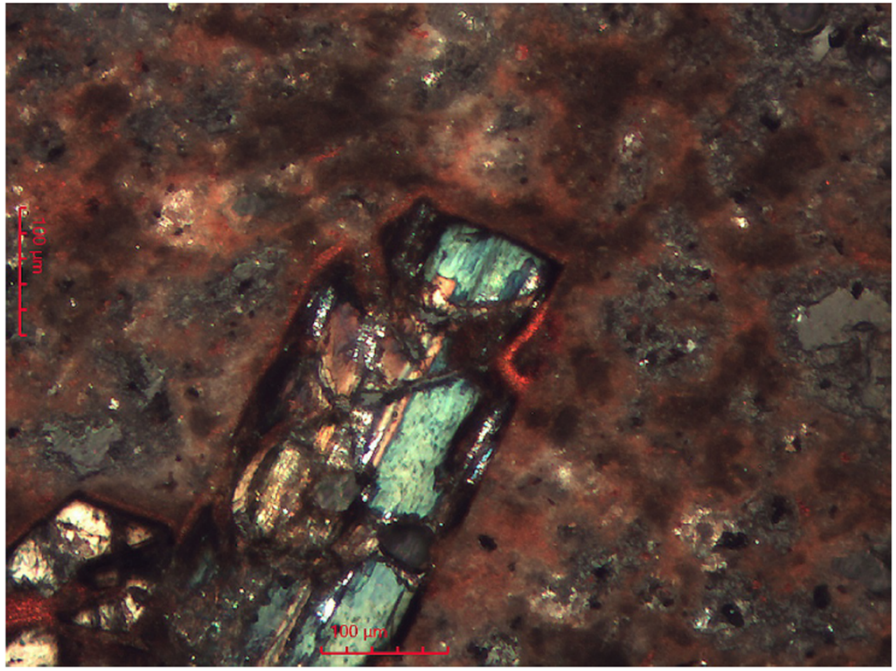
FIGURE
13



Client Sample No.: **BK1-51-52-052119**
Basalt fragment with lath shaped labradorite and iddingsite altered olivine – 100X PL



Client Sample No.: **BK2-35-36-051519**
Fragment of iron stained basalt showing plagioclase microlites – 100X PL



Client Sample No.: **BK2-63.5-64.5-051619**
Altered prism of pyroxene in dacite porphyry – 100X PL

Notes

µm – micrometer
PL – polarized light

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SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

IGNEOUS MINERAL CONSORTIA

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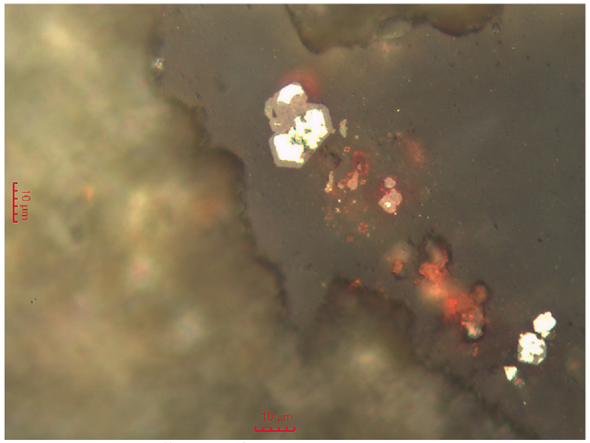
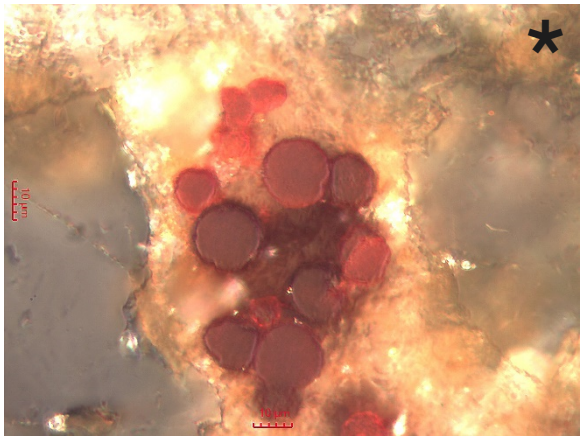
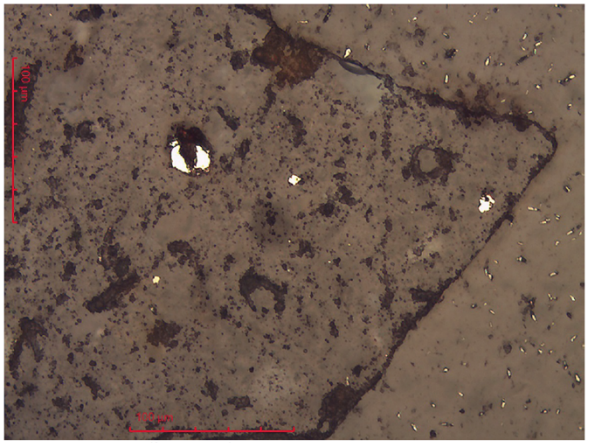
FIGURE
14



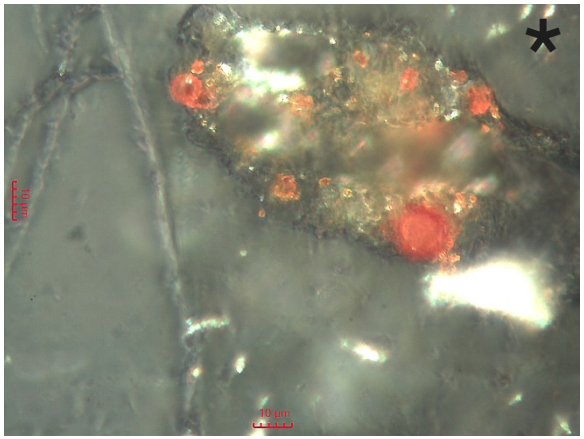
Client Sample No.: **BK1-52-53-052119**
Pyrite in quartz showing partial to complete replacement by goethite – 500X RL



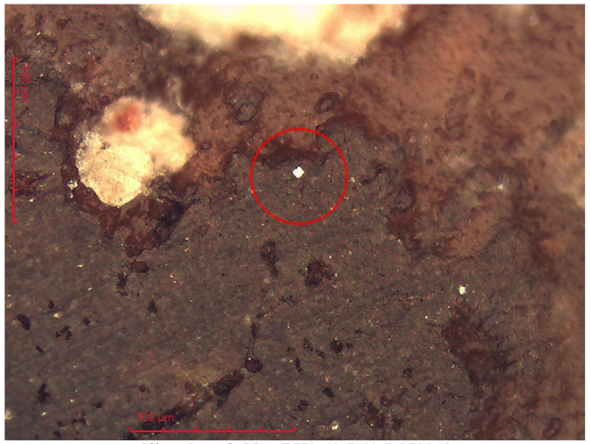
Client Sample No.: **BK1-51-52-052119**
Goethite pseudomorphs after pyrite framboids. 500X



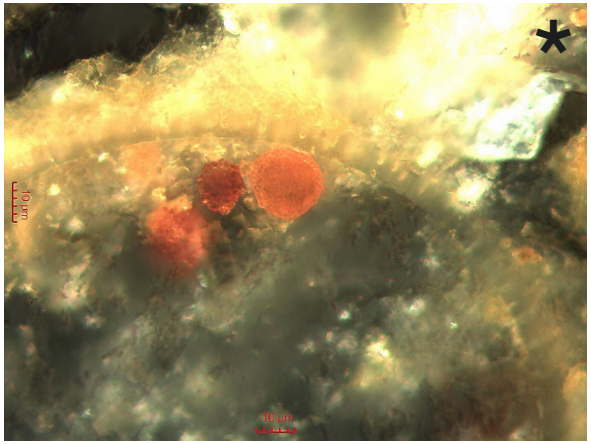
Client Sample No.: **BK2-63.5-64.5-051619**
Angular grain of chert with inclusions of bright pyrite – 200C RL



Client Sample No.: **BK2-35-36-052119**
Goethite pseudomorphs after pyrite framboids. 500X



Client Sample No.: **BK3-42.5-43.5-052219**
Small cube of bright pyrite in carbon – 200X RL



Client Sample No.: **BK3-47.5-48.5-052119**
Goethite pseudomorphs after pyrite framboids. 500X

Notes

* - Image provided from work completed after formal laboratory report was issued.
µm – micrometer
RL – reflected light

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PYRITE FORMS ACROSS THE CHANNEL

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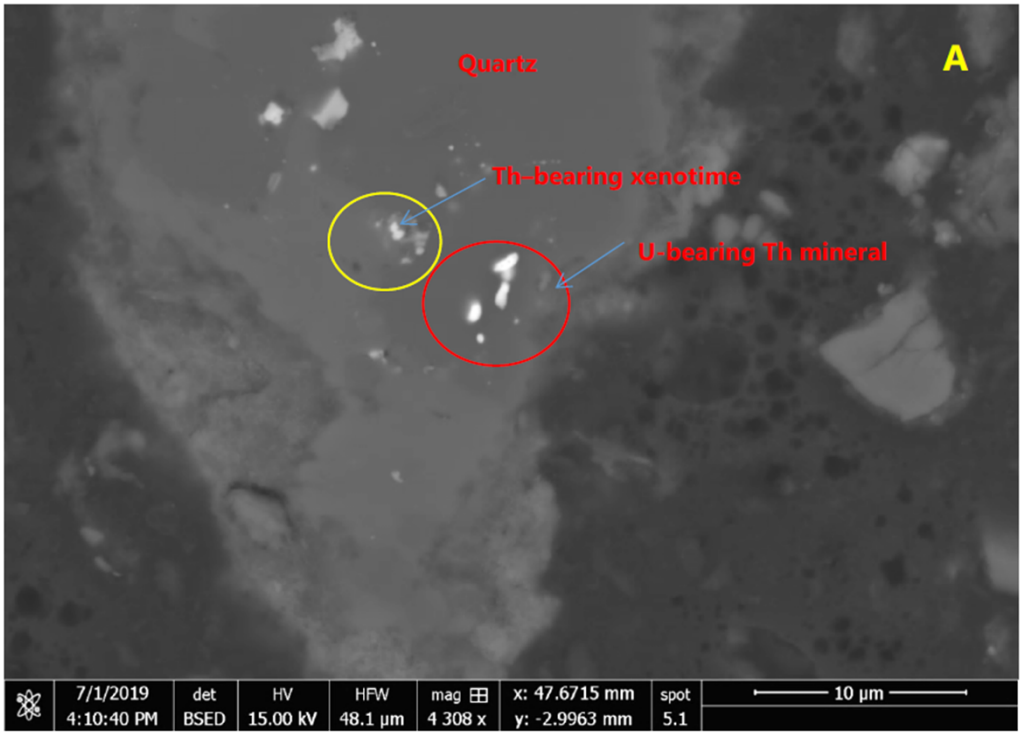
FIGURE
15



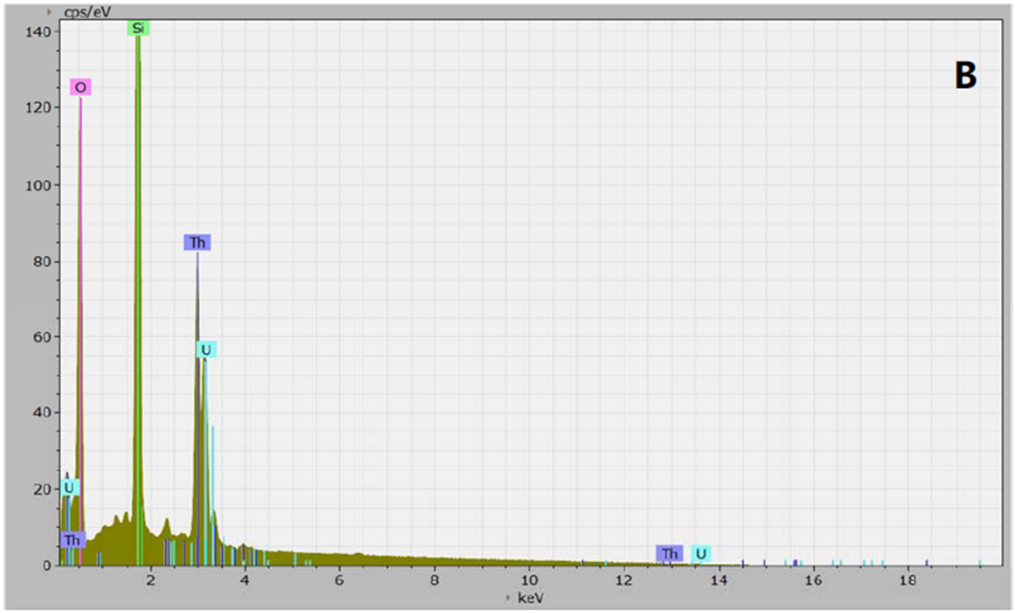


Figure 1. BSE Image of Thorium Mineral Locked in Quartz (A) and Screenshot of Qualitative EDS Analysis Showing Uranium Levels (B)

Notes

µm – micrometer
BSE – backscatter electron
BSED – backscatter electron detector
det – detector
EDS – energy dispersive x-ray spectroscopy
HV – high voltage
kV – kilovolts
HFW – height for working
mag – magnification
mm - millimeter

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QEMSCAN IMAGE AND EDS SPECTRUM

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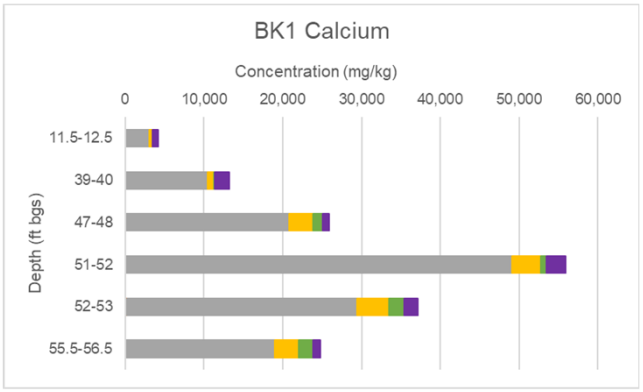
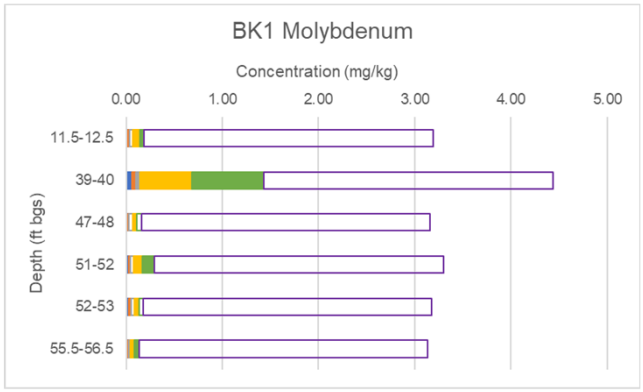
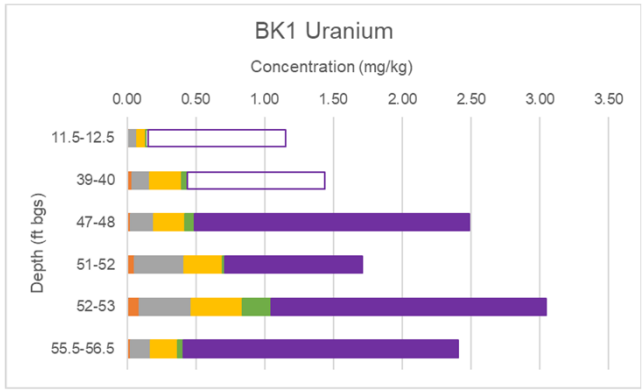
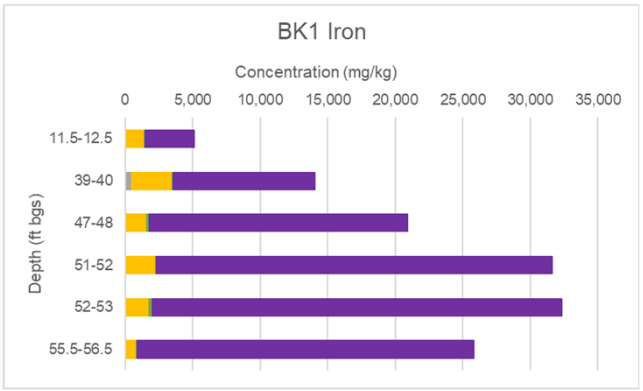
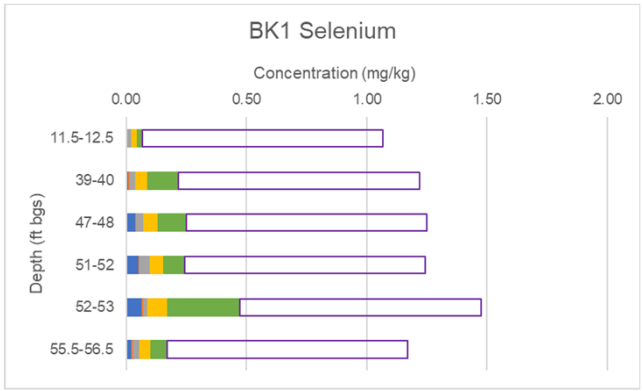
FIGURE
16

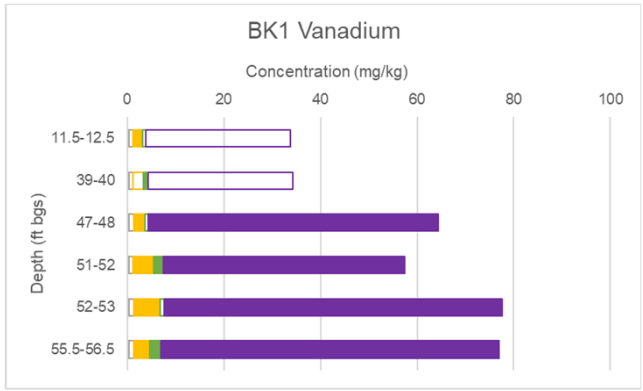












Notes

Bar with white fill and colored outline indicates a non-detect result with the value reported as the method detection limit (MDL) in mg/kg.

bgs – below ground surface

ft – feet

mg/kg – milligrams per kilogram

- Water Soluble
- Adsorbed
- Carbonate Bound
- Oxide Bound
- Organic/Sulfide Bound
- Residual

HOMESTAKE MINING COMPANY

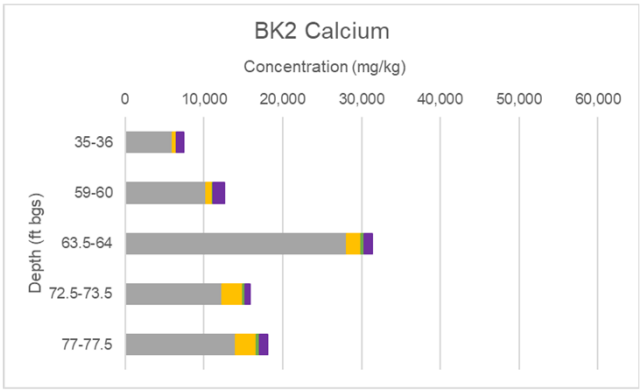
GRANTS RECLAMATION PROJECT

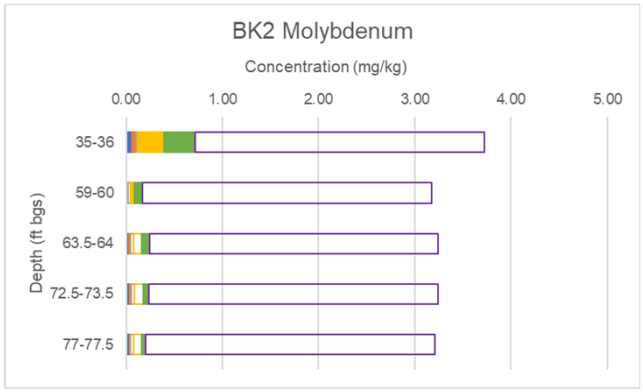
SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

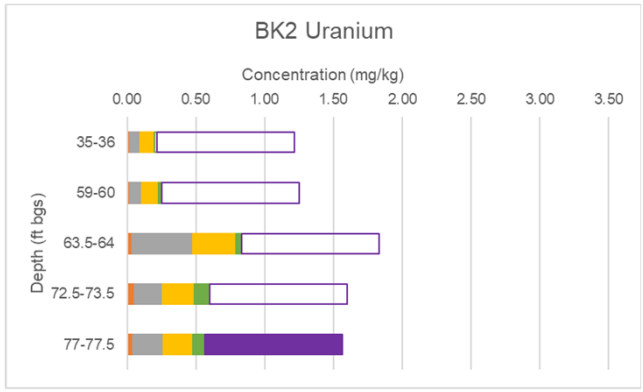
SELECTIVE SEQUENTIAL EXTRACTION RESULTS – BK1

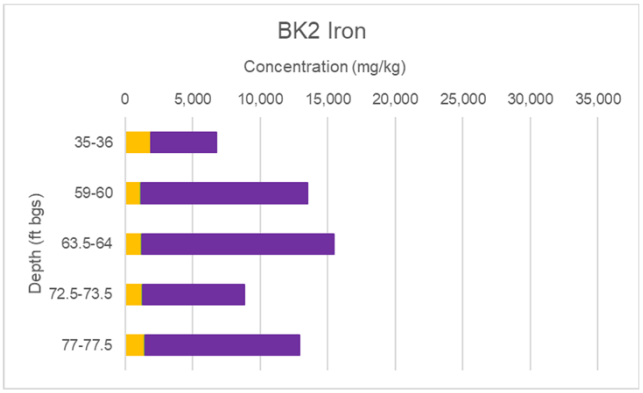
ARCADIS Design & Consultancy for natural and built assets

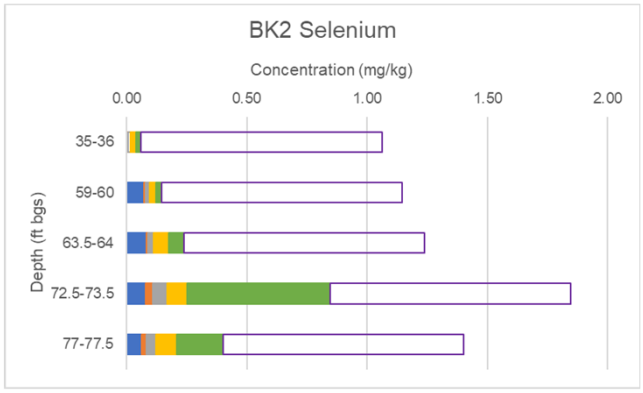
FIGURE 17

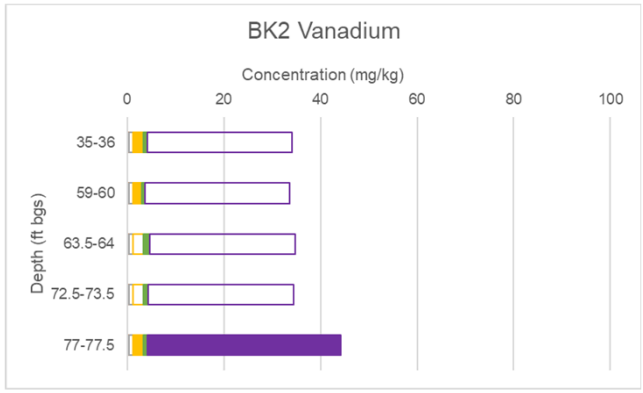












Notes

Bar with white fill and colored outline indicates a non-detect result with the value reported as the method detection limit (MDL) in mg/kg.

bgs – below ground surface

ft – feet

mg/kg – milligrams per kilogram

- Water Soluble
- Adsorbed
- Carbonate Bound
- Oxide Bound
- Organic/Sulfide Bound
- Residual

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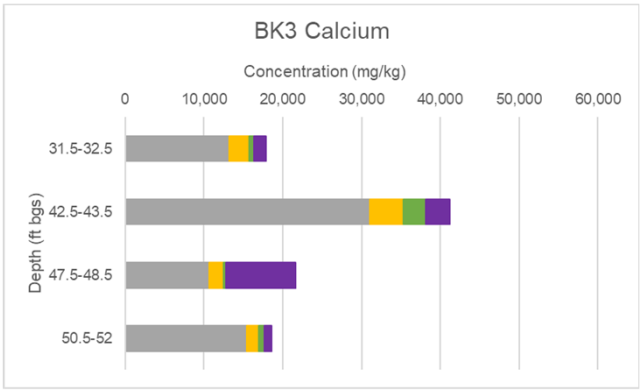
GRANTS RECLAMATION PROJECT

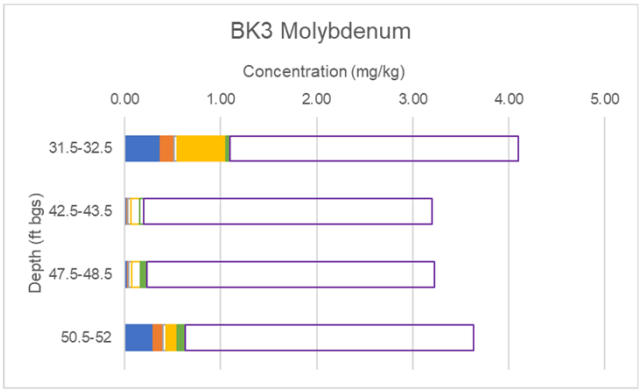
SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

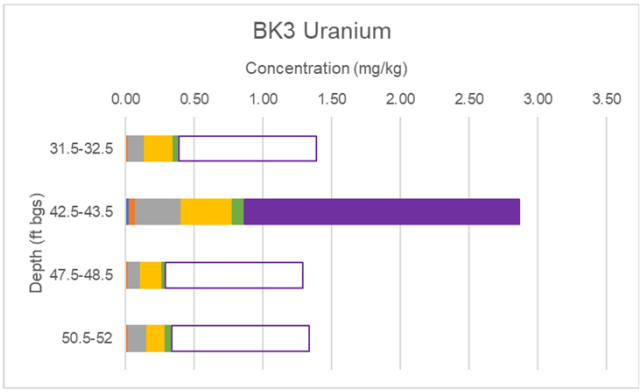
SELECTIVE SEQUENTIAL EXTRACTION RESULTS – BK2

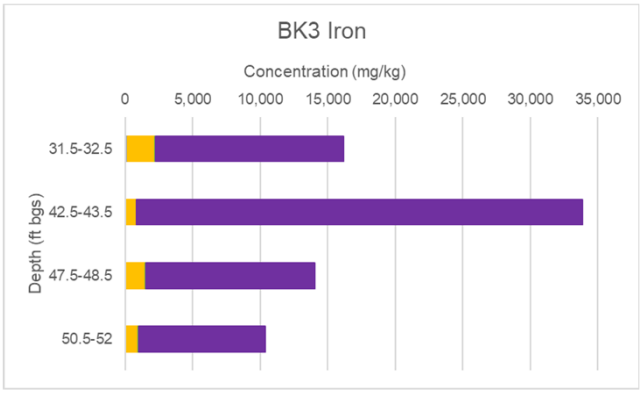
ARCADIS Design & Consultancy for natural and built assets

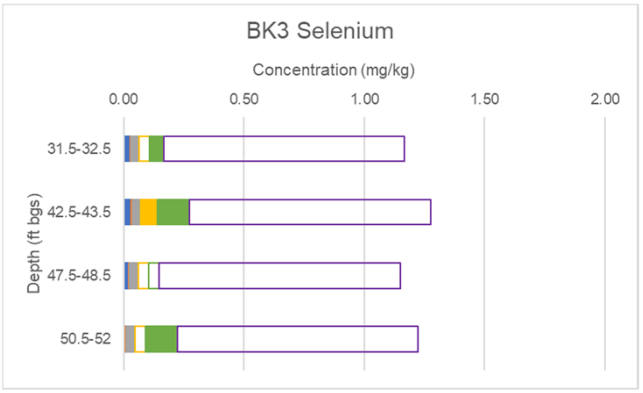
FIGURE 18

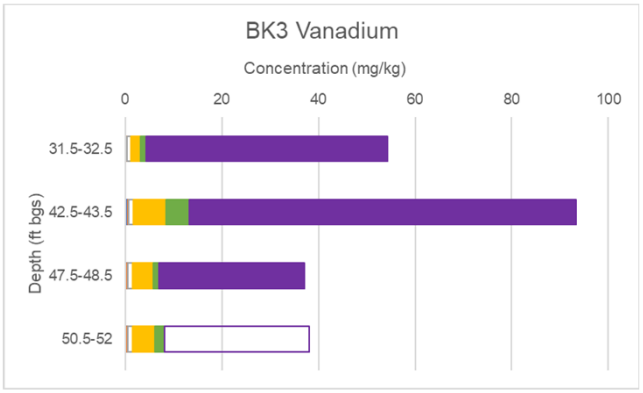












Notes

Bar with white fill and colored outline indicates a non-detect result with the value reported as the method detection limit (MDL) in mg/kg.

bgs – below ground surface

ft – feet

mg/kg – milligrams per kilogram

- Water Soluble
- Adsorbed
- Carbonate Bound
- Oxide Bound
- Organic/Sulfide Bound
- Residual

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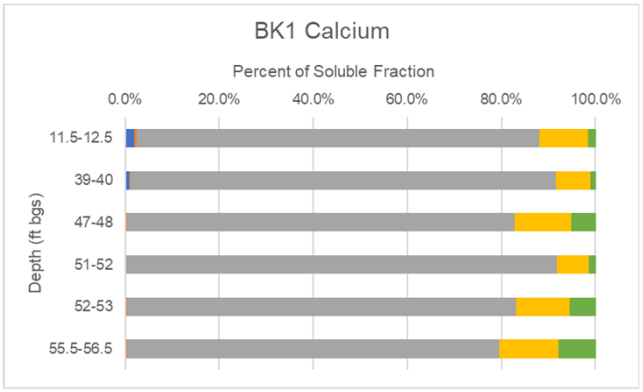
GRANTS RECLAMATION PROJECT

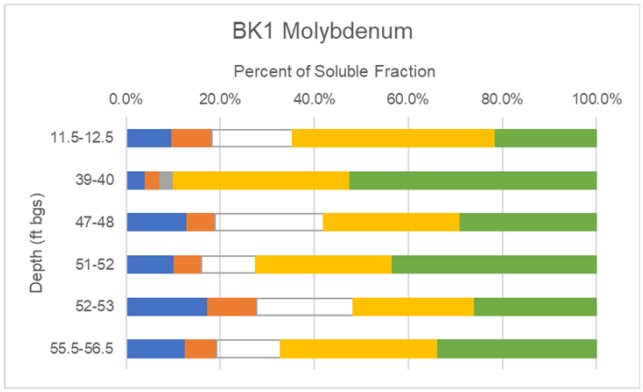
SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

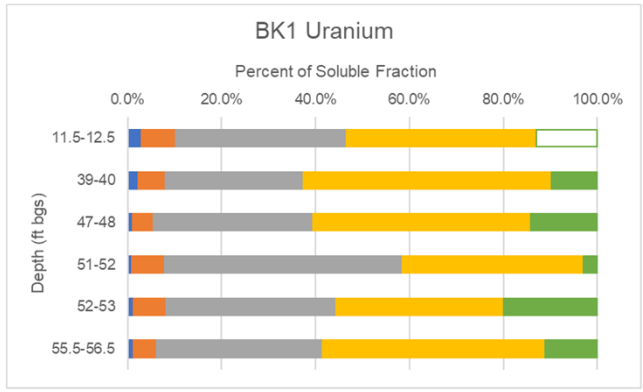
SELECTIVE SEQUENTIAL EXTRACTION RESULTS – BK3

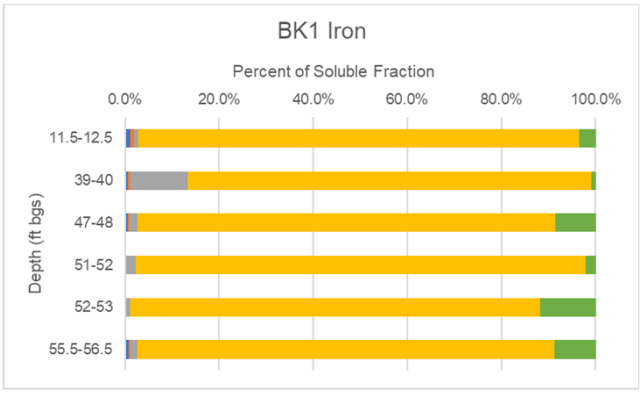
ARCADIS Design & Consultancy for natural and built assets

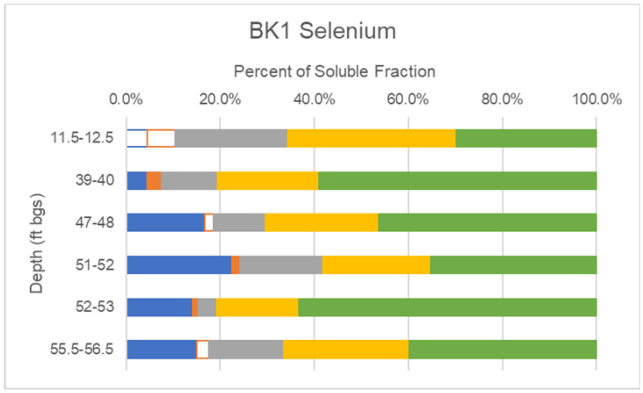
FIGURE 19

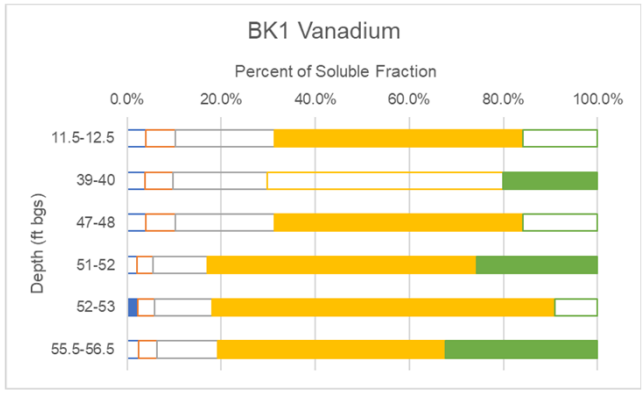












Notes

Bar with white fill and colored outline indicates a non-detect result with the value reported as the method detection limit (MDL) in mg/kg.

bgs – below ground surface

ft – feet

- Water Soluble
- Adsorbed
- Carbonate Bound
- Oxide Bound
- Organic/Sulfide Bound

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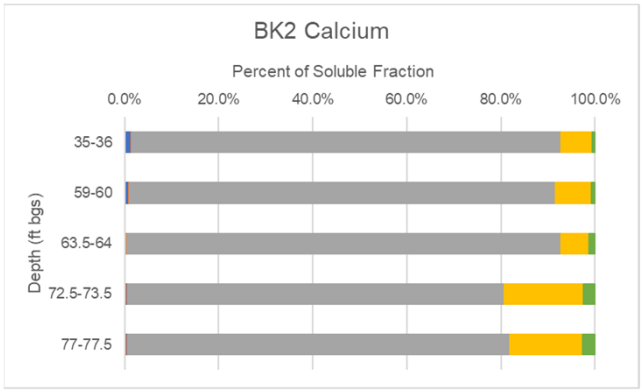
GRANTS RECLAMATION PROJECT

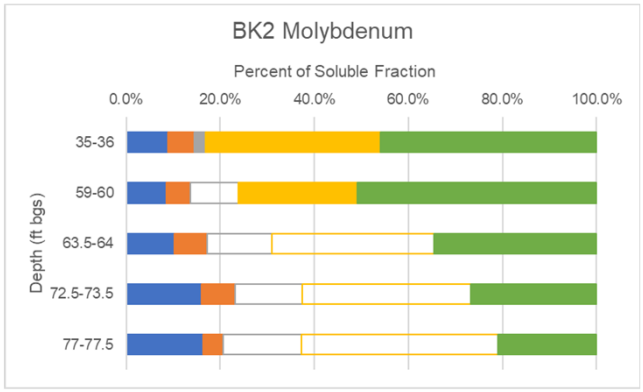
SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

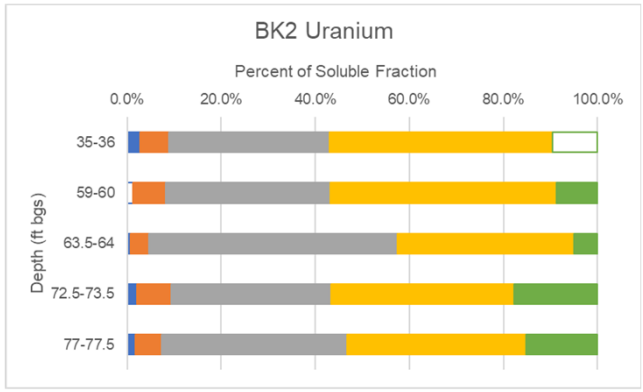
SOLUBLE FRACTION PERCENT PLOTS – BK1

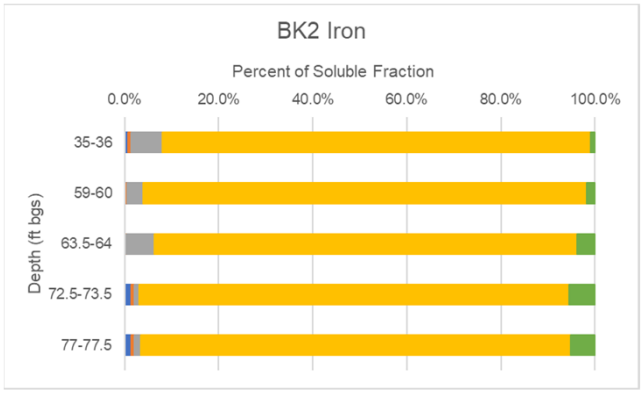
ARCADIS Design & Consultancy for natural and built assets

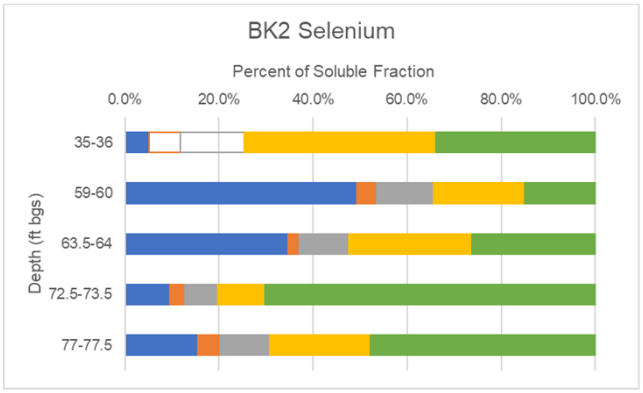
FIGURE 20

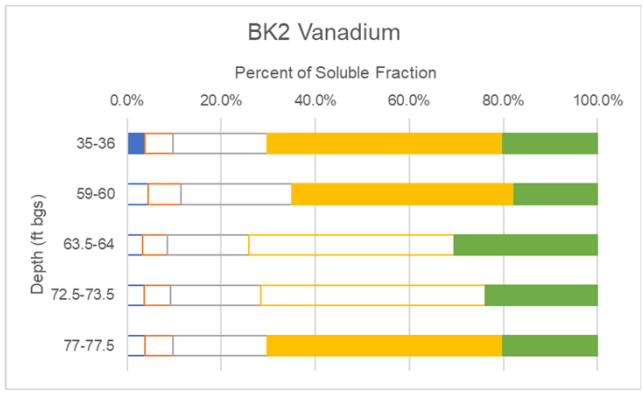












Notes

Bar with white fill and colored outline indicates a non-detect result with the value reported as the method detection limit (MDL) in mg/kg.

bgs – below ground surface

ft – feet

- Water Soluble
- Adsorbed
- Carbonate Bound
- Oxide Bound
- Organic/Sulfide Bound

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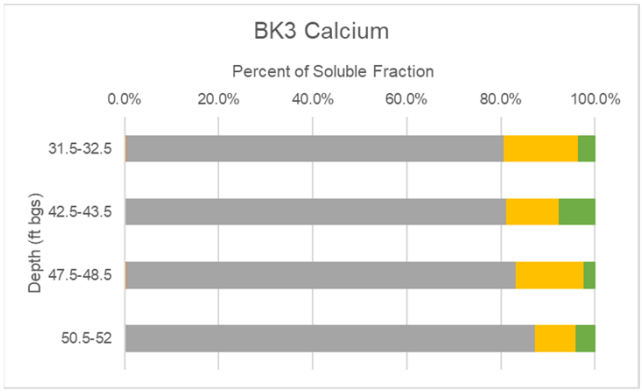
GRANTS RECLAMATION PROJECT

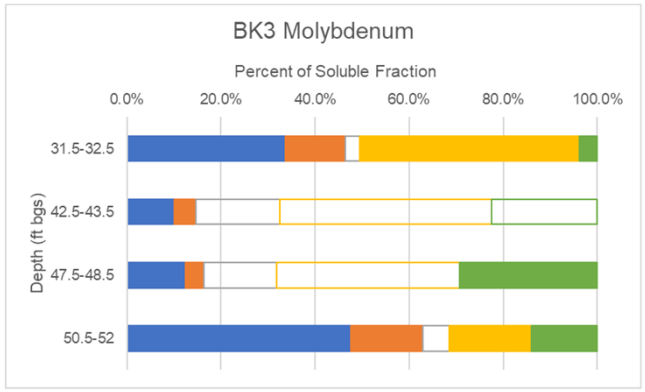
SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

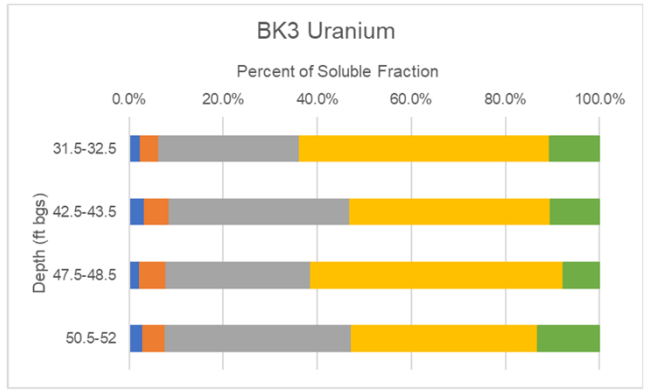
SOLUBLE FRACTION PERCENT PLOTS – BK2

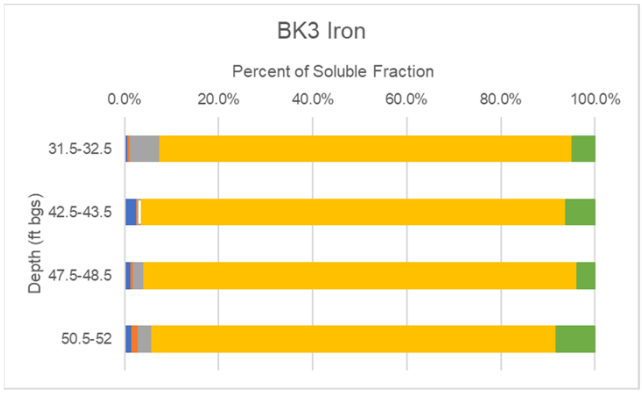
ARCADIS Design & Consultancy for natural and built assets

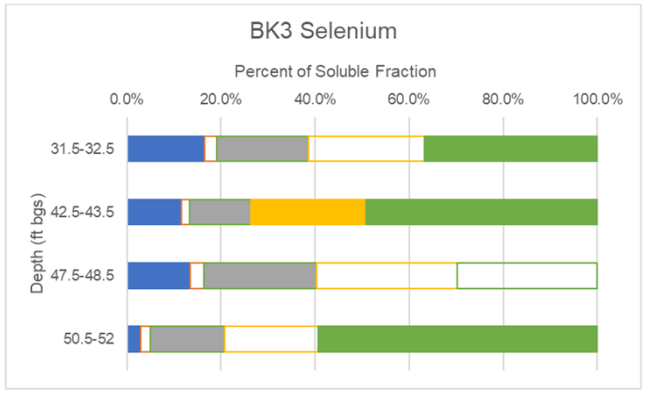
FIGURE 21

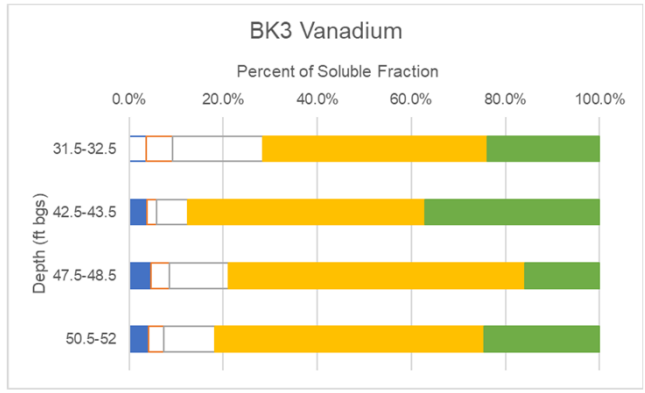












Notes

Bar with white fill and colored outline indicates a non-detect result with the value reported as the method detection limit (MDL) in mg/kg.

bgs – below ground surface

ft – feet

- Water Soluble
- Adsorbed
- Carbonate Bound
- Oxide Bound
- Organic/Sulfide Bound

HOMESTAKE MINING COMPANY

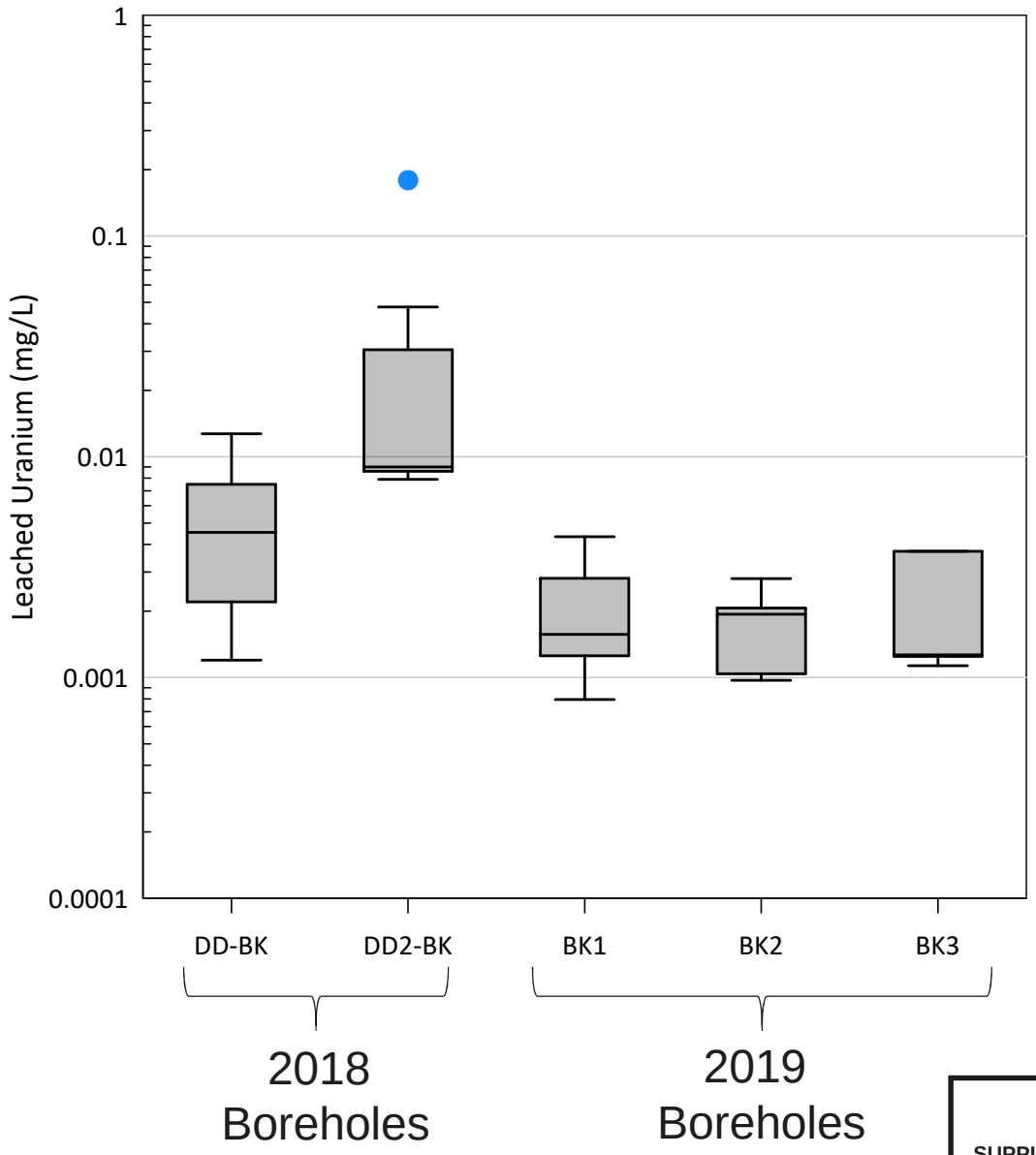
GRANTS RECLAMATION PROJECT

SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

SOLUBLE FRACTION PERCENT PLOTS – BK3

ARCADIS Design & Consultancy for natural and built assets

FIGURE 22



Notes

Sediment from 2018 boreholes was extracted with 0.0144 M sodium bicarbonate and 0.0028 M sodium carbonate (Kohler, et al. 2004; 18 hour extraction); sediment from 2019 was extracted with DI water (1 hr.) and Kohler et al. 2004 extraction solution (1 hr.); i.e., SSE Steps 1 and 2 (data is summed).

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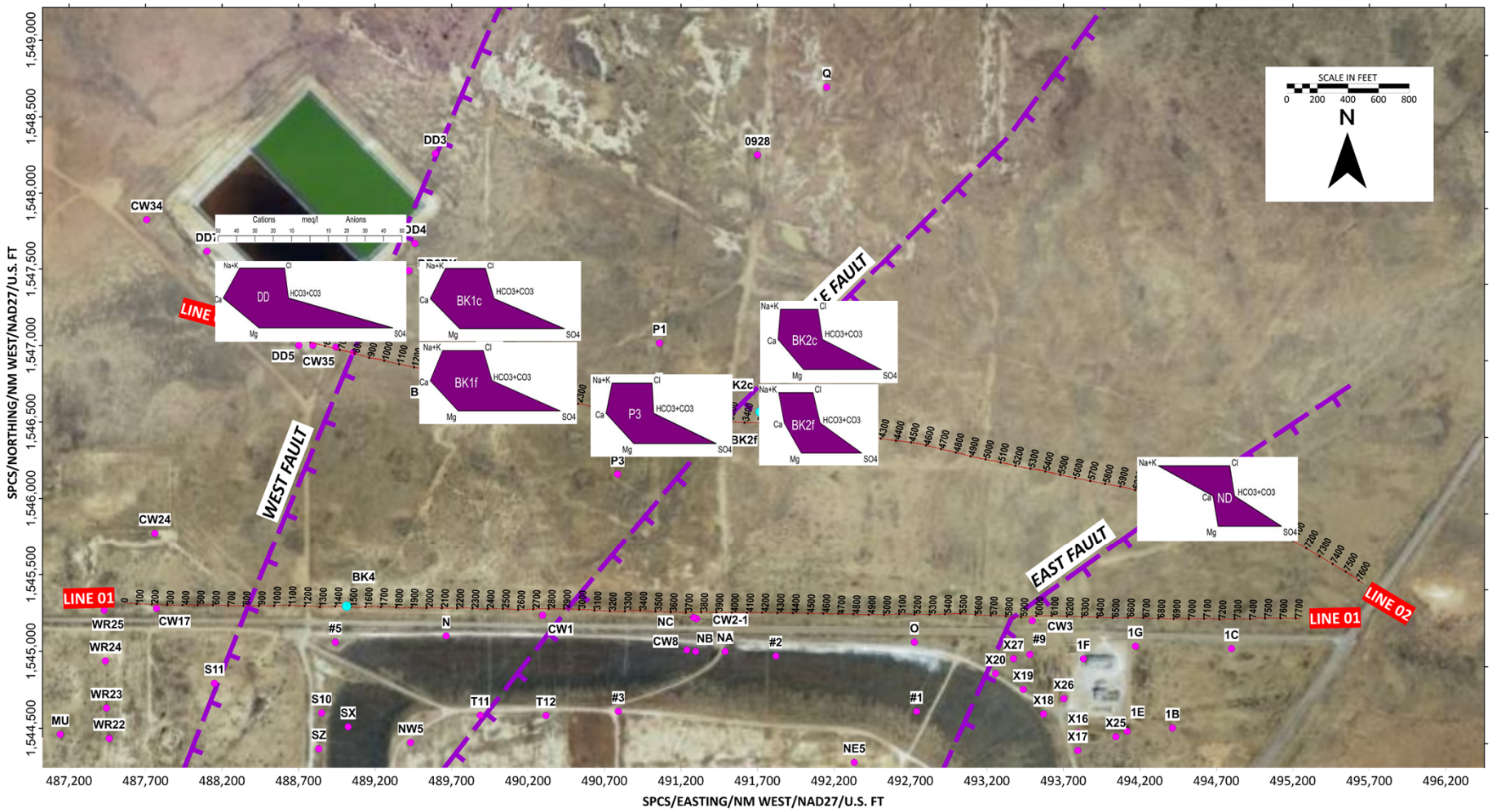
SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

EVALUATION OF URANIUM LEACHING FROM SEDIMENTS IN BICARBONATE/CARBONATE SOLUTIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
23



Notes
All diagrams are at the same horizontal scale
Ca – calcium
CO_3 – carbonate
HCO_3 – bicarbonate
K – potassium
meq/l – milliequivalent per liter
Mg – magnesium
Na – sodium
SO_4 – sulfate

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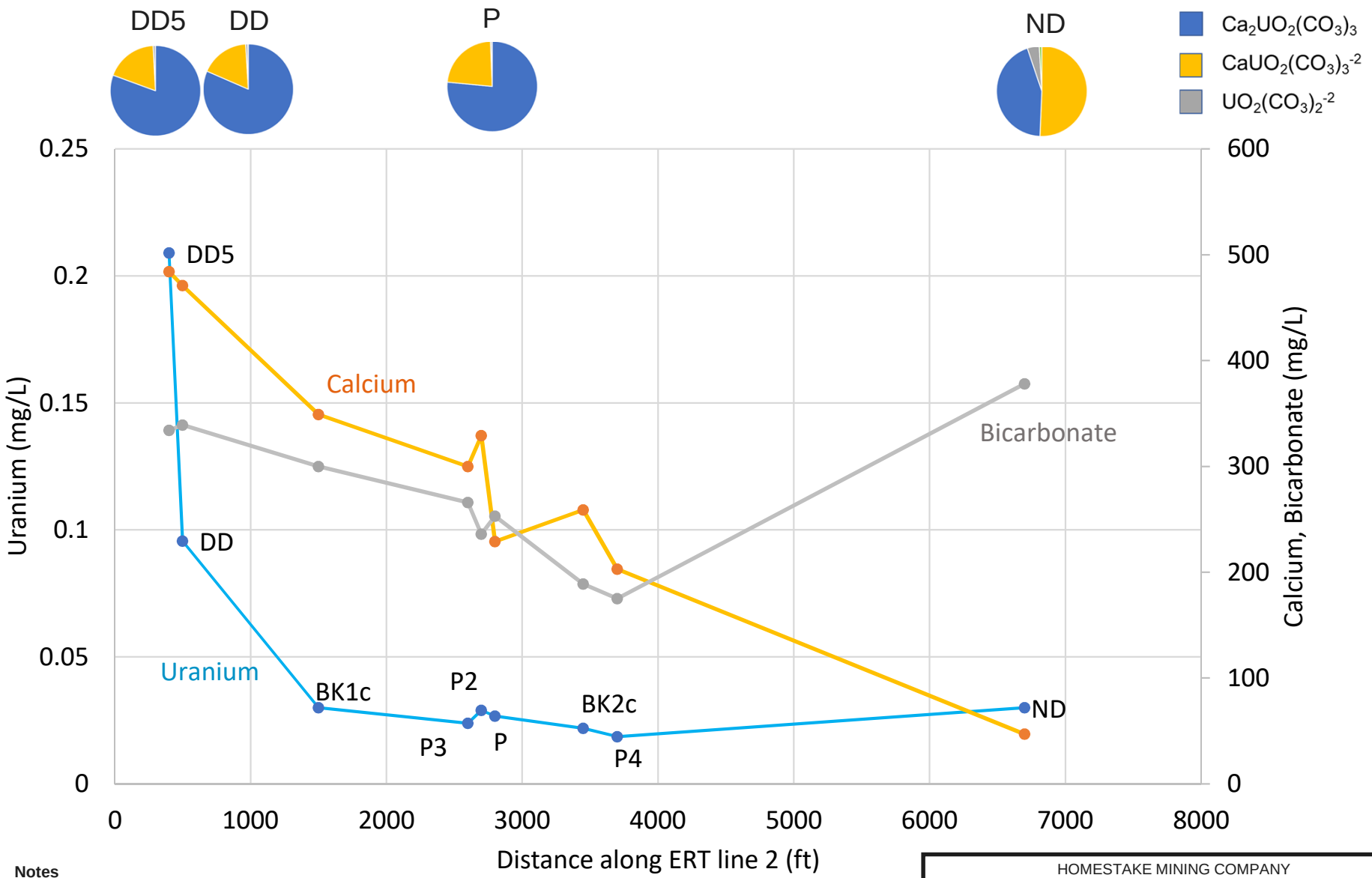
GRANTS RECLAMATION PROJECT
SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

STIFF DIAGRAMS ACROSS THE CHANNEL

ARCADIS Design & Consultancy for natural and built assets

FIGURE
24



Notes
ft – feet
mg/L – milligram per liter

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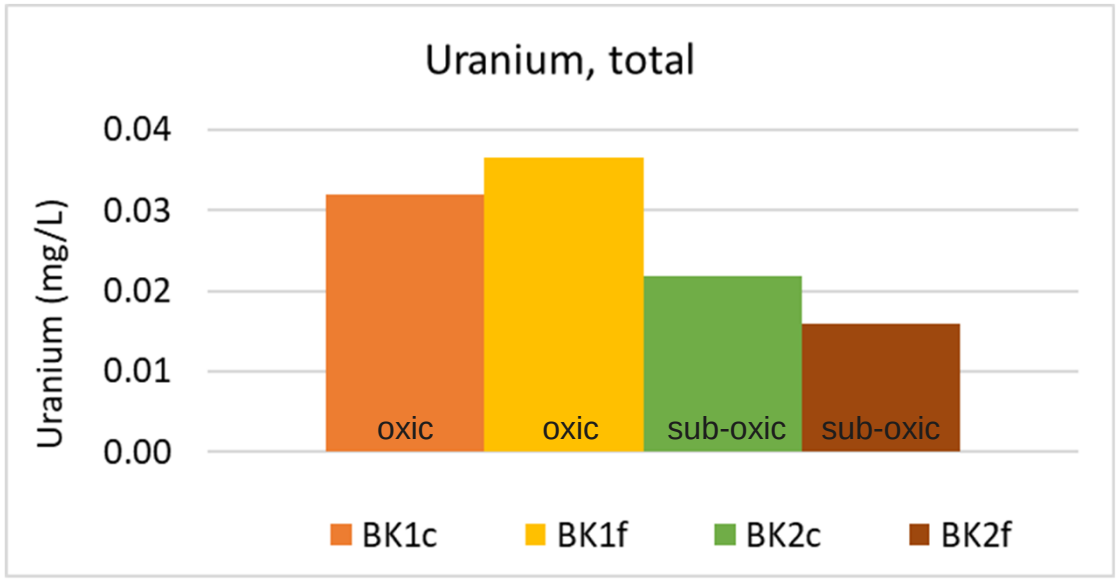
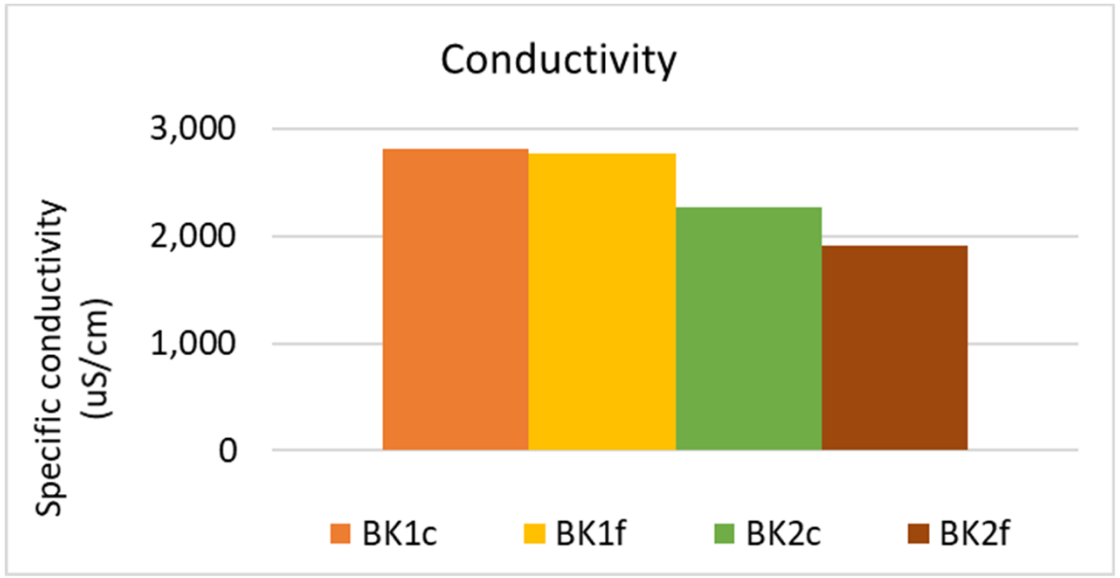
SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

GROUNDWATER CALCIUM, BICARBONATE, AND URANIUM

ARCADIS Design & Consultancy for natural and built assets

FIGURE
25





Notes
mg/l – milligram per liter
mV – millivolt
Oxic – dissolved oxygen > 1 mg/l
sub-oxic – dissolved oxygen 1-0.1 mg/l
uS/cm – microSiemen per centimeter

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SUPPLEMENTAL BACKGROUND SOIL AND GROUNDWATER INVESTIGATION REPORT

URANIUM AND CONDUCTIVITY IN BK WELLS

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FIGURE
26

APPENDIX A

Preliminary ERI Memo, Revision 1

MEMO

ARCADIS Design & Consultancy for natural and built assets

To:
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From:
Gregory Byer, L.P.G., P.E.

Date:
May 9, 2019

Arcadis Project No.:
CO000120.1901

Subject:
Preliminary ERT Assessment Results, Revision 1
2019 Background Assessment
Grants Reclamation Project, Grants, New Mexico

The purposes of this memo are 1) to present the preliminary results of the Electrical Resistivity Tomography (ERT) Assessment work, the plans for which were described in the document entitled, "WORK PLAN: 2019 BACKGROUND INVESTIGATION", dated February 13, 2019, 2) present the locations for two pairs of monitoring wells screened the alluvial aquifer (BK1 and BK2), and the rationale behind the selected locations in accord with Section 1.3, Data Needs and Study Objectives, of the referenced work plan, and 3) present the locations of two additional boreholes that will provide information on mineralogy (BK3) and depth to bedrock at two separate locations (BK4). Note that the wells will each be 2-inches in diameter and will have screen lengths that range from 5 to 10 feet (to establish sample points within material of predominantly coarse of fine size characteristics). The final presentation of the results of the electrical resistivity tomography, including documentation of field activities, data processing and interpretation work, will be incorporated in the final report outlined in Section 4.0 of the work plan.

This memo is a revision of the draft memo dated May 1, 2019. It incorporates modifications to the original memo based on comments received from the U.S. EPA and the NMED, verbally and in writing. The boring locations shown in this memo reflect the agreed-upon locations resulting from the most recent technical interchange held by teleconference held from 2:00 p.m. to 3:00 p.m. MDT on May 7, 2019.

Data collection was preformed from April 8 to 12, 2019. The procedures used were those outlined in the work plan. Arcadis conducted the ERT assessment as follows:

- Electrical resistivity data sets were collected along two roughly parallel east-west transects that span the alluvial channel. **Figure 1** (draft) provides the location of the two electrical resistivity lines. The locations were surveyed with a submeter accuracy DGPS unit. In both cases, data collection proceeded from

west to east, and the numbers posted along the lines (dots every 20 feet) are in intervals of 100 feet. Final line lengths were 7709 and 7618 feet for Lines 1 and 2, respectively.

- Each ERT setup utilized a maximum of 112 electrodes with 6-meter (19.7-foot) inter-electrode spacing. The imaging depth of this configuration achieved a maximum penetration depth of approximately 400 feet below ground surface (bgs). For each line there were six overlapping data collection set ups.
- A SuperSting R8™ resistivity meter manufactured by Advanced Geosciences Inc. was used to collect ERT data.
- A combined dipole-dipole and strong gradient array type was used to collect ERT data. These combined arrays provided an optimal horizontal and vertical sensitivity required to capture the complexities of the stratigraphic environment.
- Following field data collection, the apparent resistivity data were compiled and inverse-modelled to create an electrical resistivity tomogram, the results of which are included in continuous cross-sections of the alluvial channel (**Figures 2 through 5** [drafts]). Two renditions of the modeling results are provided. **Figures 2 and 4** are compressed cross-sections of Lines 1 and 2 at a 5:1 vertical exaggeration, intended to provide the "big picture" view of the overall setting including depiction of a significant portion of the Chinle Formation. **Figures 3 and 5** are expanded sections with no vertical exaggeration intended to reveal greater details in the alluvial sediments without the distortions introduced by vertical exaggeration. The RES2DINV software program by Geotomo Software was used to inverse-model the ERT data.
- The results of the geophysical resistivity tomography have been preliminarily reviewed and interpreted, including comments from the U.S. EPA and the NMED, to select the locations of two new monitoring well pairs, the locations of which are shown on **Figures 1, 2 and 3** (drafts). These well pairs are designated BK1c/BK1f and BK2c/BK2f. Per the work plan, one well in each pair will be screened in coarse material while the second will be screened in fine grained materials.
- Two additional locations are also depicted for soil borings designated BK3 (**see Figures 1, 2 and 3)** and BK4 (**Figures 1, 4 and 5**). BK3 is intended to provide primarily lithologic and mineralogic information in the eastern portion of the valley where there appears to be a sediment type/source which differs significantly from the western channel. BK4 is a soil boring which is primarily intended to fill a data gap related to the possible existence of a bedrock high area, indicated by Boring #5 as described by Chavez.
- The rationale for the selection of the locations of the two proposed pairs of wells (BK1 and BK2) incorporated the following key points:
    - General interpretation of electrical resistivity tomogram data
        - Electrical Resistivity Tomograms are modeled, 2-dimensional data sets that are calibrated to the apparent resistivity data collected in the field and which are considered a possible depiction of the internal structure of the subsurface in terms of the resistance to the ability of the subsurface to support electrical current flow. The assumption is that the primary mode of conduction is through interconnected pore spaces in the fluid filling the pores (air, water, or a mixture of both). Except for clay minerals and sulfide minerals, the solid mineral or lithic fragments making up the bulk of the geologic material are extremely poor electrical conductors and do not participate significantly in the flow of electrical current.
        - The principal variables which control the electrical resistivity of the subsurface are:

- Amount of interconnected porosity
- Degree of water saturation within the interconnected pore spaces
- Electrical resistivity of the fluid phase (groundwater) within the pore spaces
- Grain related factors such as roundness, orientation, elongation, etc.
- Pore space related factors such as tortuosity, coatings, cementation, etc.

- For clastic alluvial sediments in fresh water environments electrical resistivity is primarily directly proportional to the coarseness and lack of fines in the alluvium. Conversely, the least resistive materials are those which consist of clay, silt or a mixture of both.
- Unsaturated alluvium of a particular grain size is more electrically resistive than its saturated counterpart. Because of the ability of fine-grained materials to sorb water, the contrast between unsaturated and saturated fine materials is less pronounced than coarse grained materials.
- Clay minerals possess a net negative surface charge and have the capacity to attract and hold cations, which under current flow act to facilitate current and lower the electrical resistivity.

o Site specific correlations and interpretations relevant to selection of well locations

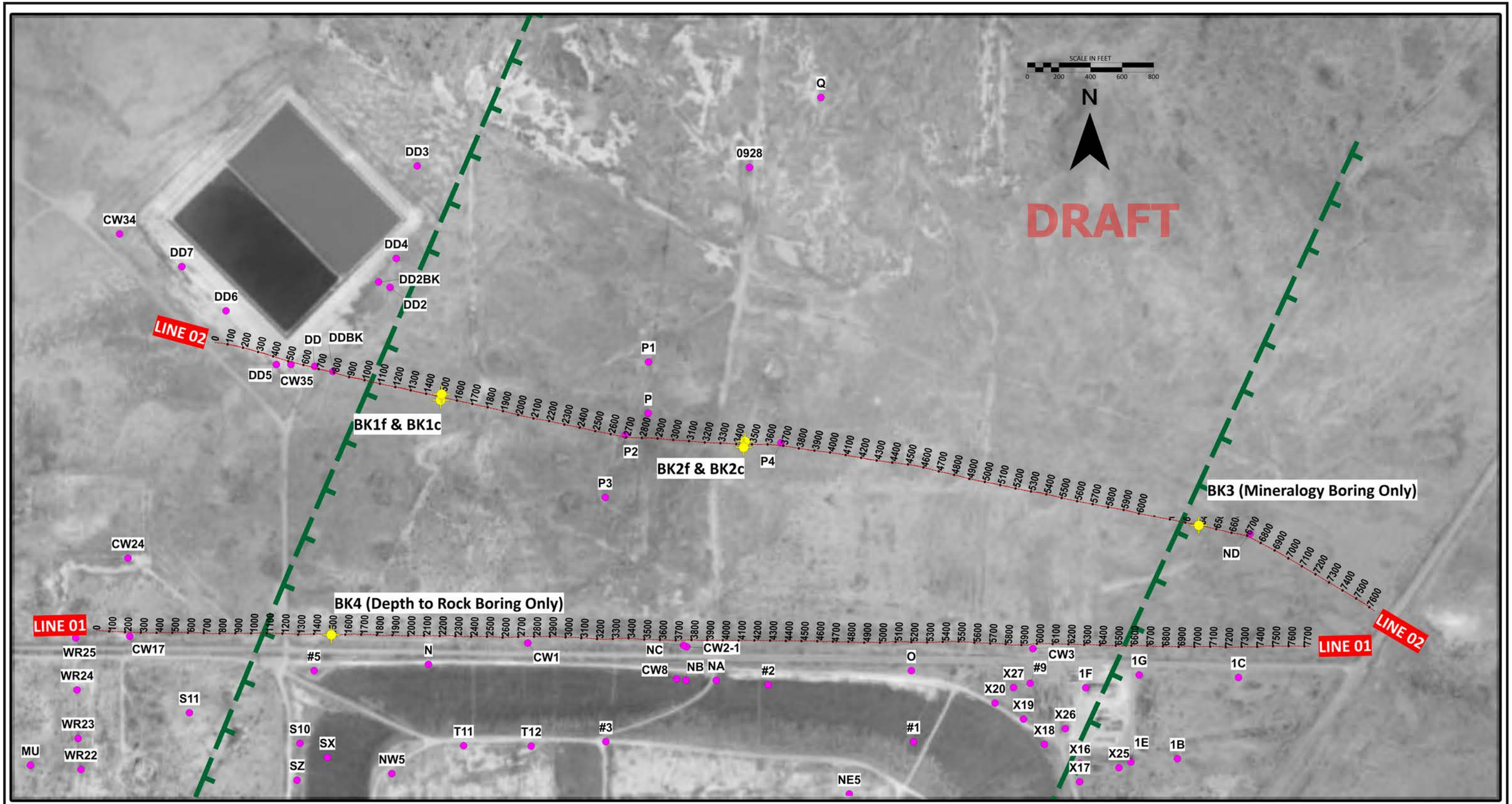
- The approximate current potentiometric surface for the alluvial aquifer and the base of alluvium from drilling observations have both been depicted on **Figures 2 through 5** (drafts).
  - In high resistivity alluvium (yellow to red colors), which is interpreted as coarse-grained materials such as sand or gravel, there is generally a vertical decrease in the electrical resistivity below the potentiometric surface. This change in resistivity may be related primarily to saturation rather than an increase in fine-grained materials.
  - The approximate base of alluvium from drilling observations appears to coincide with a vertical decline in electrical resistivity in the majority of the cross sections, which is interpreted to be fine-grained Chinle lithologies. There are exceptions where moderate to high resistivity material appears beneath the alluvium, which has been confirmed as Chinle sandstone lithologies (for example, see **Figures 4 and 5** [draft] west of horizontal position of 700 feet).
- Broadly speaking, on both cross-sections the amount of coarse grained (resistive) material is generally to the west side – west of 3100 on Line 1 and west of 4500 on Line 2. The balance of the eastern sides of both lines is a low to moderate resistivity material interpreted as being dominated by fine-grained materials. Close comparison of descriptive logs and geophysical logs for alluvial wells on Line 2 supports the finding that the west side contains sediments much coarser than the east side (for example, compare Well DD with Well ND).
- Regarding the conditions in the vicinity of Well DD and Boring DD-BK **(Figures 4 and 5** [draft]), the electrical resistivity indicates that there is predominantly coarse-grained materials within the specific drilling locations, although the pod of coarse material is surrounded beneath and to the west and east by finer-grained materials (green).
- Using the DD/DD-BK environment as an analogue for the type of depositional conditions that are of interest to this background study, locations of BK1 and BK2 are positioned within resistive materials that are also surrounded by finer-grained materials. It is anticipated that sufficient coarse and fine-grained intervals will exist within the saturated alluvium to select both a fine-

grained and coarse-grained well screen location. Evaluation of the ERT profile to identify sufficient coarse and fine-grained intervals to establish screened-intervals (5 to 10 feet in length) in each was used a primary criterion for selection of the borehole locations.

- BK2 is located near well P4 in the center of the alluvial basin to provide a dataset collected from the alluvial column near the deepest part of the alluvial channel.

o Other observations of interest

- Chinle shale appears to have a very low resistivity value, consistent with high clay content associated with distal facies such as lacustrine and lacustrine-deltaic environments.
- The west and east faults are placed on the cross-sections from site mapping work in the past. Based on the observations from the Chinle wells and the correlations with the electrical resistivity, the locations of the faults appear to be supported by the electrical resistivity results, although the data are complex, and the exact positions of the faults may need to be revised. Further, the complexity of the data in the Chinle Formation suggests that there may be additional faults.
- There appears to be a coarsening in alluvial sediments on the down-thrown sides of both the east and west faults, suggesting continued activity of the faults during deposition of the alluvium.
- The thalweg (lowest point) of the alluvial valley does not appear to coincide with the greatest concentration of coarse sediments on the west side of the valley. The centroid of the highest resistivity materials on Line 2 are off-set approximately 1100 feet west of the thalweg, and perhaps over 2000 feet of off-set on Line 1.



2019 BACKGROUND ASSESSMENT
GRANTS RECLAMATION PROJECT
GRANTS, NEW MEXICO

SITE BASE MAP
ELECTRICAL RESISTIVITY TOMOGRAPHY ASSESSMENT

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FIGURE
1

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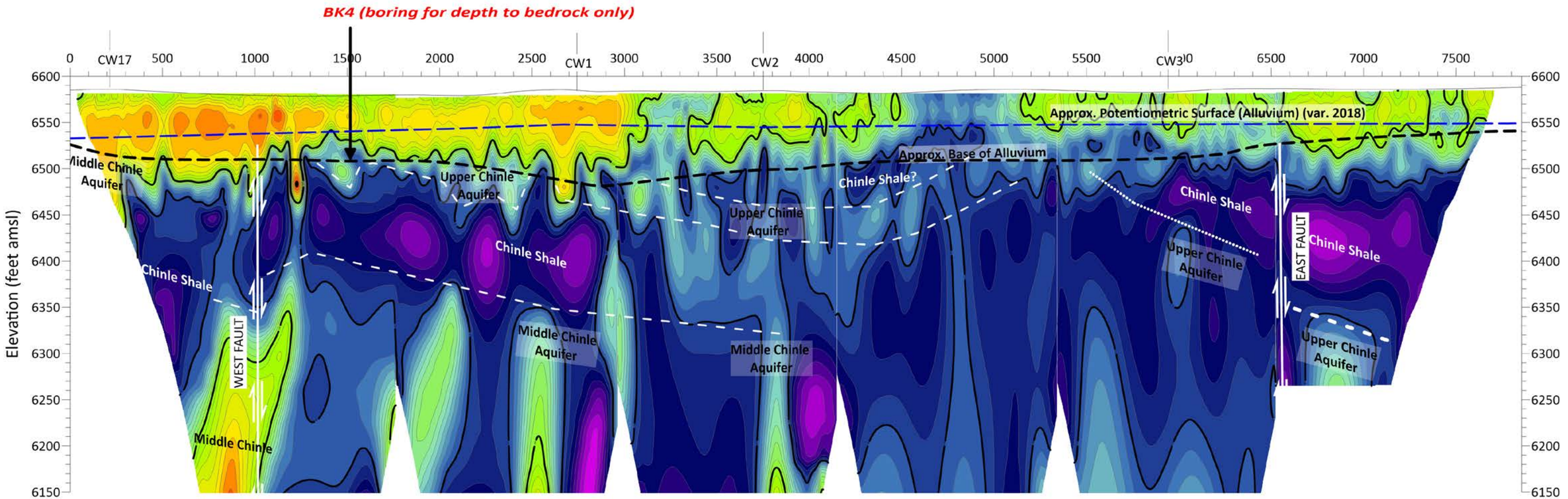
ELECTRICAL RESISTIVITY LINE 1



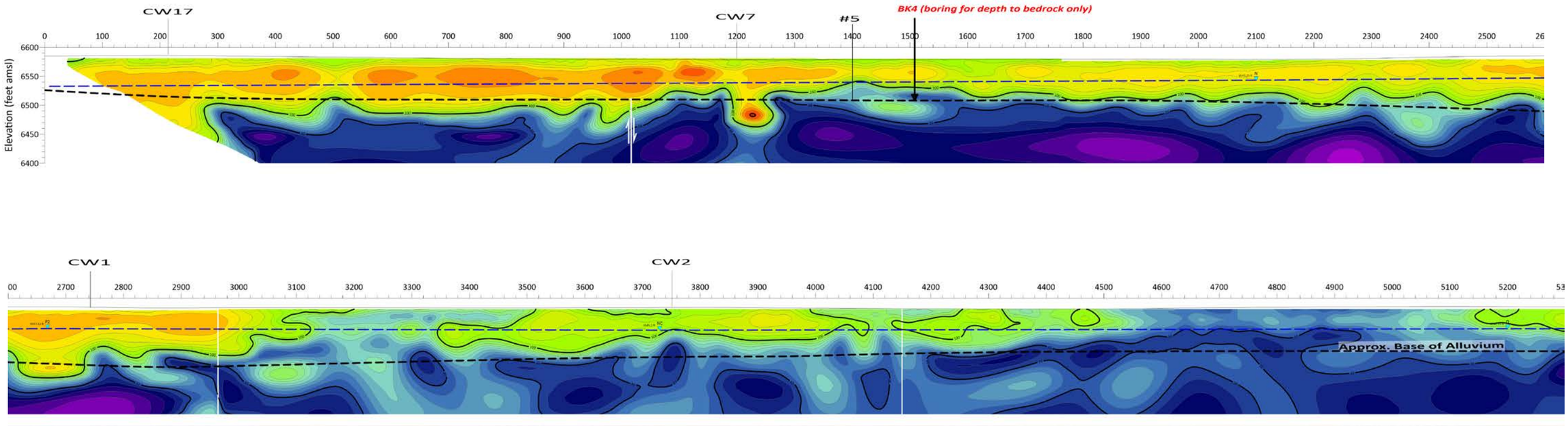
ELECTRICAL RESISTIVITY (OHM-METERS)

1 10 100 1000 10,000

DRAFT

2019 BACKGROUND ASSESSMENT GRANTS RECLAMATION PROJECT GRANTS, NEW MEXICO	
RESISTIVITY LINE 1 – COMPRESSED VIEW ELECTRICAL RESISTIVITY TOMOGRAPHY ASSESSMENT	
ARCADIS Design & Consultancy for natural and built assets	FIGURE **2**

Revision: 5/8/2019



ELECTRICAL RESISTIVITY (OHM-METERS)

1 10 100 1000 10,000

DRAFT

2019 BACKGROUND ASSESSMENT
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GRANTS, NEW MEXICO

RESISTIVITY LINE 1 – EXPANDED VIEW
ELECTRICAL RESISTIVITY TOMOGRAPHY ASSESSMENT

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FIGURE
3

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2019 BACKGROUND ASSESSMENT
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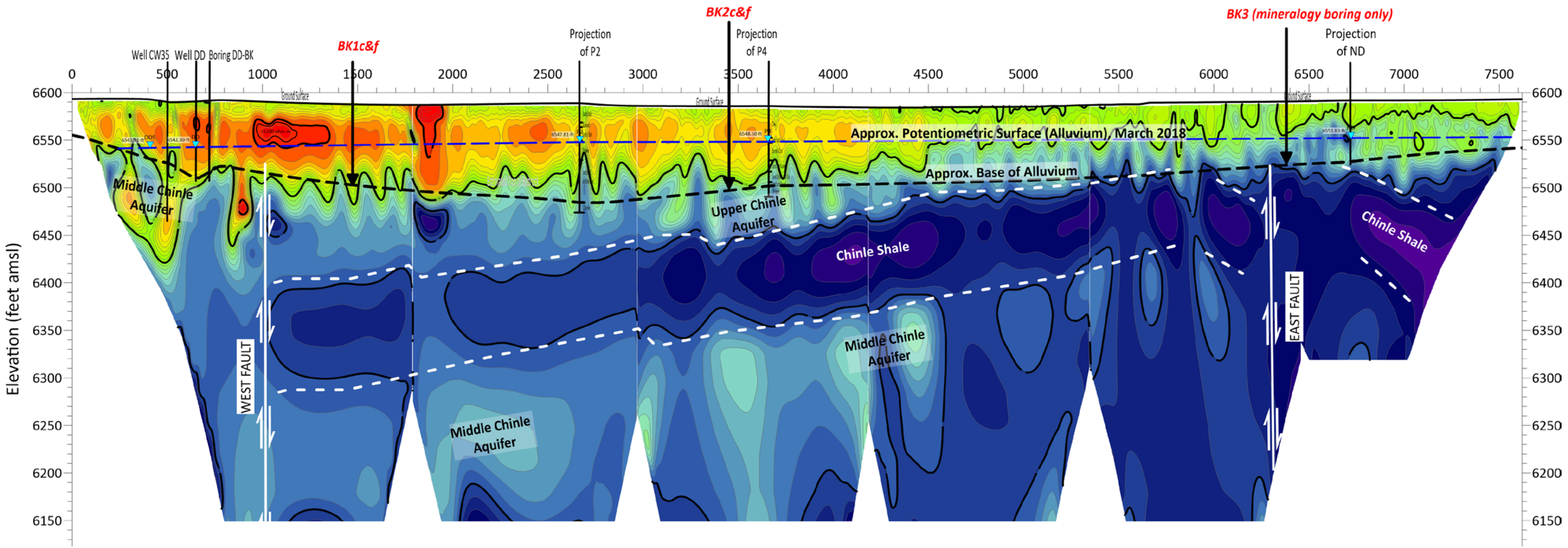
ELECTRICAL RESISTIVITY LINE 2



ELECTRICAL RESISTIVITY (OHM-METERS)

1 10 100 1000 10,000

DRAFT

2019 BACKGROUND ASSESSMENT
GRANTS RECLAMATION PROJECT
GRANTS, NEW MEXICO

RESISTIVITY LINE 2 – COMPRESSED VIEW ELECTRICAL RESISTIVITY TOMOGRAPHY ASSESSMENT

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FIGURE
4

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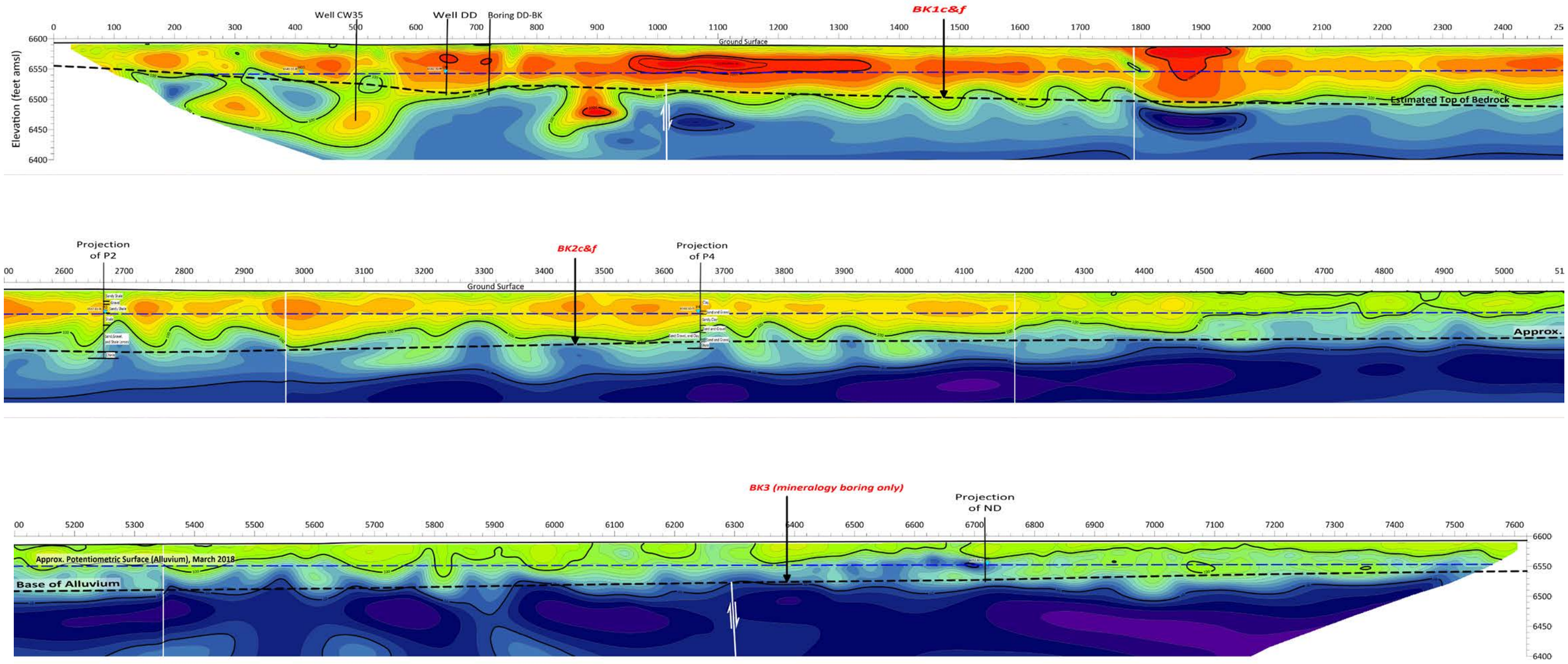

ELECTRICAL RESISTIVITY (OHM-METERS)

1 10 100 1000 10,000

DRAFT

2019 BACKGROUND ASSESSMENT
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GRANTS, NEW MEXICO

RESISTIVITY LINE 2 – EXPANDED VIEW
ELECTRICAL RESISTIVITY TOMOGRAPHY ASSESSMENT

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FIGURE
5

Revision: 5/8/2019

APPENDIX B

Groundwater sampling field forms

Background Geochemical Water Sampling

Well Name	Date	Depth to Water	Pump Type	Pump Depth Setting	Purge Rate (mL/min)	Flow Through Cell Volume (mL)	Tubing Volume (mL)	Bladder Volume (mL)
BK2F	6/10/19	40.06	Bladder	77	90	206	657	156

Stabilization Parameters

			YSI Professional Plus w/ YSI Quatro Probe & Flow Through Cell					Hach 2100Q
Time	Depth To Water (feet)	Purged Volume (mL)	Temperature (C°)	pH	Conductivity (uS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1247	pump on							
1305	40.19	1620	15.0	8.21	1917	164.5	1.52	6.41
1315	40.20	2520	14.4	8.20	1920	108.9	0.66	14.33
1325	4.23	3420	14.1	8.15	1910	110.0	0.71	14.92
1335	4.25	4320	14.1	8.13	1906	102.2	0.72	14.5

Final Sample Parameters

	Hach DR900		YSI Professional Plus w/ YSI Quatro Probe & Flow Through Cell					Hach 2100Q
Time	Ferrous Iron (mg/L)	Total Purged Volume (mL)	Temperature (C°)	pH	Conductivity (uS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity
1335	0.19	3900	14.1	8.13	1906	102.2	0.72	14.5

Sampled By:	Sampler's Signature	Sample Date	Sample Time
Adam Angell	Adam Angell	6/10/19	1335

Background Geochemical Water Sampling

Well Name	Date	Depth to Water	Pump Type	Pump Depth Setting	Purge Rate (mL/min)	Flow Through Cell Volume (mL)	Tubing Volume (mL)	Bladder Volume (mL)
BR2C	6/10/19	40.29	Bladder	61.3	200	206	523	156

Stabilization Parameters

			YSI Professional Plus w/ YSI Quatro Probe & Flow Through Cell					Hach 2100Q
Time	Depth To Water (feet)	Purged Volume (mL)	Temperature (C°)	pH	Conductivity (uS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1445		pump on						
1450	40.35	1000	15.3	8.26	2291	140.0	1.36	9.51
1455	40.34	2000	14.8	8.20	2281	136.5	0.39	3.84
1500	40.34	3000	14.7	8.15	2286	130.8	0.27	1.66
1505	40.35	4000	14.2	8.08	2280	127.0	0.55	7.27
1510	40.34	5000	14.2	8.11	2276	122.5	0.43	10.5
1515	40.35	6000	14.1	8.12	2284	117.5	0.45	10.3
1520	40.35	7000	14.1	8.12	2276	114.5	0.48	9.62

Final Sample Parameters

	Hach DR900		YSI Professional Plus w/ YSI Quatro Probe & Flow Through Cell					Hach 2100Q
Time	Ferrous Iron (mg/L)	Total Purged Volume (mL)	Temperature (C°)	pH	Conductivity (uS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity
1520	0.48	7000	14.1	8.12	2276	114.5	0.48	9.62

Sampled By:	Sampler's Signature	Sample Date	Sample Time
Adam Agnello	Adam Agnello	6/10/19	1520

GW-DUP 15:30 sampled

Background Geochemical Water Sampling

Well Name	Date	Depth to Water	Pump Type	Pump Depth Setting	Purge Rate (mL/min)	Flow Through Cell Volume (mL)	Tubing Volume (mL)	Bladder Volume (mL)
BK1f	6/10/19	44.79	Bladder	56	120 mL/min	206	555	156

Stabilization Parameters

			YSI Professional Plus w/ YSI Quatro Probe & Flow Through Cell					Hach 2100Q
Time	Depth To Water (feet)	Purged Volume (mL)	Temperature (C°)	pH	Conductivity (uS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0819	pump on							
0827	44.83	960	13.4	7.40	2762	226.1	3.92	10.6
0835	44.84	1920	13.3	7.65	2776	211.2	2.11	4.43
0843	44.90	2880	13.3	7.72	2781	201.7	2.12	5.42
0851	44.92	3840	13.3	7.76	2779	193.6	2.14	1.90
0859	44.93	4800	13.3	7.79	2778	187.0	2.33	1.82
0907	44.91	5760	13.4	7.81	2775	182.2	2.35	1.17
0915	44.92	6720	13.4	7.82	2773	177.7	2.51	1.13
0922	44.91	7680	13.4	7.83	2772	174.5	2.37	1.15

Final Sample Parameters

	Hach DR900		YSI Professional Plus w/ YSI Quatro Probe & Flow Through Cell					Hach 2100Q
Time	Ferrous Iron (mg/L)	Total Purged Volume (mL)	Temperature (C°)	pH	Conductivity (uS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity
0922	0.06	7680	13.4	7.83	2772	174.5	2.37	1.15

Sampled By:	Sampler's Signature	Sample Date	Sample Time
Adam Aycock	Adam Aycock	6/10/19	0922

Background Geochemical Water Sampling

Well Name	Date	Depth to Water	Pump Type	Pump Depth Setting	Purge Rate (mL/min)	Flow Through Cell Volume (mL)	Tubing Volume (mL)	Bladder Volume (mL)
BRIC	6/10/19	44.25	Bladder	56.0'	170 ~¼/min	206	478	156

Stabilization Parameters

			YSI Professional Plus w/ YSI Quatro Probe & Flow Through Cell					Hach 2100Q
Time	Depth To Water (feet)	Purged Volume (mL)	Temperature (C°)	pH	Conductivity (uS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1038	start pump							
1045	44.31	840	14.9	8.06	2739	168.8	1.59	5.58
1052	44.31	1680	14.2	8.02	2743	161.0	1.58	2.56
1059	44.32	2520	14.2	7.92	2765	152.0	2.38	22.5
1106	44.31	3360	14.0	7.89	2818	143.8	3.13	55.7
1113	44.31	4200	13.9	7.87	2920	139.3	3.27	40.9
1120	44.30	5040	13.9	7.87	2814	137.3	3.34	30.6
1127	44.30	5880	13.7	7.87	2823	135.6	3.30	23.1
1134	44.30	6720	13.8	7.87	2817	133.9	3.27	7.64
1141	44.30	7560	13.9	7.87	2821	132.7	3.32	7.62
1148	44.30	8400	13.8	7.88	2815	130.1	3.34	7.53

Final Sample Parameters

	Hach DR900		YSI Professional Plus w/ YSI Quatro Probe & Flow Through Cell					Hach 2100Q
Time	Ferrous Iron (mg/L)	Total Purged Volume (mL)	Temperature (C°)	pH	Conductivity (uS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity
1148	0.02	8400	13.8	7.88	2815	130.1	3.34	7.53

Sampled By:	Sampler's Signature	Sample Date	Sample Time
Adam Argyilla	Adam Argyilla	6/10/19	1148

APPENDIX C

ERT Data Processing and Interpretation Memo

MEMO

ARCADIS Design & Consultancy for natural and built assets

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From:
Gregory Byer, L.P.G., P.E.

Date:
August 29, 2019

Arcadis Project No.:
30008273

Subject:
ERT Processing and Interpretation Information
Appendix C of 2019 Background Assessment
Grants Reclamation Project, Grants, New Mexico

The purpose of this Technical Memorandum (memo) is to provide supplemental information regarding the Electrical Resistivity Tomography (ERT) data processing and interpretation steps taken by Arcadis subsequent to issuance of the Technical Memorandum dated May 9, 2019 concerning preliminary results of the ERT survey. The intent of the May 9, 2019 work product was largely to guide decisions regarding placement of background borings and wells. Since that time, Arcadis has continued to refine the ERT data and interpretations of ERT data in the context of existing and recently collected data.

The information presented in this memo consists of the following:

1. ERT data processing steps supported by visual graphics
    - Inversion modeling
    - Post-modeling data processing and graphical presentation
2. Correlations between ERT models and borehole data
3. Process of interpreting and correlating ERT data between boreholes
    - Development of top of bedrock elevation map based on boring and well data only
    - Incorporation of top of bedrock from initial top of bedrock map into ERT data
    - Refinement of top of bedrock interpretation based on interpretation of ERT data
    - Refinement of top of bedrock map with the inclusion of ERT interpretation

ERT DATA PROCESSING STEPS

The following are the primary data processing steps that were performed by Arcadis on the two electrical resistivity datasets referred to as Line 1 and Line 2 (see Figure 1 in main body of report). The data acquisition is discussed in the main body of the report (Section 2.2.1) and Appendix A. The inversion modeling information is technical in nature and not intended to be an exhaustive explanation of the process, but rather to assist readers who have a background in geophysics. The subsection on post-modeling data processing is intended to illustrate the effects of data clean-up steps leading to development of the final cross-sections.

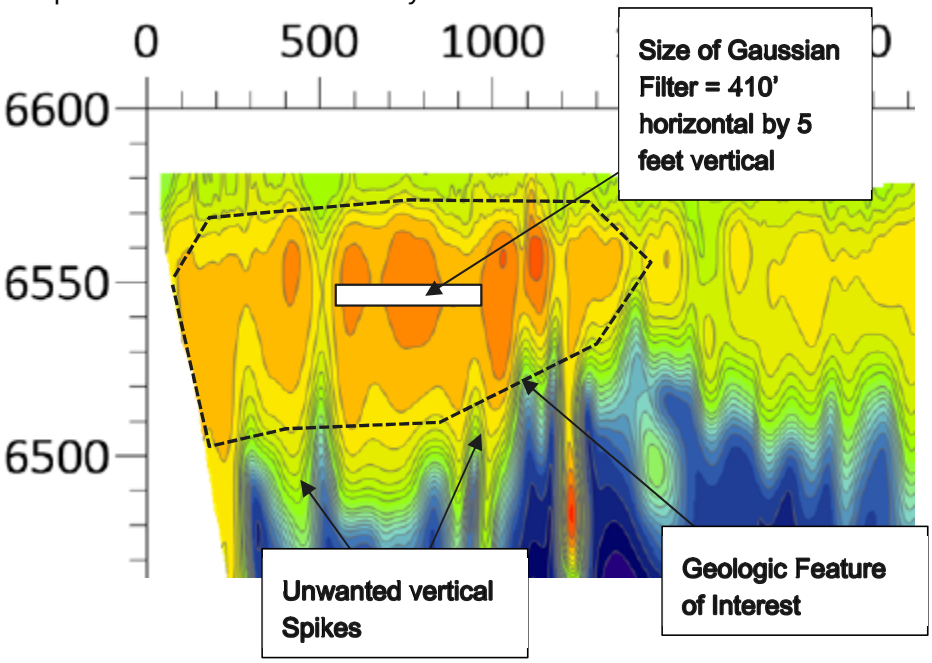
Inversion Modeling

1. Real-world coordinates and elevations for individual electrodes were determined:
    a. A global positioning system (GPS) unit with submeter accuracy was used to log the location of each electrode in the field.
    b. The electrode points were imported into Global Mapper, where elevation values were assigned from a digital elevation model (DEM).
2. The two types of raw ERT data files (AGI stg format) – dipole-dipole and strong gradient arrays – were merged and imported into Res2Dinvx64 Version 4.8.18 (Copyright Geotomo Software) and saved as mixed array format (known as “dat” format). Using Excel, the electrode coordinates (UTM) and elevation values (relative to mean sea level) were added to the dat files.
3. Based on assumed geologic conditions, the inversion parameters were developed within Res2Dinvx64 (see **Attachment C1** for full listing of inversion parameters). Many of the settings relate to controlling the inversion process such as the maximum number of iterations, damping factors, etc. Other settings provide the option for model refinement at the expense of computation time. Arcadis chose settings that provided the best detail and refinement. Further information on inversion modeling is available from the download section at geotomosoft.com, where a library of references is available.
    a. The key assumptions are supported by prior geologic work and include:
        i. Resistivity values range from approximately 1 to 1,000 ohm-meters (ohm-m) based on clastic sediments in a freshwater setting.
        ii. Main features in the alluvium and bedrock are generally horizontal (vertical to horizontal factor of 0.5).
        iii. Resistivity values vary gradationally rather than abruptly (standard constraint).
4. Inversion modeling of the individual data panels of 112-electrodes (each line had six overlapping data panels, A through F) was carried out in a stepwise manner until no discernible improvements in the error statistics were observed (model convergence). A data misfit plot was created at the end of each modeling run, and data with high misfit errors were culled and the data file saved. The goal was to trim all data producing 100 percent error or more. See **Attachment C2** for example plots (Line 1A) showing the improvement in the modeling error statistics from start to finish. The root mean square (RMS) error is a measure of the difference between the data collected in the field (upper of the three cross-sections) and a calculated data set (middle of three cross-sections) derived from the final model (bottom of three cross-sections). In the example in **Attachment C2,** the RMS error was 33.2% after the first run and was reduced to 13.4% after the third run. This is considered a good fit, consistent with Arcadis’s experience working in arid environments. Also shown in **Attachment C2** are plots of model

sensitivity, model uncertainty, model min-max, and model cell plot. Note that the model consists of finite cells of constant resistivity. The cell sizes increase with depth. Contour plots of resistivity are created by assigning the cell value at the center of each cell.

Post-Modeling Data Processing and Graphical Presentation

1. After the completion of each set of modeling runs, the modeled resistivity data were exported out of Res2Dinvx64 as plain text files. The six data panels for each line were combined in Excel. The data consisted of the center point of each grid cell within the model. The data consisted of distance along the line, elevation, and electrical resistivity of each data point. This type of data file is suitable for creating a cross-section in Surfer or other gridding and mapping programs.
2. The combined resistivity data sets were gridded in Surfer Version 16 (copyright Golden Software) using a kriging interpolator. A linear variogram was used to operate on the base-10 logarithm of the electrical resistivity model values. **Attachment C3** contains an example statistical output from the gridding operation. The cell size for the gridding process was chosen as 10 feet horizontally by 1 foot vertically to reflect the horizontal nature of the stratification. This preliminary grid was presented in the May 9, 2019 memo.
3. Because it was observed that geologically unrealistic vertical patterns (see below) were present in the initial data presented in May 2019, a phenomenon that is often observed in resistivity data, especially when subjected to vertical exaggeration, and mainly caused by electrode noise related to contact resistance, a gaussian low pass filter was applied to remove the vertical patterns and enhance the geologically realistic signal. The gaussian filter used was 41 cells in the horizontal and 5 cells in the vertical (the 410-foot by 5-foot filter box shown below). Gaussian filters are commonly used in signal and image processing on time and spatial domain data sets to remove high frequency noise. The illustration below shows the scale of the geologic features of interest (100s to 1000s of feet horizontally). The gaussian operator was biased horizontally to minimize loss of stratification. The operator is designed to be larger than the features to be removed but smaller than the wanted geologic features. **Attachment C4** presents the before and after plots showing the improvement in the image quality and illustrates the residual signal removed, which is dominated by high-frequency near-vertical distortions.



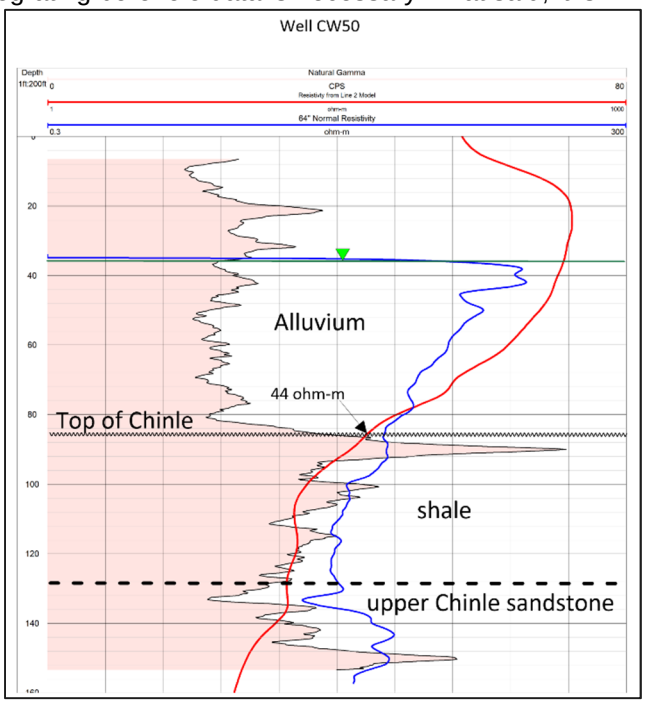
CORRELATIONS BETWEEN ERT MODELS AND BOREHOLE DATA

To tie the visual geologic details provided in this investigation to the ERT data, comparative example plots were created (**Attachment C5**). Each of these plots is for a specific boring or well location and contains 1) geologic information, 2) natural gamma and resistivity borehole data, and 3) the one-dimensional model resistivity at the well location extracted from the two-dimensional models presented in the main body of the report.

To the right is the plot for well CW50, which is located near Line 2 (140 north), and illustrates the information provided by this type of plot. This is a good plot to illustrate correlation because digital geophysical logging data were available, the information is in the central portion of the valley, and the logs contain a significant amount of data from the Chinle Formation.

The key points are:

1. The shaded pink graphic is the natural gamma log, which indicates coarse and fine (clay-rich) sediments in the alluvium and bedrock. Note that the geologic contacts are based on the geologic logging not the geophysics (although they generally are in agreement).
2. The blue line is the electrical resistivity borehole log (only measurable below the water table in this case; other logs in **Attachment C5** are induction logs, which do not require water).
3. The red line is the ERT model data coinciding with the location of CW50.
4. The groundwater potentiometric surface is the green line/triangle.
5. Note that the ERT model and the resistivity log parallel one another, although the variability of the ERT model is at a much coarser scale than at the borehole scale.
6. Because of the similarity in material types between the alluvium and the bedrock, the bedrock contact is not a sharp change in resistivity. This means that the alluvium-bedrock contact is not definable on a broad scale through resistivity data alone. Integrating borehole data is necessary. That said, it is notable that the top of bedrock value (44 ohm-m in the case of CW50) does fall into two ranges. Borings in the west (DD-BK, BK1c, and BK4) have top of bedrock ERT model resistivity values in the 100s of ohm-m (270 to 450 ohm-m). Borings to the east (P2, BK2c, BK3, and CW50) have top of bedrock ERT model resistivity values in the 10s of ohm-m (20 to 44 ohm-m). This distinction is a reflection of a shallow sandstone in the Chinle Formation to the west (DD-BK and BK4 for certain, possibly at BK1c below the shale found during drilling), and cored bedrock material to the center and east that consists of shale as seen in CW50.



7. For locations where there is a significant section of both unsaturated and saturated alluvium, there is a strong vertical change

in borehole-based resistivity from high to low at the water table. The ERT modeling does not tend to show the water table as a distinct boundary, but rather depicts the appearance of a gradational decrease (see plots for P2 and BK2c in **Attachment C5**). Conversely, where there is thinner alluvium and where the alluvium has a higher percentage of fine materials on the east, the ERT model plot and the borehole geophysical resistivity log have good correlation (see the plot for BK3).

8. The geologic complexity where there is sandstone in the shallow bedrock is not reflected in the ERT model in detail, although the ERT model shows resistivity values approximately 10 times higher in these locations (DD-BK, BK1c, and BK4) than where there is only shale. As such, for the west bedrock high area surrounding BK4 and the "S" wells to the south, it is more difficult to generalize about the location of the top of bedrock and the interpretation must be qualified as lower confidence than elsewhere. In other words, in the center and east areas, the top of rock can be stated to be roughly 30 ohm-m ± 10 ohm-m, a relatively confident finding. The west bedrock high area depends on the correlation with borings to a much greater degree.

INTERPRETING AND CORRELATING ERT BETWEEN BOREHOLES

Interpretation of the ERT sections was an iterative process that relied upon both objective measurements and observations of a site-specific nature and the experience, background, and judgment of the interpreter. The interpreter was Gregory Byer. Mr. Byer has more than 38 years of professional experience using geologic and geophysical data to interpret the subsurface and he is both a licensed geologist and engineer. The independent interpretations presented are within the norms and practices of the geologic and geophysical professions.

Because the primary focus of the ERT survey was to determine the thickness of the alluvium, that is, to define the bedrock valley within which the alluvium is contained, the highest priority was to inform the ERT interpretation with the best available information regarding the elevation of the bedrock surface. Prior to performance of the ERT survey, Arcadis created a bedrock topographic model using Surfer Version 16 and drilling-based observations available to Arcadis, including the 2018 borings DD-BK and DD2-BK (see **Attachment C6** for the data used). The map was created using the kriging gridding method with a standard default linear variogram. The attributes included:

- Cell size of 150 feet by 150 feet
- Rotation of 39.5° east of north to align with the principal trend
- Anisotropy factor of 1.5 to 1 where the major axis is in the direction of the stream valley to reflect bias of stream processes in the direction of erosion and sediment transport

The resulting contour map based solely on drilling-based information is provided in **Attachment C7** (see Map C7.1). The preliminary top of rock profile was derived from this map as presented in the May 2019 memo. At that time, Arcadis had not had the opportunity to tie in existing wells beyond extraction of the information from Map C7.1. The profiles from Map C7.1 are shown on Lines 1 and 2 (ERT Sections C7.4 and C7.5) as the blue dotted lines. The red dashed lines indicate profiles extracted after drilling of the BK locations (Map C7.2), but prior to interpretational adjustments.

The third and final top of bedrock line (black wavy line) is an adjustment of the red dashed line based on the interpreter's judgment, which incorporated:

- Drilling-based data for locations found on or near the ERT line route

- Resistivity values based on information presented in the previous section, that is, following a constant resistivity value guided by nearby drilling control when possible
- Use of interpretations of bedrock characteristics such as faults and bedding planes to depict an erosional surface

The final top of bedrock interpretation was added to the drilling-based top of bedrock data file and a third map was created. Limited additional interpretative judgment was made between Lines 1 and 2 and surroundings to reduce geologically unrealistic patterns such as bullseyes (see Map C7.3). Interpretation involves judgment in areas of no data, and certainly other interpretations are possible. Judgment is also required when conflicts between data sets exist. Notwithstanding limitations noted, it is Arcadis's opinion that the interpretation is a reasonable and appropriate representation of the geologic conditions based on the composite of the available data.

ATTACHMENT C1

Inversion Parameters

ATTACHMENT C1: INVERSION PARAMETERS

Initial damping factor (0.01 to 1.00)
0.1000
Minimum damping factor (0.001 to 0.75)
0.0100
Local optimization option (0=No, 1=Yes)
1
Convergence limit for relative change in RMS error in percent (0.1 to 20)
3.0000
Minimum change in RMS error for line search in percent (0.5 to 100)
0.5000
Number of iterations (1 to 30)
10
Vertical to horizontal flatness filter ratio (0.25 to 4.0)
0.5000
Model for increase in thickness of layers(0=default 10%, 1=default 25%, 2=user defined)
2
Number of nodes between adjacent electrodes (1, 2 or 4)
4
Flatness filter type, Include smoothing of model resistivity (0=model changes only,1=directly on model)
1
Reduce number of topographical data points? (0=No,1=Yes. Recommend leave at 0)
0
Carry out topography modeling? (0=No,1=Yes)
1
Type of topography trend removal (0=Average,1=Least-squares,2=End to end)
2
Type of Jacobian matrix calculation (0=Quasi-Newton, 1=Gauss-Newton, 2=Mixed)
1
Increase of damping factor with depth (1.0 to 2.0)
1.0500
Type of topographical modeling (0=None, 1=No longer supported so do not use, 2=uniform distorted FEM, 3=underwater, 4=damped FEM, 5=FEM with inverse Swartz-Christoffel)
4
Robust data constrain? (0=No, 1=Yes)
0
Cutoff factor for data constrain (0.0001 to 0.1))
0.0500
Robust model constrain? (0=No, 1=Yes)
0
Cutoff factor for model constrain (0.0001 to 1.0)
0.0050
Allow number of model parameters to exceed data points? (0=No, 1=Yes)
1
Use extended model? (0=No, 1=Yes)
0
Reduce effect of side blocks? (0=No, 1=Slight, 2=Severe, 3=Very Severe)
1
Type of mesh (0=Normal,1=Fine,2=Finest)
2
Optimise damping factor? (0=No, 1=Yes)
1

Time-lapse inversion constrain (0=None,1&2=Smooth,3=Robust)
3
Type of time-lapse inversion method (0=Simultaneous,1=Sequential)
0
Thickness of first layer (0.25 to 1.0)
0.2500
Factor to increase thickness layer with depth (1.0 to 1.25)
1.1000
USE FINITE ELEMENT METHOD (YES=1,NO=0)
1
WIDTH OF BLOCKS (1=NORMAL WIDTH, 2=DOUBLE, 3=TRIPLE, 4=QUADRAPLE, 5=QUINTIPLE)
1
MAKE SURE BLOCKS HAVE THE SAME WIDTH (YES=1,NO=0)
1
RMS CONVERGENCE LIMIT (IN PERCENT)
2.000
USE LOGARITHM OF APPARENT RESISTIVITY (0=USE LOG OF APPARENT RESISTIVITY, 1=USE RESISTANCE VALUES, 2=USE APPARENT RESISTIVITY)
0
TYPE OF IP INVERSION METHOD (0=CONCURRENT,1=SEQUENTIAL)
0
PROCEED AUTOMATICALLY FOR SEQUENTIAL METHOD (1=YES,0=NO)
0
IP DAMPING FACTOR (0.01 to 1.0)
0.250
USE AUTOMATIC IP DAMPING FACTOR (YES=1,NO=0)
0
CUTOFF FACTOR FOR BOREHOLE DATA (0.0005 to 0.02)
0.00010
TYPE OF CROSS-BOREHOLE MODEL (0=normal,1=halfsize)
0
LIMIT RESISTIVITY VALUES(0=No,1=Yes)
1
Upper limit factor (10-50)
10.000
Lower limit factor (0.02 to 0.1)
0.100
Type of reference resistivity (0=average,1=first iteration)
0
Model refinement (1.0=Normal,0.5=Half-width cells)
0.50
Combined Combined Marquardt and Occam inversion (0=Not used,1=used)
1
Type of optimisation method (0=Gauss-Newton,2=Incomplete GN)
0
Convergence limit for Incomplete Gauss-Newton method (0.005 to 0.05)
0.005
Use data compression with Incomplete Gauss-Newton (0=No,1=Yes)
0
Use reference model in inversion (0=No,1=Yes)
1
Damping factor for reference model (0.0 to 1.0)
0.05000

Use fast method to calculate Jacobian matrix. (0=No,1=Yes)
0
Use higher damping for first layer? (0=No,1=Yes)
1
Extra damping factor for first layer (1.0 to 100.0)
2.00000
Type of finite-element method (0=Triangular,1=Trapezoidal elements)
1
Factor to increase model depth range (1.0 to 5.0)
1.050
Reduce model variations near borehole (0=No, 1=Yes)
0
Factor to control the degree variations near the boreholes are reduced (2 to 100)
5.0
Factor to control variation of borehole damping factor with distance (0.5 to 5.0)
1.0
Floating electrodes survey inversion method (0=use fixed water layer, 1=Incorporate water layer into the model)
1
Resistivity variation within water layer (0=allow resistivity to vary freely,1=minimise variation)
1
Use sparse inversion method for very long survey lines (0=No, 1=Yes)
0
Optimize Jacobian matrix calculation (0=No, 1=Yes)
1
Automatically switch electrodes for negative geometric factor (0=No, 1=Yes)
1
Force resistance value to be consistant with the geometric factor (0=No, 1=Yes)
0
Shift the electrodes to round up positions of electrodes (0=No, 1=Yes)
0
Use difference of measurements in time-lapse inversion (0=No,1=Yes)
0
Use active constraint balancing (0=No,1=Yes)
0
Type of active constraints (0=Normal,1=Reverse)
0
Lower damping factor limit for active constraints
0.4000
Upper damping factor limit for active constraints
2.5000
Water resistivity variation damping factor
8.0000
Use automatic calculation for change of damping factor with depth (0=No,1=Yes)
1
Type of I.P. model transformation (0=None, 1=square root, 3=range)
1
Model Chargeability Lower Limit (mV/V) for range
0.00
Model Chargeability Upper Limit (mV/V) for range
900.00
Use I.P. model refinement (0=No, 1=Yes)
1

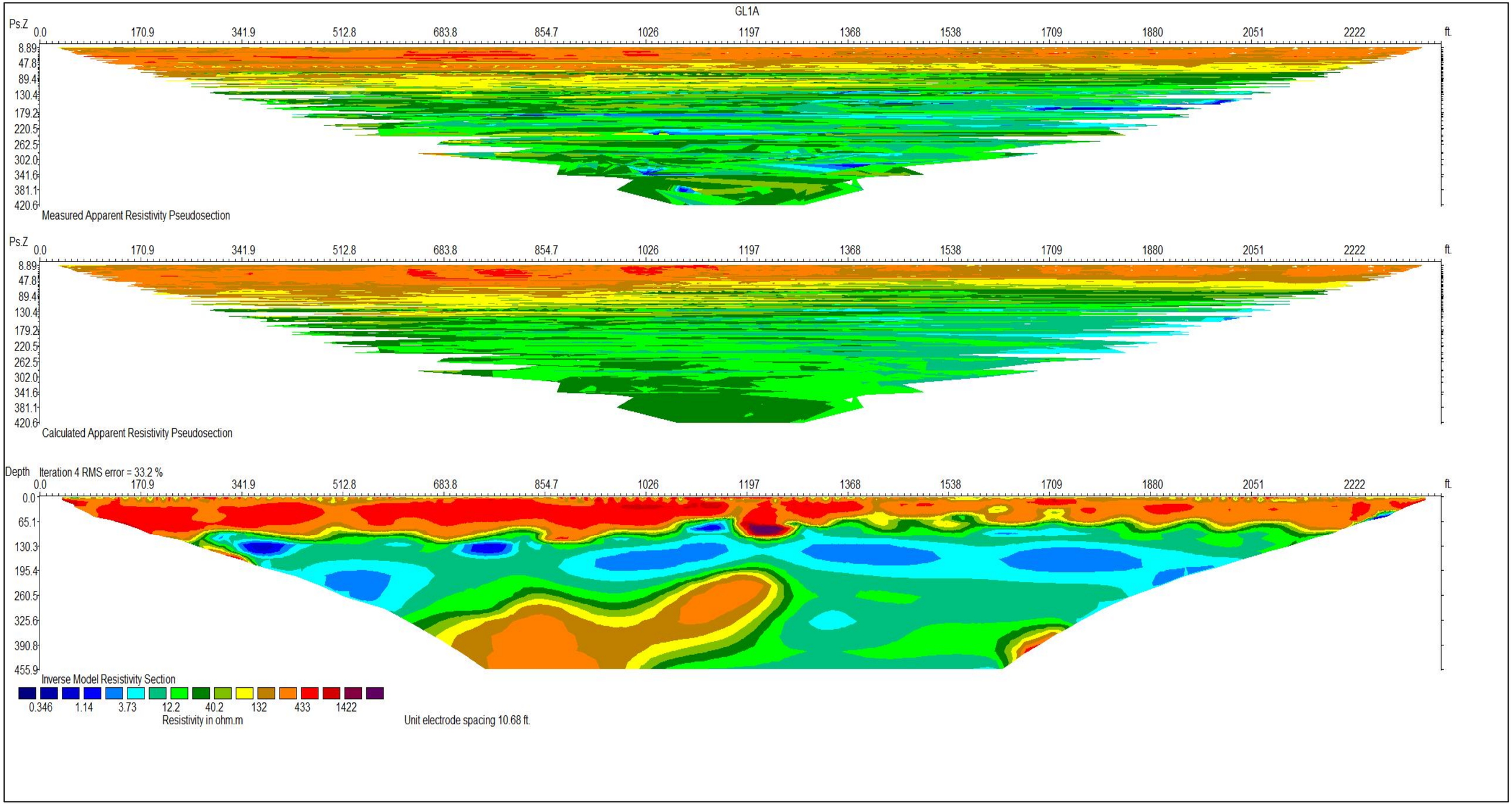
Weight for I.P. data (0.1 to 10)
1.0000
I.P. model damping factor (0.05 to 1.0)
0.2500
Use program estimate for I.P. model damping factor (0=No, 1=Yes)
0
Type of I.P. smoothness constraint (1=Same as resistivity, 0=Different)
1
Joint or separate I.P. inversion method (1=Separate, 0=Joint)
1
Apparent I.P. cutoff value (300 to 899 mV/V)
899.00
Use diagonal filter (0=No, 1=Yes)
0
Diagonal filter weight (0.2 to 5.0)
1.00
Limit range of data weights from error estimates? (0=No, 1=Yes)
0
Lower limit of data weights (0.2 to 0.5)
0.30
Upper limit of data weights (2.0 to 5.0)
3.00
Use same data weights from error estimates for different time series? (0=No, 1=Yes)
0
Calculate model resolution? (0=No, 1=Yes)
0
Use L curve method? (0=No, 1=Yes)
0
Use same norms in L curve method? (0=No, 1=Yes)
0
Allow damping factor in increase in L curve method? (0=No, 1=Yes)
0
Type of borehole damping method (0=Horizontal distance from nearest borehole, 1=Distance from nearest active electrode)
0
Use fast Jacobian calculation for dense data sets? (0=No,1=Yes)
0
Use higher damping factors at sides of model? (0=No,1=Yes)
1
Adjust damping factors for distances between the blocks in the model? (0=No,1=Yes)
1
Number of electrodes in segment for sparse inversion method for very long survey lines.
250
Time-lapse damping factor.
0.25
Reduce time-lapse damping with each iteration? (0=No,1=Yes)
1
Filter input data using gemetric factor? (0=No,1=Yes)
0
Automatically remove negative apparent resistivity values? (0=No,1=Yes)
0
Automatically remove Gamma type arrays? (0=No,1=Yes)
0

Topography distortion damping factor (0.1 to 2.0)
0.750
Use zero reference I.P. model value? (0=No, 1=Yes)
0
Use apparent IP data in resistivity inversion. (0=No, 1=Yes)
0

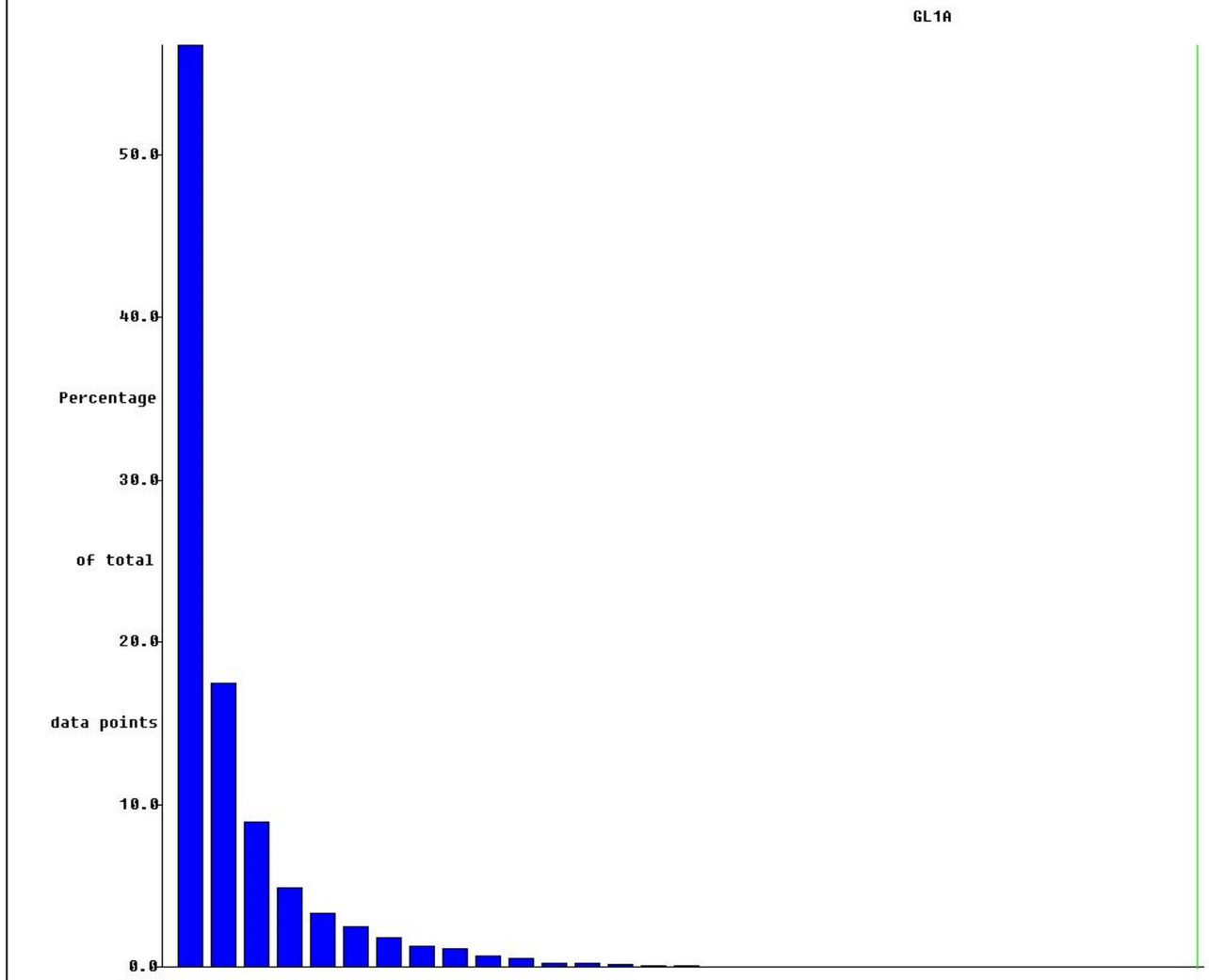
ATTACHMENT C2

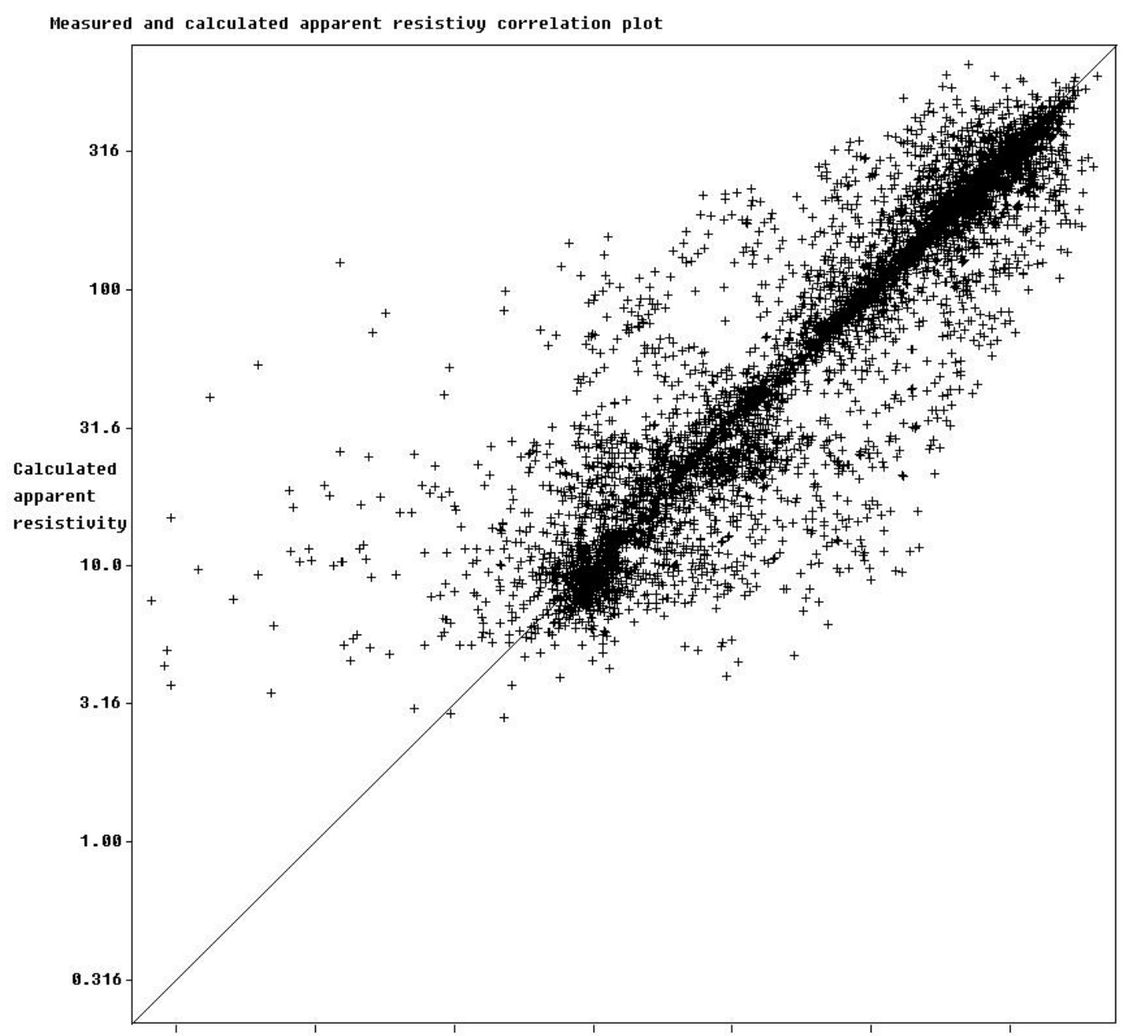
Example Quality Control Plots

C2.1 – Line 1A – results of Run #1

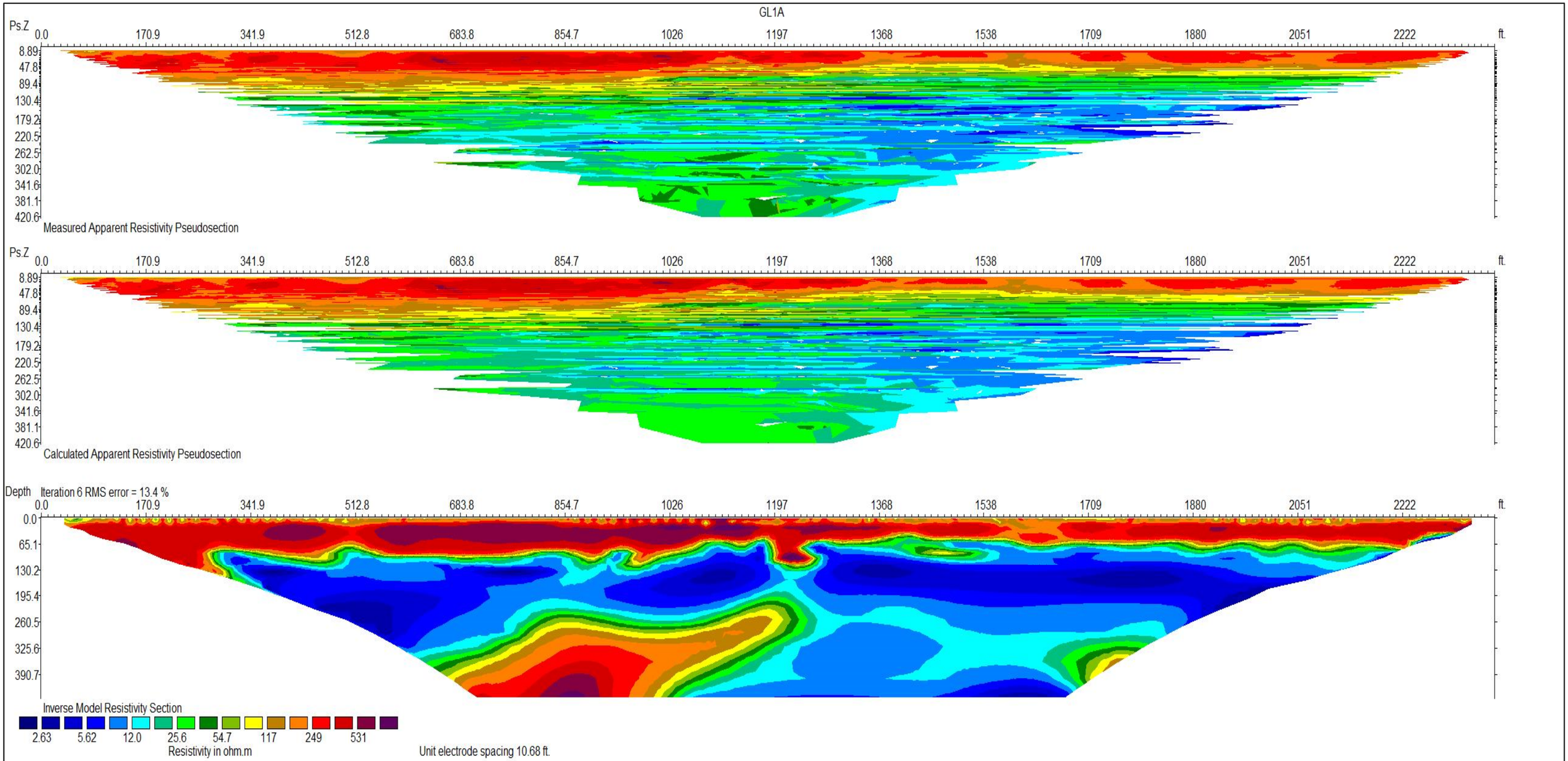


C2.2 - Line 1A – results of Run #1 Data Misfit Plot

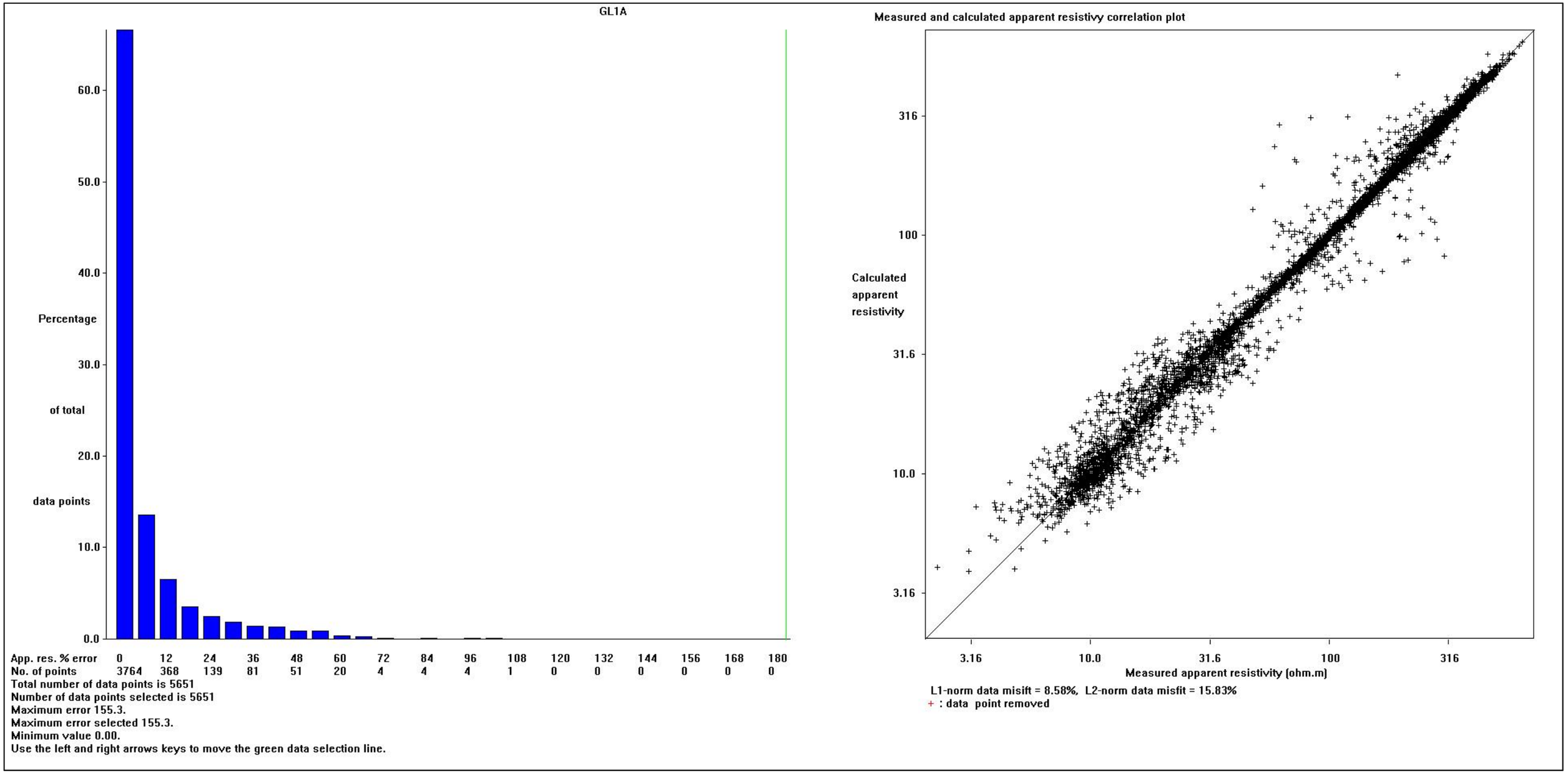




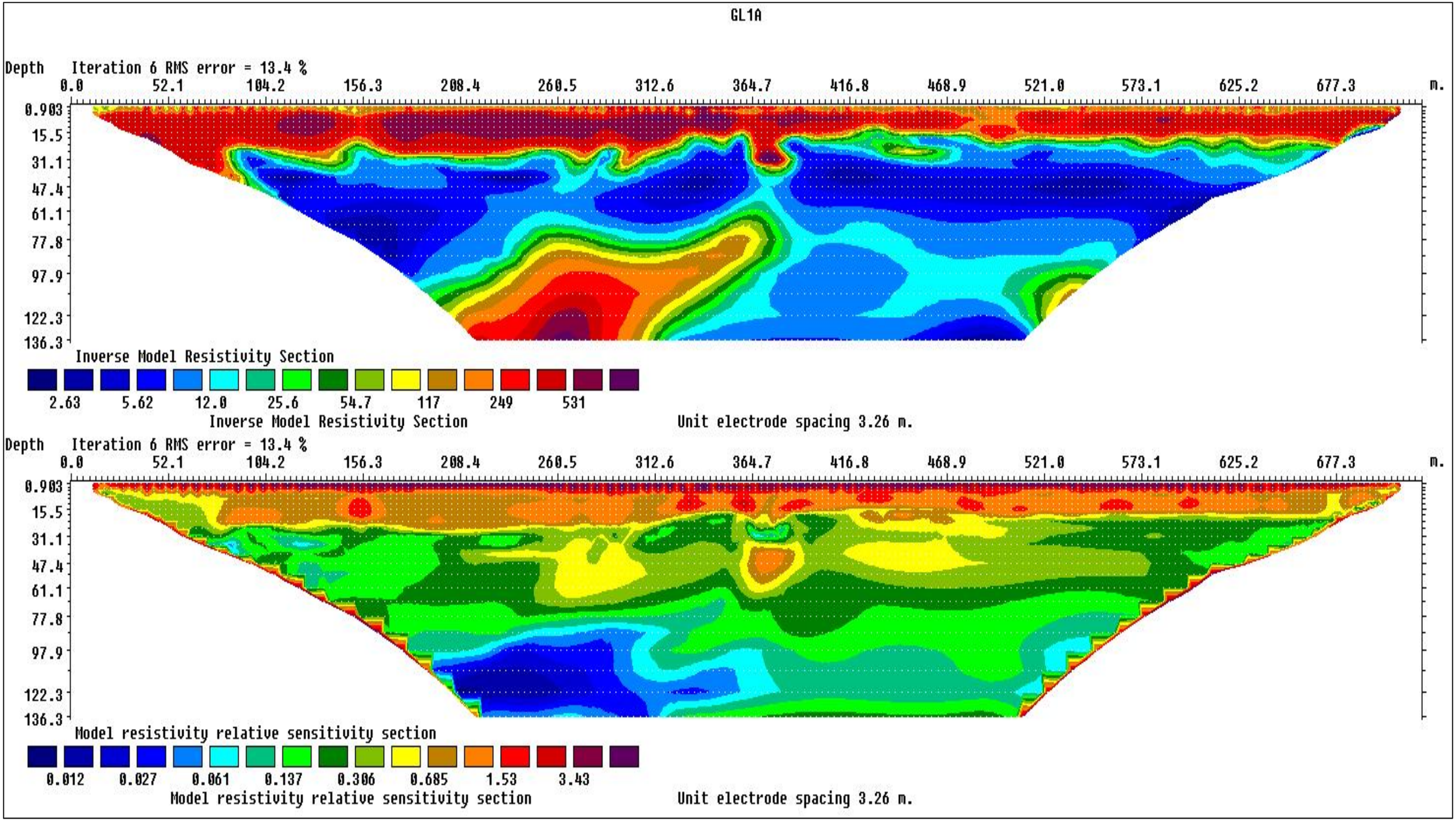
C2.3 - Line 1A – results of Run #3



C2.4 - Line 1A – results of Run #3 Data Misfit Plot



C2.5 - Line 1A – Model Sensitivity Plot for Run #3



C2.6 - Line 1A – Model Uncertainty Plot for Run #3

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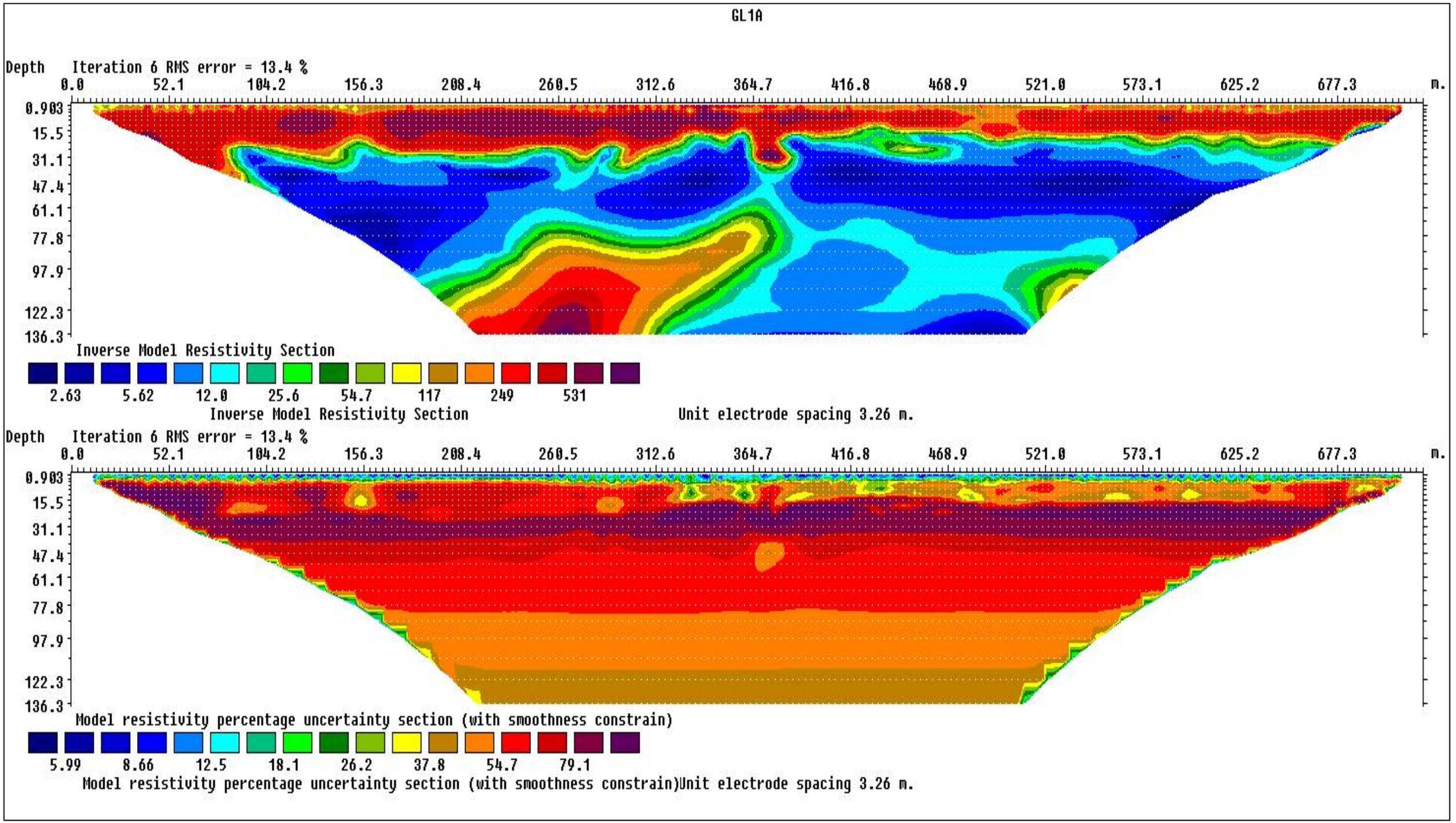
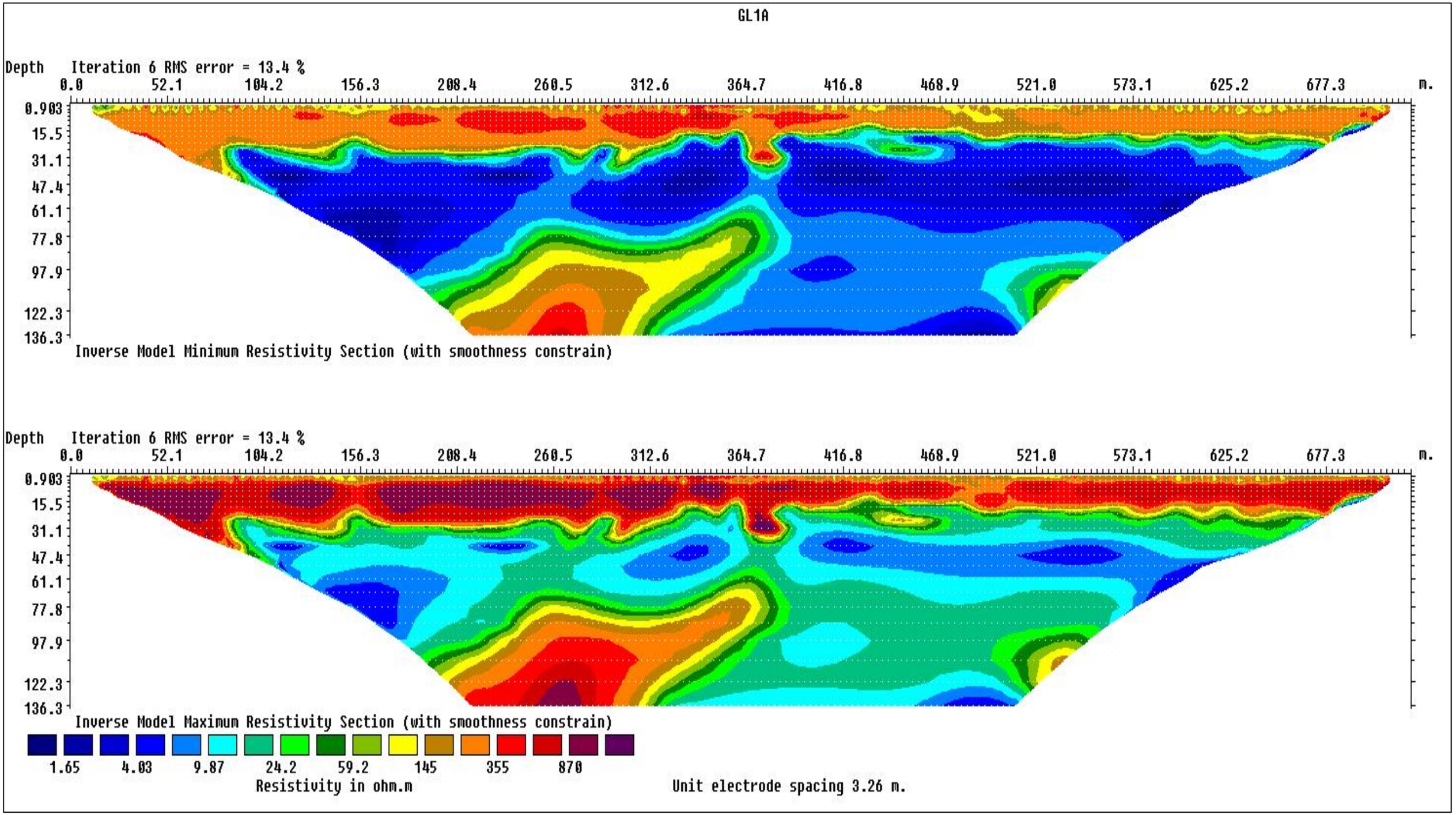
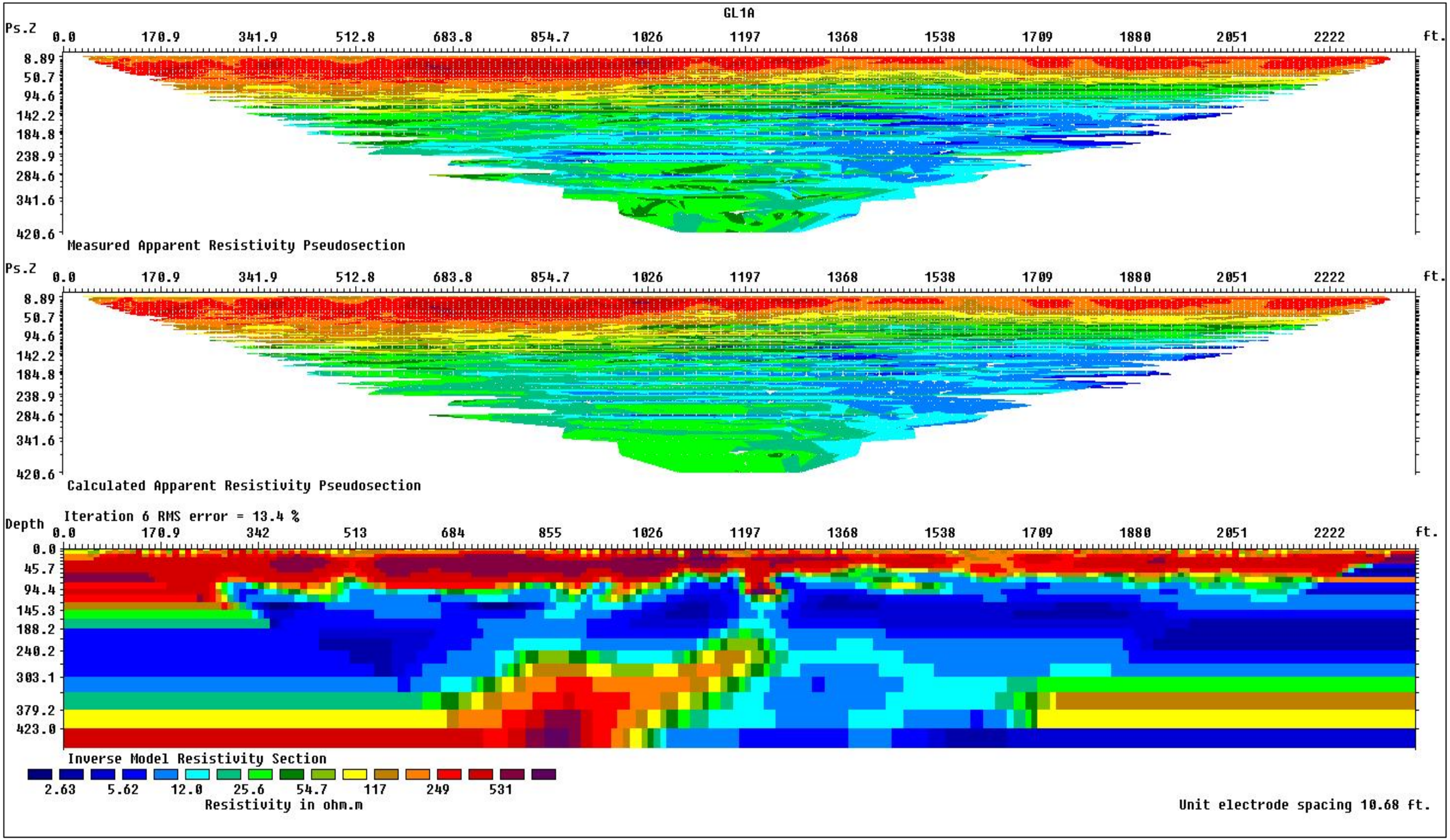


C2.7 - Line 1A – Model Min-Max Plot for Run #3



C2.8 - Line 1A – Model Block Plot for Run #3

ARCADIS Design & Consultancy for natural and built assets



ATTACHMENT C3

Gridding Report

Gridding Report

Fri Jul 26 14:11:40 2019
Elapsed time for gridding: 12.1 seconds

Data Source

Source Data File Name: F:\one_drive\ARCADIS\Geophysics Projects - Grants NM\2019 ERI\Processed Data\Line 1\Line 1 all data.xlsx (sheet 'all')
X Column: A
Y Column: B
Z Column: D

Filtered Data Counts

Active Data: 21912

Original Data: 21912
Excluded Data: 0
Deleted Duplicates: 0
Retained Duplicates: 0
Artificial Data: 0
Superseded Data: 0

Exclusion Filtering

Exclusion Filter String: Not In Use

Duplicate Filtering

Duplicate Points to Keep: First
X Duplicate Tolerance: 0.00091
Y Duplicate Tolerance: 5.4E-05

No duplicate data were found.

Breakline Filtering

Breakline Filtering: Not In Use

Z Data Transform

Transformation method: Linear (use Z values directly)

No untransformable data were found.

Data Counts

Active Data: 21912

Univariate Statistics

	X	Y	Z
Count:	21912	21912	21912
1%-tile:	293.785	6137.47	0.364550995354
5%-tile:	795.854	6225.192	0.598462200474
10%-tile:	1288.958	6292.301	0.7168377233
25%-tile:	2259.245	6407.769	0.89492497736
50%-tile:	3987.696	6498.529	1.27263051589
75%-tile:	5598.538	6553.253	2.09405165551
90%-tile:	6627.384	6573.547	2.48442797291
95%-tile:	6966.109	6578.216	2.64376841222
99%-tile:	7439.461	6583.146	2.78120228418
Minimum:	37.387	6129.017	-0.116906641424
Maximum:	7708.543	6586.368	3.13710080458
Mean:	3947.22634903	6463.36016292	1.46980946394
Median:	3987.7005	6498.53	1.27265369681
Geometric Mean:	3269.22855458	6462.34609647	N/A
Harmonic Mean:	2222.38156443	6461.31788519	N/A
Root Mean Square:	4411.7235052	6464.36017709	1.61987822621
Trim Mean (10%):	3955.76649389	6473.15945337	1.45621488105
Interquartile Mean:	3962.46593146	6494.41862882	1.37117286378
Midrange:	3872.965	6357.6925	1.51009708158
Winsorized Mean:	3960.01745235	6471.05931115	1.46913570406
TriMean:	3958.29375	6489.52	1.38355941616
Variance:	3882885.6395	12928.493468	0.463686768785
Standard Deviation:	1970.50390497	113.703533226	0.680945496192
Interquartile Range:	3339.293	145.484	1.19912667815
Range:	7671.156	457.351	3.254007446
Mean Difference:	2273.90221867	121.348933455	0.773915056289
Median Abs. Deviation:	1664.345	63.8315	0.496243108004
Average Abs. Deviation:	1694.30082585	86.4794406718	0.585456193382
Quartile Dispersion:	0.424966304109	0.0112247321237	N/A
Relative Mean Diff.:	0.576075962612	0.0187748988756	N/A
Standard Error:	13.3117848638	0.768126857673	0.00460014310372
Coef. of Variation:	0.49921229003	0.0175920156636	N/A
Skewness:	-0.0334840889892	-1.15058957792	0.377768022411
Kurtosis:	1.88490507669	3.49557085021	1.85520028643
Sum:	86491623.76	141625147.89	32206.4649738

Sum Absolute:	86491623.76	141625147.89	32206.8533362
Sum Squares:	426479923523	915657615161	57497.2078094
Mean Square:	19463304.2864	41787952.4991	2.62400546775

Inter-Variable Covariance

	X	Y	Z
X:	3882885.6	12762.731	-326.35699
Y:	12762.731	12928.493	43.16591
Z:	-326.35699	43.16591	0.46368677

Inter-Variable Correlation

	X	Y	Z
X:	1.000	0.057	-0.243
Y:	0.057	1.000	0.558
Z:	-0.243	0.558	1.000

Inter-Variable Rank Correlation

	X	Y	Z
X:	1.000	0.076	-0.225
Y:	0.076	1.000	0.688
Z:	-0.225	0.688	1.000

Principal Component Analysis

	PC1	PC2	PC3
X:	-0.00329753714341	-0.00329753714341	9.53335787618e-05
Y:	0.999988669346	0.999988669346	-0.00343298685821
Z:	0.0034332825732	0.0034332825732	-0.00343298685821
Lambda:	3882927.75665	12886.5556147	0.284384930658

Planar Regression: Z = AX+BY+C

Fitted Parameters

	A	B	C
Parameter Value:	-9.53338849473e-05	0.00343293133578	-20.3421577512
Standard Error:	1.83135700152e-06	3.17377659296e-05	0.204879690658

Inter-Parameter Correlations

	A	B	C
A:	1.000	-0.057	0.022
B:	-0.057	1.000	-0.999
C:	0.022	-0.999	1.000

ANOVA Table

Source	df	Sum of Squares	Mean Square	F
Regression:	2	3928.60908263	1964.30454132	6906.49139865
Residual:	21909	6231.23170821	0.284414245662	
Total:	21911	10159.8407908		

Coefficient of Multiple Determination (R^2): 0.38668018166

Nearest Neighbor Statistics

	Separation	|Delta Z|
1%-tile:	0.683816495853	0.000598901918984
5%-tile:	1.63285578053	0.00315964019137
10%-tile:	2.44401247951	0.00662940196674
25%-tile:	3.85105959445	0.0198484257726
50%-tile:	5.23303821886	0.0620375001269
75%-tile:	10.6780007492	0.145063332046
90%-tile:	10.7120007468	0.301200257818
95%-tile:	10.7700185701	0.42787443238
99%-tile:	10.7840289781	0.804471881145
Minimum:	0.0440113621692	0
Maximum:	10.7940313136	1.68910602761
Mean:	6.37259160643	0.117724650735
Median:	5.23367257264	0.0620609281471

Geometric Mean:	5.36137791371	N/A
Harmonic Mean:	3.92220128949	N/A
Root Mean Square:	7.17134166342	0.200124672383
Trim Mean (10%):	6.42344151141	0.0946495707009
Interquartile Mean:	6.10923442528	0.067951989231
Midrange:	5.41902133791	0.844553013807
Winsorized Mean:	6.45643309512	0.0978882080956
TriMean:	6.24878419534	0.072246689518
Variance:	10.8187112057	0.0261919864318
Standard Deviation:	3.28918093234	0.161839384674
Interquartile Range:	6.82694115475	0.125214906273
Range:	10.7500199515	1.68910602761
Mean Difference:	3.67859238353	0.141402241622
Median Abs. Deviation:	2.29233379054	0.0496878457017
Average Abs. Deviation:	2.79858177194	0.0940692312042
Quartile Dispersion:	0.469881808822	N/A
Relative Mean Diff.:	0.577252177876	1.20112687308
Standard Error:	0.0222201381276	0.00109330971933
Coef. of Variation:	0.516144943137	1.37472809359
Skewness:	0.208001252625	3.23560367998
Kurtosis:	1.61494520229	18.6562158182
Sum:	139636.22728	2579.58254691
Sum Absolute:	139636.22728	2579.58254691
Sum Squares:	1126893.43115	877.573069086
Mean Square:	51.4281412535	0.0400498844964

Complete Spatial Randomness

Lambda:	0.0062455626852
Clark and Evans:	1.00723745884
Skellam:	44221.5832386

Gridding Rules

Gridding Method:	Kriging
Kriging Type:	Point
Polynomial Drift Order:	0
Kriging std. deviation grid:	no

Semi-Variogram Model

Component Type:	Linear
Anisotropy Angle:	0
Anisotropy Ratio:	1
Variogram Slope:	1

Search Parameters

Search Ellipse Radius #1:	3840

Search Ellipse Radius #2: 3840
Search Ellipse Angle: 0

Number of Search Sectors: 4
Maximum Data Per Sector: 16
Maximum Empty Sectors: 3

Minimum Data: 8
Maximum Data: 64

Output Grid

Grid File Name: F:\one_drive\ARCADIS\Geophysics Projects - Grants NM\2019 ERI\Processed Data\Final Cross Section Work\Line 1 all data_x10 and y1.grd
Grid Size: 458 rows x 768 columns
Total Nodes: 351744
Filled Nodes: 310214
NoData Nodes: 41530
NoData Value: 1.70141E+38

Grid Geometry

X Minimum: 37.387
X Maximum: 7708.543
X Spacing: 10.001507170795

Y Minimum: 6129.017
Y Maximum: 6586.368
Y Spacing: 1.0007680525164

Univariate Grid Statistics

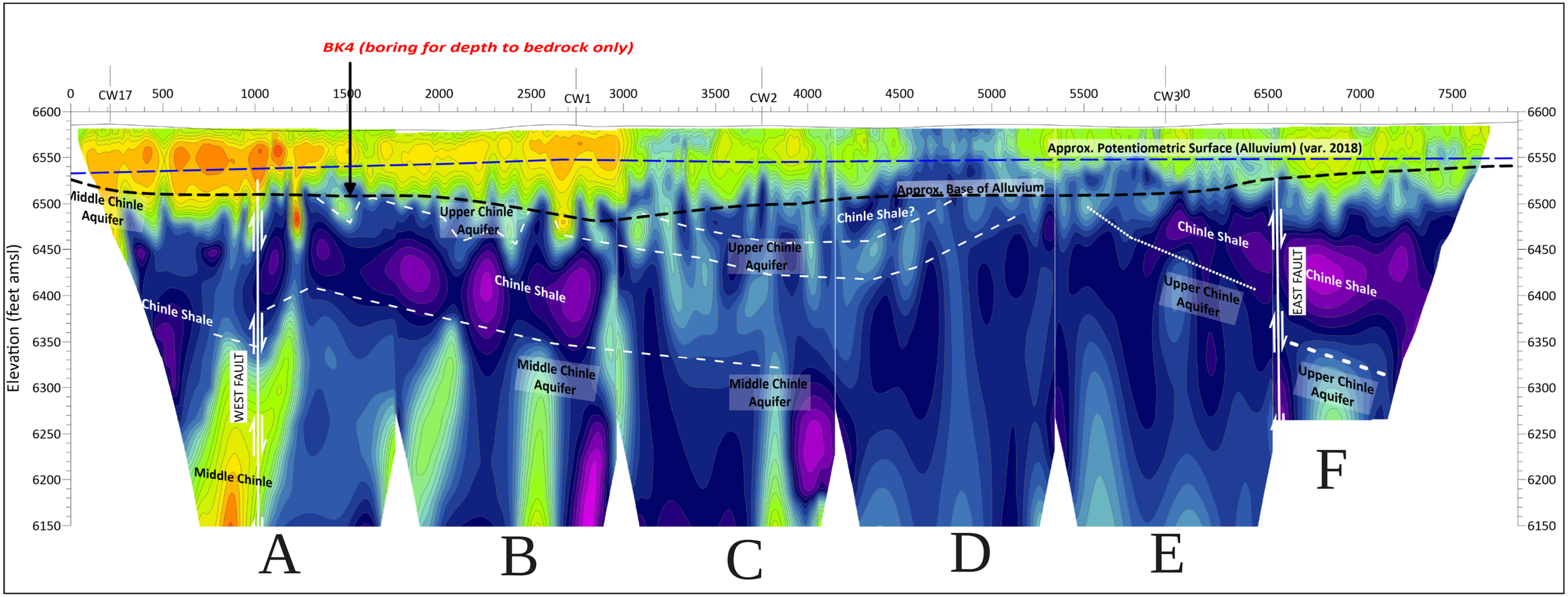
	Z
Count:	310214
1%-tile:	0.327361654504
5%-tile:	0.540739352315
10%-tile:	0.665974211164
25%-tile:	0.805002201751
50%-tile:	0.999326190146
75%-tile:	1.40011672445
90%-tile:	2.19170206422
95%-tile:	2.47989270159
99%-tile:	2.74642098847
Minimum:	0.102154747139
Maximum:	3.11509471592
Mean:	1.19026163472

Median:	0.999329937462
Geometric Mean:	1.06953052938
Harmonic Mean:	0.961197948351
Root Mean Square:	1.32361555019
Trim Mean (10%):	1.15189343025
Interquartile Mean:	1.02395835954
Midrange:	1.60862473153
Winsorized Mean:	1.1755061722
TriMean:	1.05094282662
Variance:	0.335236446298
Standard Deviation:	0.578996067601
Interquartile Range:	0.595114522696
Range:	3.01293996878
Mean Difference:	N/A
Median Abs. Deviation:	0.239027078258
Average Abs. Deviation:	0.414876717258
Quartile Dispersion:	0.269878651725
Relative Mean Diff.:	N/A
Standard Error:	0.00103954888581
Coef. of Variation:	0.486444367116
Skewness:	1.15475445106
Kurtosis:	3.50509102769
Sum:	369235.822752
Sum Absolute:	369235.822752
Sum Squares:	543481.937699
Mean Square:	1.75195812471

ATTACHMENT C4

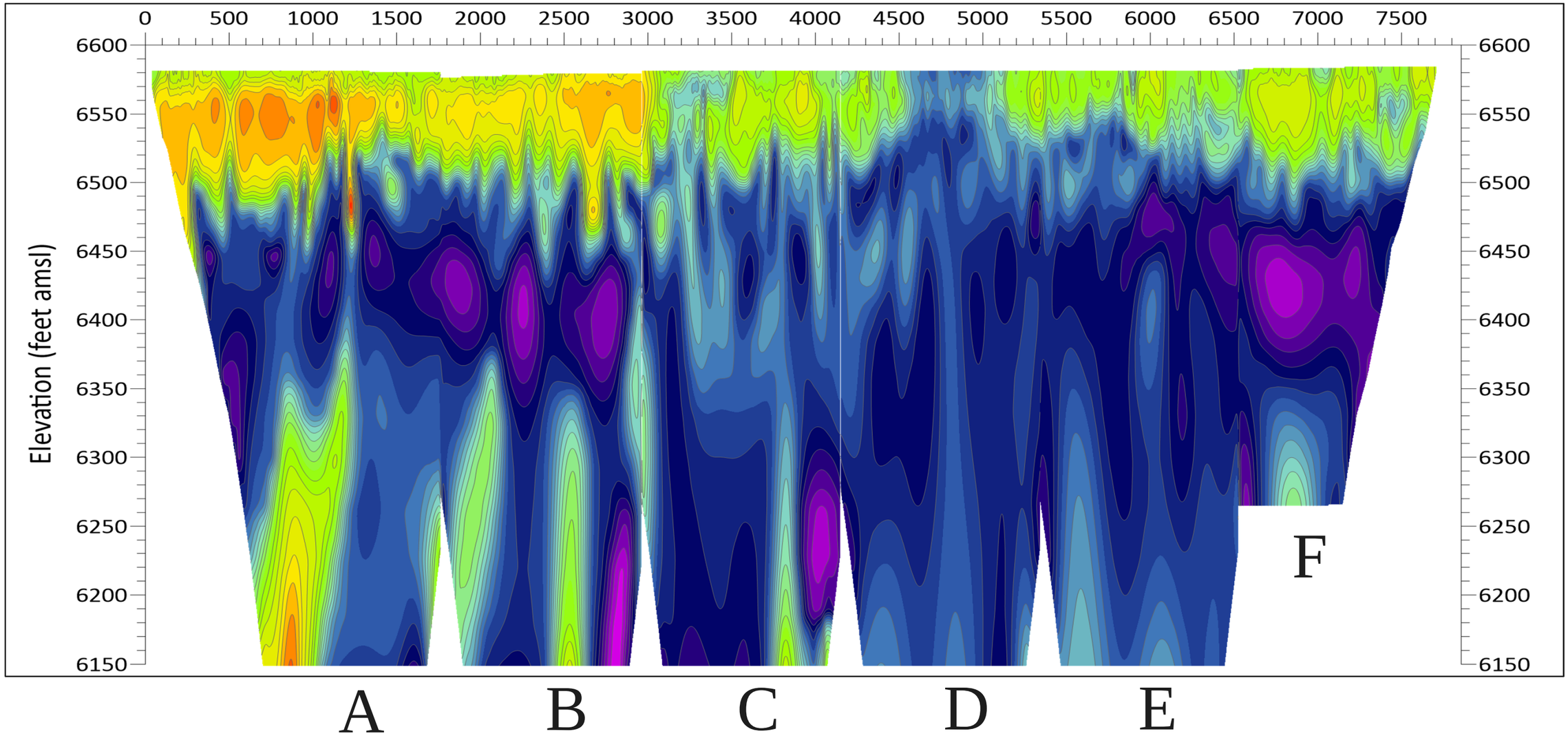
Example of Removal of Vertical Noise Using Gaussian Low Pass Filter

C4.1 - Line 1 as presented May 9, 2019
5:1 vertical exaggeration



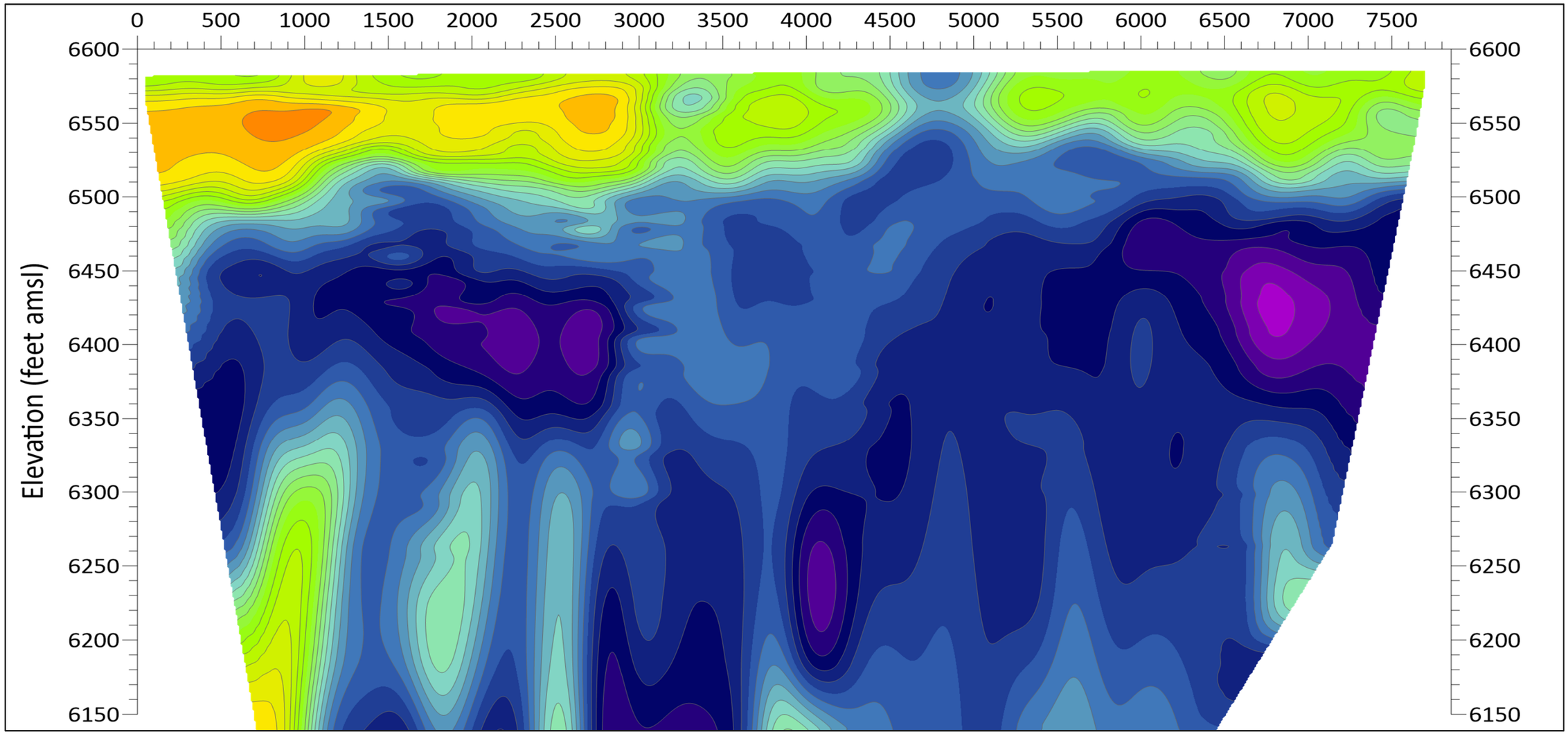
A to F are the 6 individual data sets, each a trapezoidal shape. For the preliminary work each of the 6 data sets were plotted individually

C4.2 - Line 1 as presented May 9, 2019 but with no markup and a 10:1 vertical exaggeration. Note the unrealistic vertical features



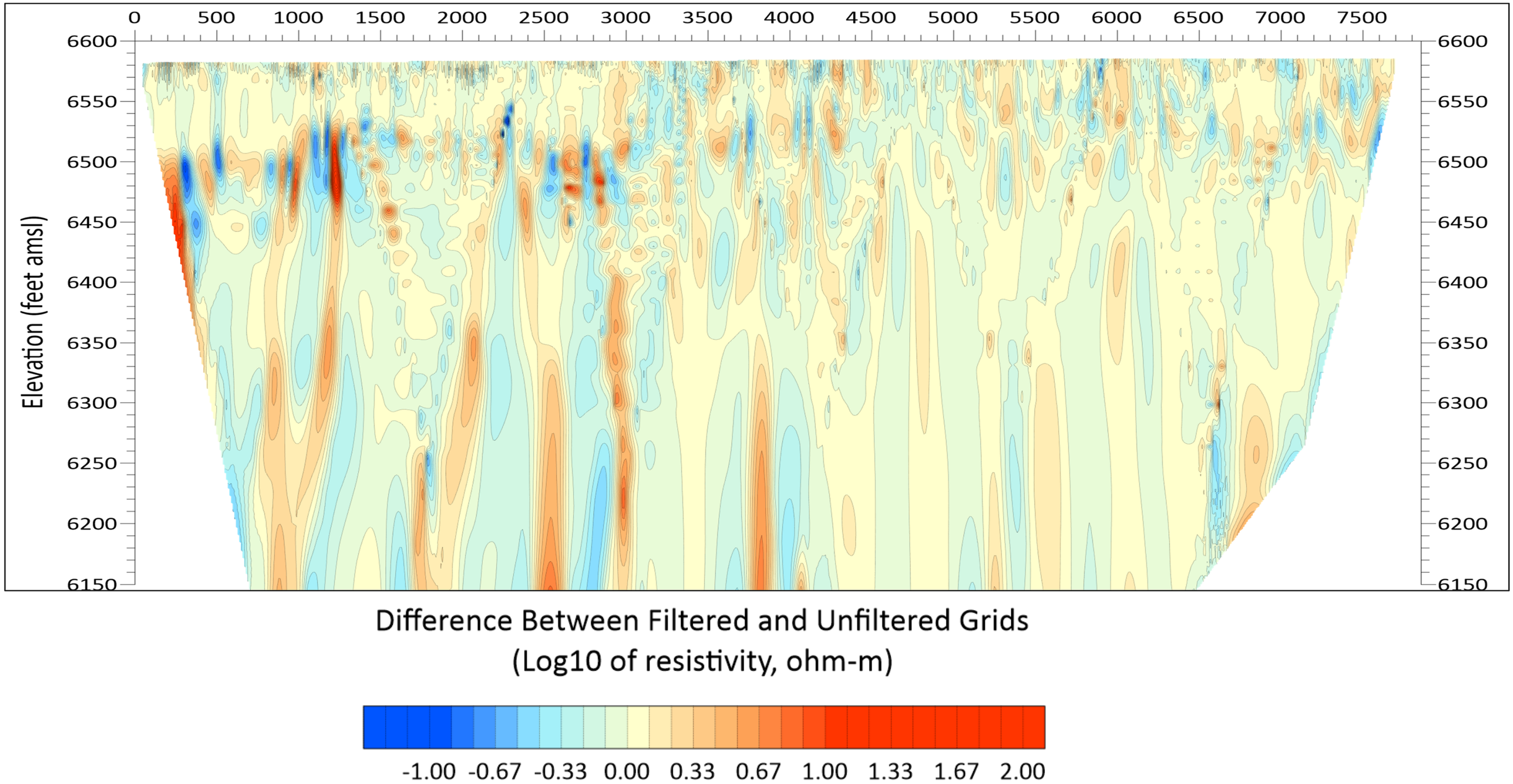
A to F are the 6 individual data sets, each a trapezoidal shape. For the preliminary work each of the 6 data sets were plotted individually

C4.3 - Line 1 after application of gaussian low pass filter to remove vertical noise.

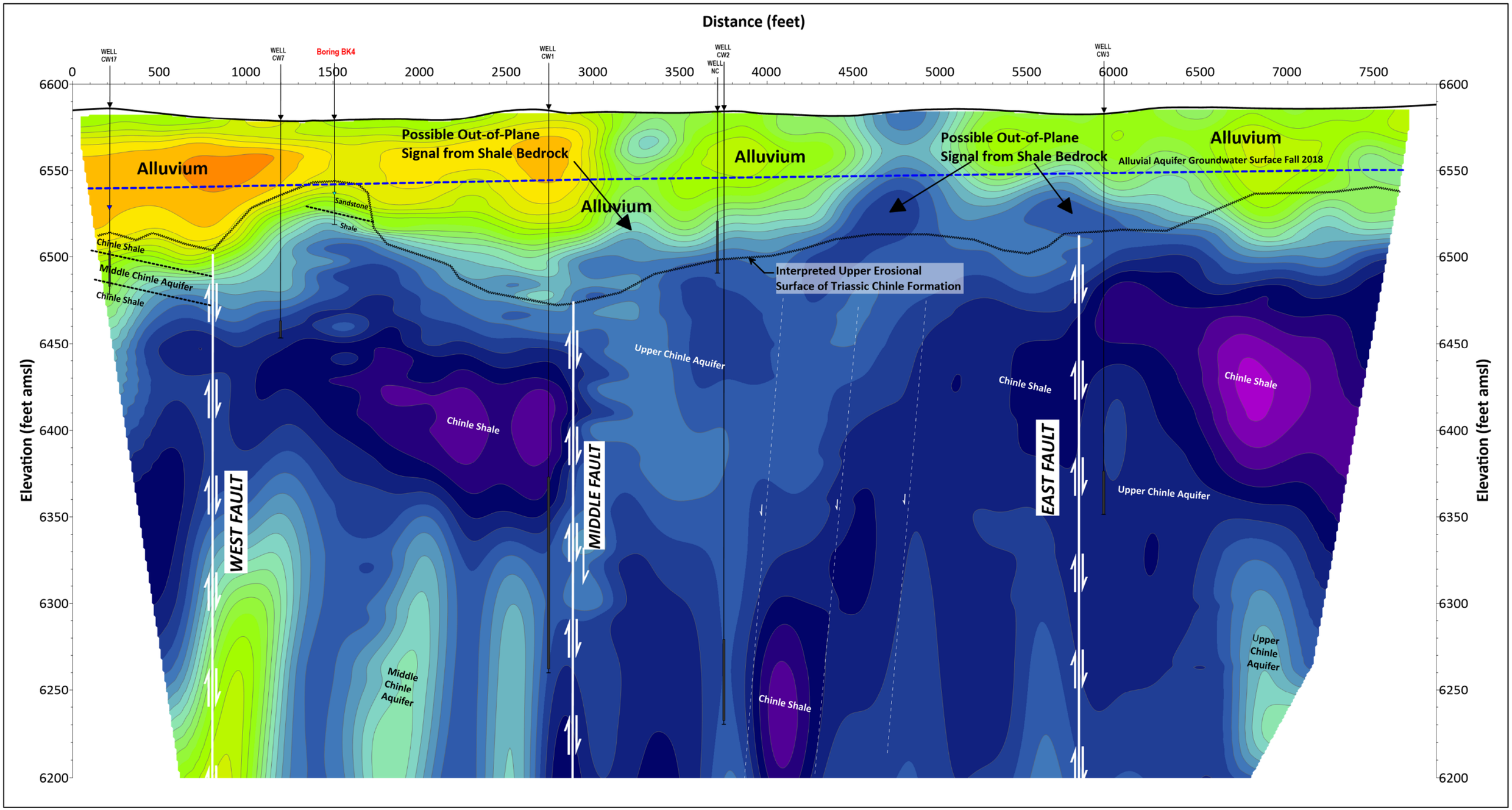


For the final processing the data from A to F were combined in a single data file for gridding. The gaussian filter was applied to the regridded data set.

C4.4 - Residual Plot showing the nature of what was removed from Line 1 after application of gaussian low pass filter to remove vertical noise. Note the predominant vertical nature.



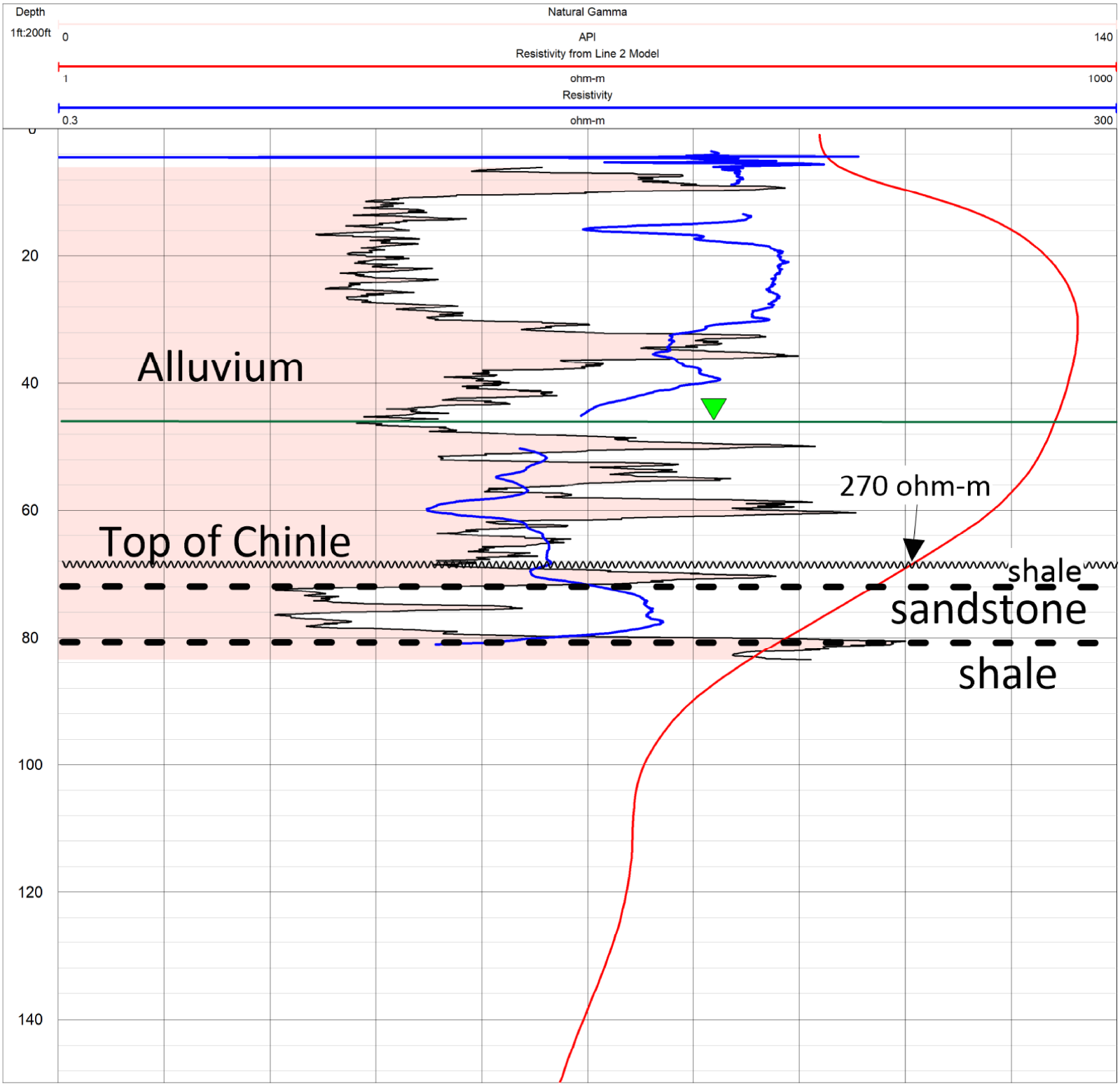
C4.5 - Line 1 after application of gaussian low pass filter to remove vertical noise. With interpretations added.



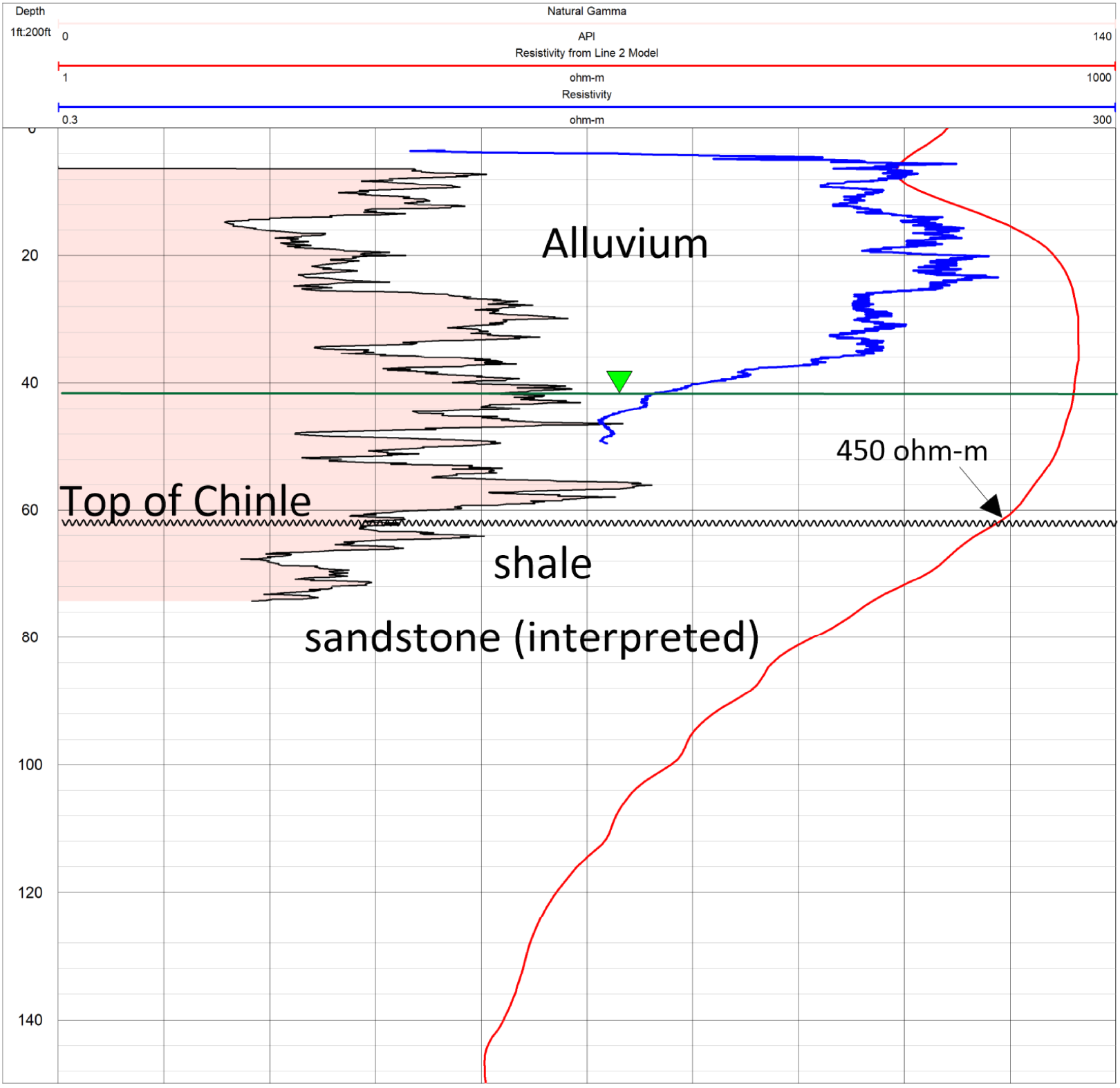
ATTACHMENT C5

Model Plots for Select Wells

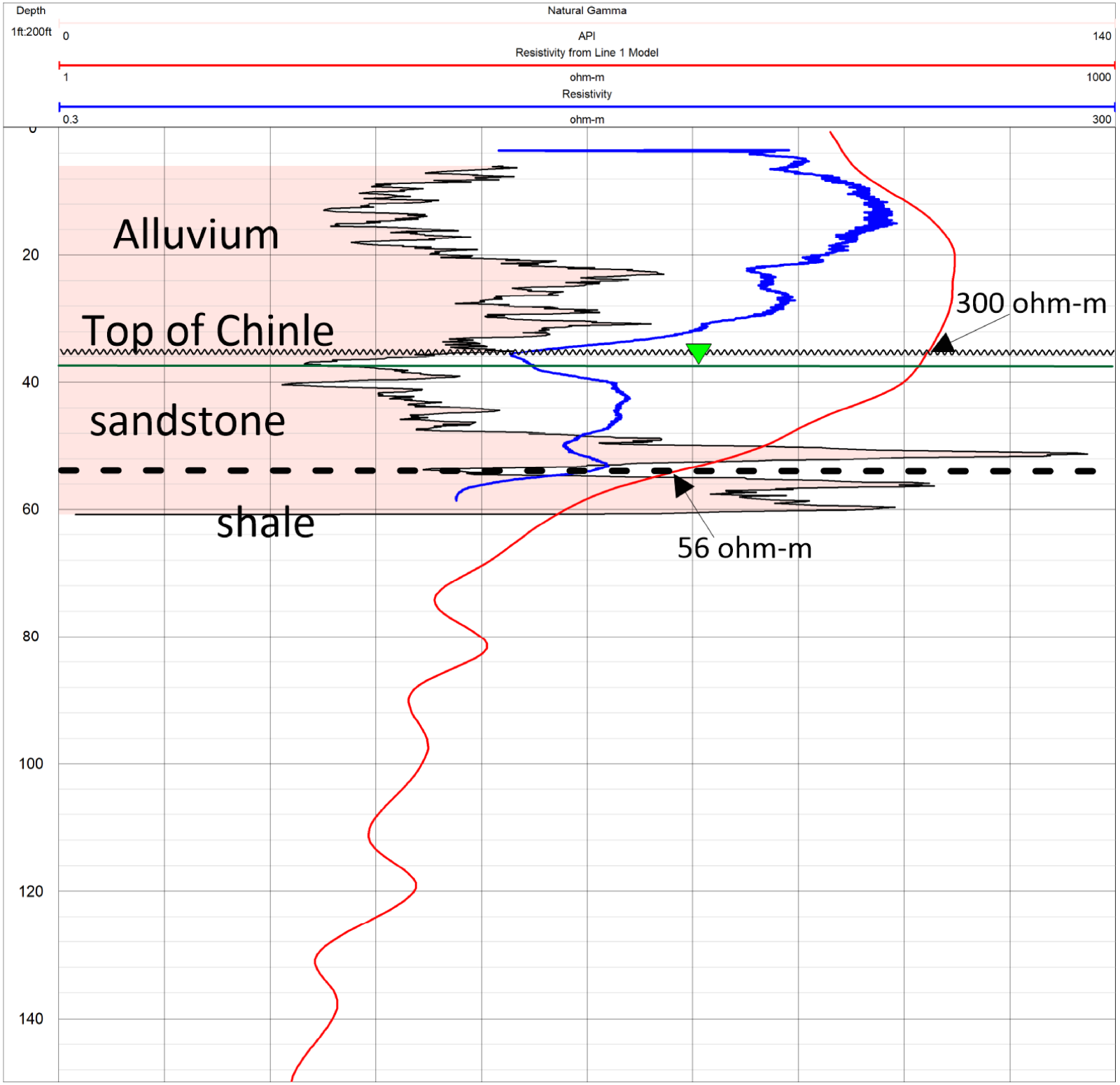
Boring DDBK


Depth
1ft:200ft
Natural Gamma
0
API
140
Resistivity from Line 2 Model
1
ohm-m
1000
Resistivity
0.3
ohm-m
300
20
40
60
80
100
120
140
Alluvium
Top of Chinle
270 ohm-m
shale
sandstone
shale

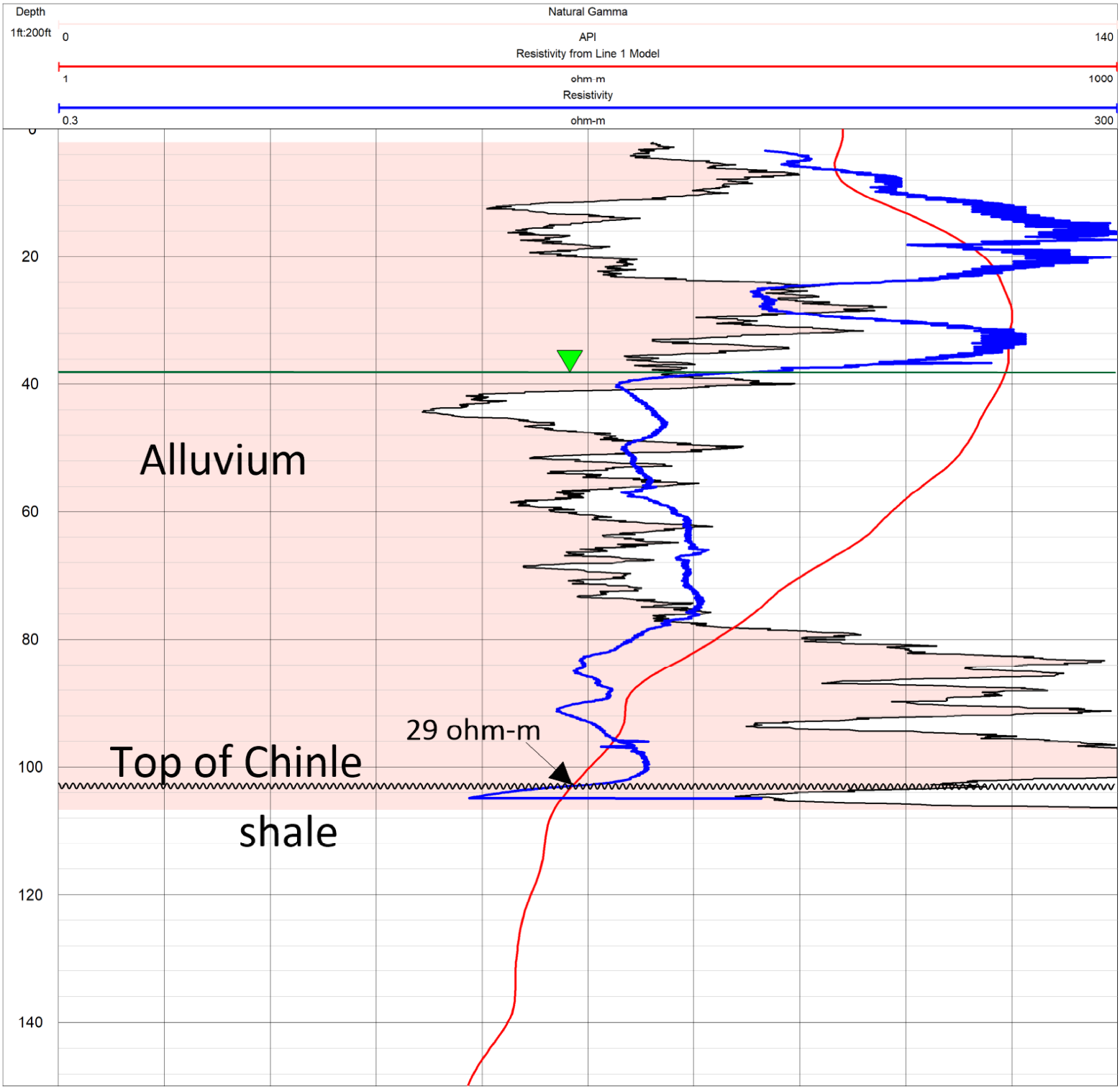
Well BK1c


Depth
1ft:200ft
Natural Gamma
0
API
140
Resistivity from Line 2 Model
1
ohm-m
1000
Resistivity
0.3
ohm-m
300
20
40
60
80
100
120
140
Alluvium
450 ohm-m
Top of Chinle
shale
sandstone (interpreted)

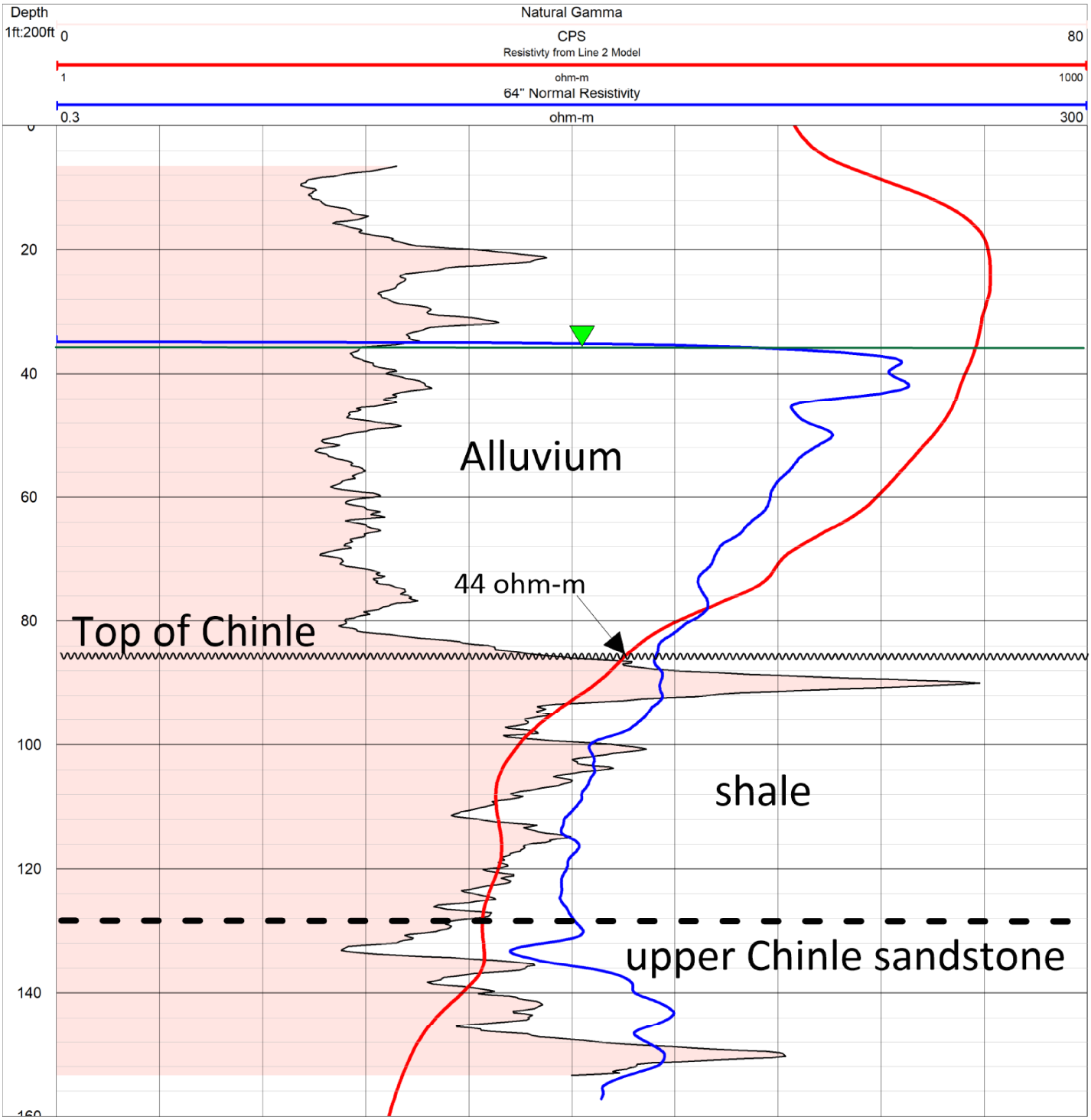
Boring BK4


Depth
1ft:200ft
Natural Gamma
0
API
140
Resistivity from Line 1 Model
1
ohm-m
1000
Resistivity
0.3
ohm-m
300
20
40
60
80
100
120
140
Alluvium
Top of Chinle
sandstone
shale
300 ohm-m
56 ohm-m

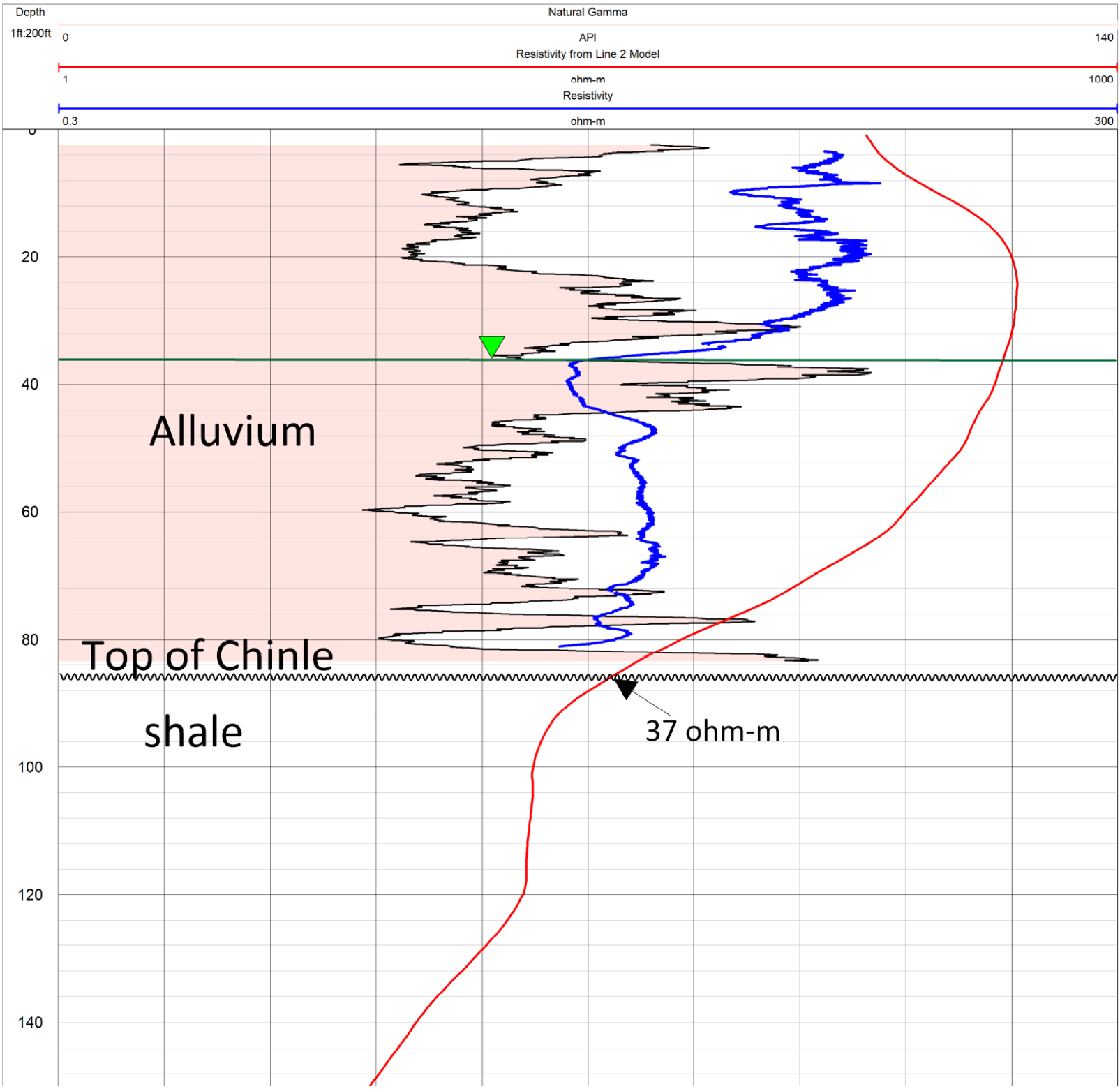
Well P2


Depth
1ft:200ft
Natural Gamma
0
API
140
Resistivity from Line 1 Model
1
ohm-m
1000
Resistivity
0.3
ohm-m
300
20
40
60
80
100
120
140
Alluvium
29 ohm-m
Top of Chinle
shale

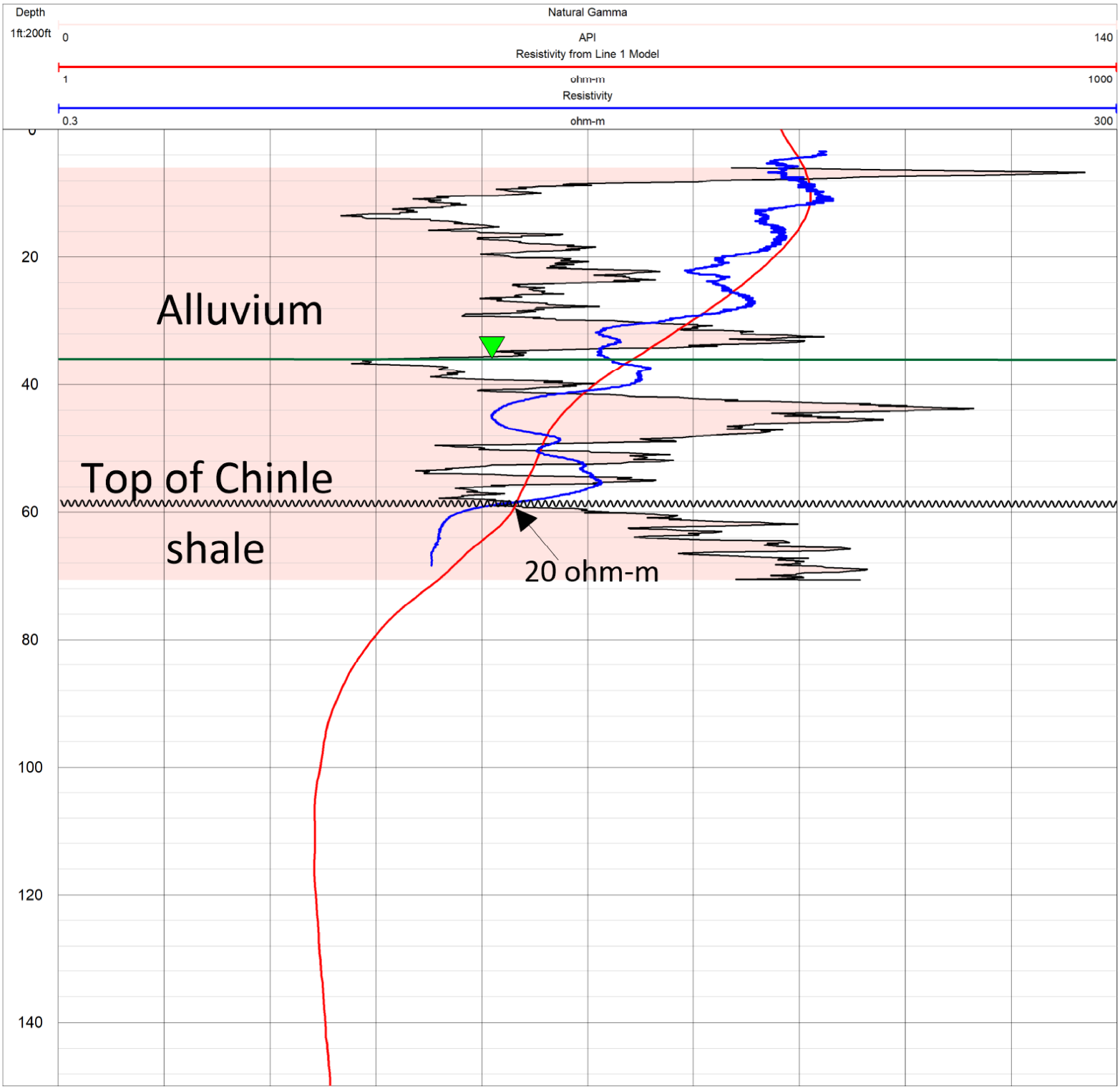
Well CW50


Depth
1ft:200ft
Natural Gamma
0
CPS
80
Resistivty from Line 2 Model
1
ohm-m
1000
64" Normal Resistivity
0.3
ohm-m
300
20
40
60
80
100
120
140
160
Alluvium
44 ohm-m
Top of Chinle
shale
upper Chinle sandstone

Well BK2c


Depth
1ft:200ft
Natural Gamma
0
API
140
Resistivity from Line 2 Model
1
ohm-m
1000
Resistivity
0.3
ohm-m
300
0
20
40
60
80
100
120
140
Alluvium
Top of Chinle
shale
37 ohm-m

Boring BK3


Depth
1ft:200ft
Natural Gamma
0
API
140
Resistivity from Line 1 Model
1
ohm-m
1000
Resistivity
0.3
ohm-m
300
0
20
40
60
80
100
120
140
Alluvium
Top of Chinle
shale
20 ohm-m

ATTACHMENT C6

Bedrock Elevation Data Used in Mapping

Attachment C6
Bedrock Elevation Data Used in Mapping
GRP Background Investigation

Boring_ID	SPCS Easting (feet)	SPCS Northing (feet)	Ground Elevation (feet amsl)	Depth to Bedrock (feet bgs)	Top of Bedrock Elevation (feet amsl)	Qualifier (include pre-BK=1, include post-BK=2,exclude=0)	Reason for Exclusion
#1 Deepwell	493633.3400	1543307.0800	6583.76	130	6453.76	0	Outlier (differs signficantly from surrounding locations)
#2 Deepwell	490971.7100	1542423.6000	6575.66	110	6465.66	1	
0410	489882.0000	1537459.0000	6559.66	75	6484.66	1	
0411	489510.0000	1537400.0000	6560.00	70	6490.00	1	
0421	491100.0000	1538450.0000	6571.10	92	6479.10	1	
0422	490810.0000	1538440.0000	6570.00	75	6495.00	1	
0425	490630.0000	1538430.0000	6567.00	71	6496.00	1	
0426	490620.0000	1538230.0000	6565.00	80	6485.00	1	
0427	490410.0000	1538450.0000	6570.00	81	6489.00	1	
0428	490435.0000	1538367.0000	6570.00	66	6504.00	1	
0429	490430.0000	1538210.0000	6570.00	74	6496.00	1	
0430	490300.0000	1538469.0000	6568.00	72	6496.00	1	
0431	490090.0000	1538045.0000	6568.00	60	6508.00	1	
0433	489620.0000	1538220.0000	6562.50	75	6487.50	1	
0434	489420.0000	1538370.0000	6563.68	75	6488.68	1	
0435	489300.0000	1538220.0000	6559.70	85	6474.70	1	
0436	488947.0000	1538439.0000	6562.73	90	6472.73	1	
0437	491128.0000	1537859.0000	6570.20	90	6480.20	1	
0438	490840.0000	1537854.0000	6571.00	105	6466.00	1	
0439	490490.0000	1537940.0000	6567.00	75	6492.00	1	
0441	490090.0000	1537720.0000	6566.00	78	6488.00	1	
0442	489840.0000	1537940.0000	6565.00	80	6485.00	1	
0443	489280.0000	1537940.0000	6561.00	75	6486.00	1	
0445	489300.0000	1537720.0000	6561.00	79	6482.00	1	
0446	488960.0000	1537830.0000	6560.00	60	6500.00	1	
0447	490480.0000	1537490.0000	6568.00	80	6488.00	1	
0450	490763.0000	1537448.0000	6571.00	85	6486.00	1	
0452	490420.0000	1537880.0000	6566.20	85	6481.20	1	
0453	490300.0000	1538375.0000	6567.10	80	6487.10	1	
0481	490180.0000	1538350.0000	6568.00	110	6458.00	1	
0482	489579.0000	1536981.0000	6562.66	80	6482.66	1	
0483	489753.2100	1536585.8900	6562.66	40	6522.66	1	
0484	490356.0000	1536447.7000	6563.98	38	6525.98	1	
0485	489630.0000	1535800.0000	6565.00	35	6530.00	1	
0486	489024.0000	1535800.0000	6558.40	21	6537.40	1	
0490	489752.0000	1536553.0000	6562.42	75	6487.42	1	
0491	489658.0000	1537031.0000	6562.62	40	6522.62	1	
0492	489280.0000	1537220.0000	6559.48	55	6504.48	1	
0493	489492.0000	1536702.0000	6559.38	40	6519.38	1	
0494	489494.0000	1536689.0000	6559.54	40	6519.54	1	
0496	489603.2000	1534649.7000	6560.92	86	6474.92	1	
0497	489502.6300	1535039.3100	6560.62	89	6471.62	1	
0498	488953.2350	1534661.1350	6558.00	80	6478.00	1	
0520	492934.9000	1538933.8900	6585.72	68	6517.72	1	
0521	492588.4500	1539104.1700	6581.94	65	6516.94	1	
0522	492437.3400	1538640.4000	6577.73	68	6509.73	1	
0523	492896.4700	1538680.2400	6583.79	62	6521.79	1	
0524	493173.2100	1538888.7400	6587.35	70	6517.35	1	
0536R	479654.0000	1539888.0000	6553.00	62	6491.00	1	
0538	486899.4840	1533486.3030	6546.74	95	6451.74	1	
0539	487595.7870	1534013.8800	6553.32	100	6453.32	1	
0540	488091.3490	1534124.6880	6553.91	80	6473.91	1	
0551	479800.0000	1536292.0000	6545.40	115	6430.40	1	
0553	480514.0000	1534846.0000	6543.00	128	6415.00	1	
0554	479098.0000	1534845.0000	6529.00	118	6411.00	1	
0631	483756.2250	1532233.6510	6538.90	109	6429.90	1	
0632	483766.5440	1531849.7540	6538.30	102	6436.30	1	
0633	479642.0550	1541466.8560	6556.16	95	6461.16	1	
0634	480362.0000	1541652.0720	6560.07	95	6465.07	1	
0636	476037.7420	1545373.6720	6571.14	119	6452.14	1	
0637	474710.4400	1545409.0640	6572.70	118	6454.70	1	
0638	493265.3000	1539627.6700	6585.56	65	6520.56	1	
0639	492961.0500	1539370.3900	6585.38	71	6514.38	1	
0640	491961.1400	1537790.1800	6577.77	77	6500.77	1	
0641	491110.3900	1536494.3400	6570.86	87	6483.86	1	
0642	490932.0000	1536103.8800	6569.48	89	6480.48	1	
0643	487385.5000	1533760.1000	6549.83	93	6456.83	1	
0644	485449.7000	1533481.1000	6541.90	102	6439.90	1	
0645	485282.4000	1532923.8000	6541.29	70	6471.29	1	

Attachment C6
Bedrock Elevation Data Used in Mapping
GRP Background Investigation

Boring_ID	SPCS Easting (feet)	SPCS Northing (feet)	Ground Elevation (feet amsl)	Depth to Bedrock (feet bgs)	Top of Bedrock Elevation (feet amsl)	Qualifier (include pre-BK=1, include post-BK=2,exclude=0)	Reason for Exclusion
0646	484952.5000	1533245.9000	6541.85	91	6450.85	1	
0647	478307.7000	1536622.8000	6550.51	132	6418.51	1	
0648	478342.9000	1534729.9000	6545.79	120	6425.79	1	
0649	479798.4000	1534729.9000	6542.99	115	6427.99	1	
0650	482134.9000	1536779.4000	6544.91	103	6441.91	1	
0652	483778.7000	1531170.3300	6536.65	79	6457.65	1	
0653	486569.9700	1533283.2500	6543.37	97	6446.37	1	
0654	478635.9880	1541993.5710	6549.10	106	6443.10	1	
0655	479830.0000	1541620.0000	6558.18	88	6470.18	1	
0656	478333.0000	1542578.0000	6554.07	88	6466.07	1	
0657	478392.4950	1537497.4890	6549.61	120	6429.61	1	
0658	478435.9540	1535922.2900	6549.78	129	6420.78	1	
0659	480771.5750	1541688.5650	6558.17	97	6461.17	1	
0680	478745.9800	1543850.2900	6556.87	75	6481.87	1	
0681	482733.5600	1540675.7800	6558.40	111	6447.40	1	
0682	477489.0000	1543124.9000	6551.17	102	6449.17	1	
0683	476217.2600	1540198.0900	6554.04	140	6414.04	1	
0684	478498.7100	1540273.0000	6551.28	118	6433.28	1	
0685	478169.6100	1539097.5200	6554.87	116	6438.87	1	
0686	475438.2300	1545318.6100	6577.00	136	6441.00	1	
0687	477275.5400	1539011.2100	6553.81	120	6433.81	1	
0688	483954.5000	1541256.6500	6559.72	95	6464.72	1	
0689	478477.7000	1530024.1000	6539.42	75	6464.42	1	
0690	493465.0600	1540278.9700	6579.56	55	6524.56	1	
0691	493860.2100	1540275.6200	6585.91	55	6530.91	1	
0692	493174.6000	1535891.6000	6582.32	80	6502.32	1	
0693	499660.5900	1536909.0800	6636.06	50	6586.06	1	
0694	499658.7600	1540102.1300	6635.00	50	6585.00	1	
0695	??	??	6640.00	55	6585.00	0	Location Unknown
0696	??	??	6639.00	55	6584.00	0	Location Unknown
0697	??	??	6634.00	45	6589.00	0	Location Unknown
0698	??	??	6633.00	26	6607.00	0	Location Unknown
0699	??	??	6633.00	30	6603.00	0	Location Unknown
0801	488600.0000	1541020.0000	6567.73	85	6482.73	1	
0801R	488431.0700	1541096.2370	6566.05	82	6484.05	1	
0802	488277.0000	1540765.0000	6560.72	81	6479.72	1	
0803	487430.0000	1540800.0000	6561.00	85	6476.00	1	
0804	486790.0000	1540790.0000	6562.00	85	6477.00	1	
0805	486241.0000	1540818.0000	6567.00	110	6457.00	1	
0806	486320.0000	1541120.0000	6567.00	90	6477.00	1	
0807	488610.0000	1540598.0000	6565.00	63	6502.00	1	
0808	487490.0000	1540080.0000	6559.40	85	6474.40	1	
0810	486563.0000	1540244.0000	6562.00	81	6481.00	1	
0811	486373.0000	1540320.0000	6563.00	110	6453.00	1	
0812	488505.0000	1539910.0000	6565.40	68	6497.40	1	
0813	488620.0000	1539300.0000	6565.00	63	6502.00	1	
0816	487705.0000	1539110.0000	6557.00	35	6522.00	1	
0818	487547.0000	1539085.0000	6557.00	62	6495.00	1	
0819	487000.0000	1539000.0000	6557.00	62	6495.00	1	
0823	487720.0000	1540150.0000	6561.00	40	6521.00	1	
0832	485629.0000	1539263.0000	6557.00	85	6472.00	1	
0833	485445.0000	1539335.0000	6558.00	103	6455.00	1	
0834	484847.0000	1540259.0000	6560.00	80	6480.00	1	
0835	484795.0000	1539610.0000	6559.00	94	6465.00	1	
0836	484010.0000	1540250.0000	6558.00	80	6478.00	1	
0837	485950.0000	1540995.0000	6567.00	80	6487.00	1	
0839	485371.0000	1540782.0000	6560.00	94	6466.00	1	
0840	485360.0000	1540440.0000	6561.00	94	6467.00	1	
0843	485738.0000	1541411.0000	6570.00	112	6458.00	1	
0844	487001.6200	1538375.9900	6554.93	70	6484.93	1	
0845	487832.5100	1537280.0400	6555.35	55	6500.35	1	
0846	484730.0900	1537219.3600	6548.12	65	6483.12	1	
0847	488507.5300	1534736.2700	6555.67	80	6475.67	1	
0848	490660.4000	1534633.5000	6569.84	91	6478.84	1	
0849	493990.3900	1534600.3600	6587.79	60	6527.79	1	
0850	486043.8700	1534651.7600	6545.95	37	6508.95	1	
0851	483908.5300	1534691.5600	6543.14	80	6463.14	1	
0852	493988.8000	1535609.6000	6587.67	70	6517.67	1	
0853	484823.7600	1532123.8100	6539.68	60	6479.68	1	

Attachment C6
Bedrock Elevation Data Used in Mapping
GRP Background Investigation

Boring_ID	SPCS Easting (feet)	SPCS Northing (feet)	Ground Elevation (feet amsl)	Depth to Bedrock (feet bgs)	Top of Bedrock Elevation (feet amsl)	Qualifier (include pre-BK=1, include post-BK=2,exclude=0)	Reason for Exclusion
0854	484201.2500	1531227.2400	6533.95	75	6458.95	1	
0855	484184.1000	1532110.9900	6539.01	97	6442.01	1	
0856	489232.5400	1533541.6600	6557.60	18	6539.60	1	
0857	489079.5100	1533284.5300	6556.67	40	6516.67	1	
0858	488926.7000	1533036.2400	6556.89	47	6509.89	1	
0860	??	??	6554.00	50	6504.00	0	Location Unknown
0861	488701.9500	1534332.0300	6557.55	65	6492.55	1	
0862	487799.5600	1534264.9600	6552.90	97	6455.90	1	
0863	487912.1600	1533866.5500	6554.11	94	6460.11	1	
0864	486463.8300	1533735.0900	6544.87	78	6466.87	1	
0865	488428.8100	1534122.8600	6554.58	88	6466.58	1	
0866	488339.7400	1534493.9600	6556.32	80	6476.32	1	
0867	488408.9900	1533761.6100	6553.90	86	6467.90	1	
0868	491032.5000	1534847.9000	6572.54	94	6478.54	1	
0869	486072.7100	1533250.6500	6542.79	99	6443.79	1	
0870	484905.7700	1532679.8600	6542.26	95	6447.26	1	
0871	485399.7200	1533603.0200	6542.33	93	6449.33	1	
0872	485406.9500	1533092.3000	6541.51	96	6445.51	1	
0873	484505.3000	1533285.8600	6541.11	96	6445.11	1	
0874	484924.9500	1533968.4800	6543.14	110	6433.14	1	
0875	483634.4400	1532784.7300	6541.14	116	6425.14	1	
0876	486087.8300	1532853.0700	6542.35	85	6457.35	1	
0877	488067.2700	1533068.1700	6551.18	65	6486.18	1	
0878	??	??	6548.00	47	6501.00	0	Location Unknown
0879	486104.1700	1532400.7300	6542.36	62	6480.36	1	
0880	??	??	6541.00	55	6486.00	0	Location Unknown
0881	481477.9400	1542034.2600	6563.04	103	6460.04	1	
0882	482396.3500	1541404.4900	6559.21	98	6461.21	1	
0883	483038.8000	1540096.6100	6555.27	96	6459.27	1	
0884	481497.8600	1542677.3100	6565.15	85	6480.15	1	
0885	483473.7900	1541919.0100	6563.14	95	6468.14	1	
0886	482487.4800	1542327.3300	6563.05	87	6476.05	1	
0887	482468.6100	1543063.4800	6566.23	60	6506.23	1	
0888	479334.5000	1542284.5700	6556.24	90	6466.24	1	
0889	480222.2100	1540046.9000	6548.18	60	6488.18	1	
0890	480087.9800	1541365.4100	6556.73	93	6463.73	1	
0891	493751.1800	1540903.6400	6579.02	50	6529.02	1	
0892	494317.0500	1540954.3100	6585.21	42	6543.21	1	
0893	482243.6600	1541933.7100	6561.87	93	6468.87	1	
0894	478317.3700	1541976.0200	6551.29	97	6454.29	1	
0895	476221.8500	1541521.3200	6551.44	116	6435.44	1	
0896	476236.6300	1542245.7600	6553.61	117	6436.61	1	
0897	478236.8800	1543819.3600	6560.25	70	6490.25	1	
0898	479264.4700	1543886.9500	6557.24	55	6502.24	1	
0899	477288.0000	1543800.8000	6568.84	120	6448.84	1	
0901	492845.9041	1531530.6405	6599.00	40	6559.00	1	
0902	488800.0000	1533700.0000	6560.00	72	6488.00	1	
0905	480850.0000	1532700.0000	6545.00	120	6425.00	1	
0907	480800.0000	1534250.0000	6545.60	123	6422.60	1	
0908	483325.0200	1534430.3700	6542.87	107	6435.87	1	
0909	483400.0000	1531900.0000	6538.90	112	6426.90	1	
0910	481150.0000	1528800.0000	6535.00	132	6403.00	1	
0915	499650.0000	1552650.0000	6625.00	70	6555.00	1	
0919	??	??	6684.00	35	6649.00	0	Location Unknown
0923	477900.0000	1552400.0000	6622.60	60	6562.60	1	
0924	438900.0000	1547500.0000	6592.90	112	6480.90	1	
0925	480800.0000	1548600.0000	6601.40	140	6461.40	1	
0926	472700.0000	1547500.0000	6596.90	132	6464.90	1	
0928	491700.0000	1548250.0000	6596.45	138	6458.45	0	Outlier (differs signficantly from surrounding locations)
0930	494997.3100	1542847.7100	6598.54	30	6568.54	1	
0934	493940.6600	1540640.8500	6583.64	30	6553.64	1	
0935	476628.7700	1540114.7500	6555.52	125	6430.52	1	
0936	472977.6000	1543620.7500	6573.38	160	6413.38	1	
0937	471478.2417	1542179.9000	6578.00	70	6508.00	1	
0938	473040.0000	1539500.0000	6568.80	95	6473.80	1	
0942	483703.0000	1538306.0000	6550.20	95	6455.20	1	
0944	493091.1700	1539279.6000	6587.01	64	6523.01	1	
0947	491840.9300	1536206.1400	6575.18	95	6480.18	1	
0949	483600.0000	1540350.0000	6562.30	112	6450.30	1	

Attachment C6
Bedrock Elevation Data Used in Mapping
GRP Background Investigation

Boring_ID	SPCS Easting (feet)	SPCS Northing (feet)	Ground Elevation (feet amsl)	Depth to Bedrock (feet bgs)	Top of Bedrock Elevation (feet amsl)	Qualifier (include pre-BK=1, include post-BK=2,exclude=0)	Reason for Exclusion
0951	473200.0000	1545500.0000	6572.80	110	6462.80	1	
0955	483699.0000	1537338.0000	6549.80	40	6509.80	1	
0979	483110.0000	1538860.0000	6551.00	100	6451.00	1	
0982	483400.0000	1538610.0000	6551.00	105	6446.00	1	
0984	482950.0000	1538750.0000	6551.00	98	6453.00	1	
0985	483380.0000	1539048.0000	6551.00	102	6449.00	1	
0986	483690.0000	1537894.0000	6549.20	65	6484.20	1	
0987	483357.0000	1538226.0000	6549.00	70	6479.00	1	
0988	483423.0000	1538124.0000	6547.75	18	6529.75	1	
0992	483790.0000	1539510.0000	6552.00	95	6457.00	1	
0993	483677.0000	1537920.0000	6550.00	98	6452.00	1	
0996	477989.3400	1537620.5600	6550.82	136	6414.82	1	
1101	??	??	6638.00	75	6563.00	0	Location Unknown
1102	??	??	6621.00	30	6591.00	0	Location Unknown
1A	493768.0500	1543789.7500	6582.53	47	6535.53	1	
1B	494412.0800	1544502.1700	6582.92	50	6532.92	1	
1C	494798.8300	1545017.5100	6585.49	43	6542.49	1	
1D	494752.3600	1544142.1600	6583.77	40	6543.77	1	
1E	494116.3600	1544481.2200	6582.21	43	6539.21	1	
1F	493830.6300	1544952.3600	6585.58	54	6531.58	1	
1G	494170.2600	1545033.6700	6584.77	48	6536.77	1	
1H	494265.7400	1543363.4900	6584.59	43	6541.59	1	
1I	493927.7300	1542627.1200	6597.10	35	6562.10	1	
1J	493695.1700	1541986.0800	6583.60	40	6543.60	1	
1K	493274.8400	1541991.9500	6583.13	47	6536.13	1	
1L	493415.5100	1541256.1600	6575.51	40	6535.51	1	
1M	493132.9200	1541326.9000	6574.23	33	6541.23	1	
1N	494396.1900	1543099.6200	6588.45	25	6563.45	1	
1O	494175.2500	1542591.5300	6594.14	29	6565.14	1	
1P	493924.4000	1541901.8900	6582.64	35	6547.64	1	
1Q	493618.5600	1541992.7200	6581.21	56	6525.21	1	
1R	493622.9900	1542070.7400	6584.69	56	6528.69	1	
1S	493614.0500	1541919.7300	6580.54	56	6524.54	1	
1T	493656.4800	1541989.5900	6583.21	56	6527.21	1	
A1	491538.7500	1542365.2500	6572.05	55	6517.05	1	
ACW	488070.0000	1540235.0000	6562.60	40	6522.60	1	
AW	488015.0000	1540235.0000	6563.33	63	6500.33	1	
B	489311.0400	1541683.9700	6568.50	60	6508.50	1	
B1	489370.0900	1542071.4100	6571.05	82	6489.05	1	
B10	491132.7600	1542517.2200	6574.47	75	6499.47	1	
B11	491328.7300	1542517.0500	6575.19	77	6498.19	1	
B12	488915.0170	1542523.6340	6570.82	91	6479.82	1	
B13	490223.2920	1541840.6700	6566.94	72	6494.94	1	
B2	489514.8800	1542475.1300	6572.25	72	6500.25	1	
B3	489730.6800	1542479.6200	6571.69	77	6494.69	1	
B4	489941.9800	1542471.3800	6567.26	82	6485.26	1	
B5	490141.1800	1542474.0000	6572.06	81	6491.06	1	
B6	490340.6900	1542477.6600	6575.69	80	6495.69	1	
B7	490539.8500	1542487.8600	6572.20	77	6495.20	1	
B8	490734.3300	1542488.0500	6573.45	77	6496.45	1	
B9	490934.8700	1542514.4200	6573.97	76	6497.97	1	
BA	489439.7100	1541834.9100	6569.88	76	6493.88	1	
BC	487909.5300	1543655.3900	6572.01	75	6497.01	1	
BP	489841.4800	1541882.3800	6569.14	75	6494.14	1	
C	490853.9000	1541762.2100	6570.54	75	6495.54	1	
C1	490780.4660	1541532.8960	6570.14	67	6503.14	1	
C10	491628.6200	1542182.2900	6582.56	65	6517.56	1	
C11	491844.0300	1542375.5100	6578.98	60	6518.98	1	
C12	492028.9000	1542374.9100	6577.95	55	6522.95	1	
C13	490655.1550	1541394.4030	6568.01	63	6505.01	1	
C14	490713.0520	1541412.8660	6567.69	63	6504.69	1	
C2	490565.7120	1541630.2440	6564.12	66	6498.12	1	
C3	490481.1600	1541343.6800	6567.63	65	6502.63	1	
C3R	490472.1690	1541337.8610	6567.29	66	6501.29	1	
C4	490674.6790	1541347.6130	6569.54	66	6503.54	1	
C5	490868.7970	1541344.1790	6569.05	62	6507.05	1	
C6	491142.2300	1541533.0700	6583.29	72	6511.29	1	
C7	491280.2600	1541734.3100	6582.94	61	6521.94	1	
C8	491415.4500	1541905.9500	6582.89	67	6515.89	1	

Attachment C6
Bedrock Elevation Data Used in Mapping
GRP Background Investigation

Boring_ID	SPCS Easting (feet)	SPCS Northing (feet)	Ground Elevation (feet amsl)	Depth to Bedrock (feet bgs)	Top of Bedrock Elevation (feet amsl)	Qualifier (include pre-BK=1, include post-BK=2,exclude=0)	Reason for Exclusion
C9	491544.7600	1542075.4500	6583.05	65	6518.05	1	
CE1	489979.4800	1541922.6660	6565.79	75	6490.79	1	
CE2	490434.3040	1542475.1900	6574.60	74	6500.60	1	
CE5	490695.3730	1541453.3770	6566.95	63	6503.95	1	
CW1	490295.0100	1545235.0300	6584.52	105	6479.52	1	
CW10	491803.4800	1542823.3200	6587.89	75	6512.89	1	
CW14	488883.7500	1538785.7600	6563.15	56	6507.15	1	
CW15	485960.9200	1536259.1100	6548.72	50	6498.72	1	
CW16	488507.0800	1534746.7200	6558.54	82	6476.54	1	
CW17	487771.0300	1545278.7500	6586.22	73	6513.22	1	
CW18	491378.0000	1535924.4000	6571.18	90	6481.18	1	
CW19	485962.5000	1535303.1700	6546.06	30	6516.06	1	
CW2	491302.0100	1545211.5500	6583.78	85	6498.78	1	
CW20	484869.4800	1537252.2900	6550.02	57	6493.02	1	
CW21	485435.8000	1537256.7300	6549.61	59	6490.61	1	
CW2-1	491302.0100	1545211.5500	6583.78	85	6498.78	1	
CW22	485411.3000	1535760.6600	6543.87	39	6504.87	1	
CW23	488866.0000	1540071.0000	6562.00	55	6507.00	1	
CW24	487760.1600	1545773.3000	6585.67	61	6524.67	1	
CW25	488865.6700	1540802.3300	6564.20	53	6511.20	1	
CW26	489593.3100	1534116.3700	6560.93	50	6510.93	1	
CW27	489599.7000	1534109.2600	6561.03	50	6511.03	1	
CW28	491008.4000	1535111.7900	6569.83	90	6479.83	1	
CW29	487435.4100	1534550.5300	6550.52	52	6498.52	1	
CW3	493496.3100	1545200.0000	6586.48	70	6516.48	1	
CW30	488704.3000	1536642.0300	6556.31	35	6521.31	1	
CW31	482738.3000	1540689.3900	6558.26	111	6447.26	1	
CW32	483522.7500	1543412.9800	6565.58	70	6495.58	1	
CW33	486347.0500	1543813.6700	6573.09	83	6490.09	1	
CW34	487706.8800	1547827.2300	6591.20	20	6571.20	1	
CW35	488793.7100	1547000.9400	6589.27	63	6526.27	1	
CW36	481328.9300	1540052.7600	6548.29	96	6452.29	1	
CW37	484852.8000	1537240.4500	6549.87	55	6494.87	1	
CW38	483428.6900	1540102.7300	6553.50	108	6445.50	1	
CW39	483753.6100	1537260.3000	6547.31	40	6507.31	1	
CW4	490873.9700	1541681.5400	6570.15	70	6500.15	1	
CW40	491819.0600	1537623.9400	6576.34	75	6501.34	1	
CW41	488583.5000	1533173.7000	6553.91	59	6494.91	1	
CW42	487176.6000	1533169.4000	6548.78	98	6450.78	1	
CW43	482493.0200	1537586.7100	6546.79	57	6489.79	1	
CW44	488890.5000	1535047.6400	6558.24	94	6464.24	1	
CW45	489493.8100	1535035.7500	6560.71	90	6470.71	1	
CW46	489594.5000	1534642.1000	6560.76	88	6472.76	1	
CW4R	490787.3000	1541415.7300	6567.48	61	6506.48	1	
CW5	490221.3600	1538729.0600	6567.74	65	6502.74	1	
CW8	491237.9700	1545008.6500	6591.83	85	6506.83	1	
CW9	491015.3700	1542839.6900	6591.83	80	6511.83	1	
D	490117.9100	1542126.6300	6572.09	90	6482.09	1	
D1	489615.4200	1542139.5800	6569.90	80	6489.90	1	
D2	492106.6300	1542641.1600	6577.22	62	6515.22	1	
D3	491916.8900	1542645.5800	6577.63	72	6505.63	1	
D4	491724.0400	1542651.5700	6576.93	70	6506.93	1	
DA	489487.9000	1542863.6600	6582.55	90	6492.55	1	
DA2	489655.6400	1542881.3200	6584.49	83	6501.49	1	
DA3	489389.6500	1542664.0730	6571.81	72	6499.81	1	
DA4	489756.2600	1542597.6950	6572.27	71	6501.27	1	
DAA	492410.9500	1542733.4900	6578.40	54	6524.40	1	
DAB	492398.5900	1542632.5200	6577.58	56	6521.58	1	
DAC	492851.0800	1543218.2200	6616.26	45	6571.26	1	
DD	488943.4100	1546988.9200	6590.69	83	6507.69	1	
DE	490192.6500	1542876.7400	6590.55	80	6510.55	1	
DH2	??	??	??	1		0	Location Unknown
DI	491787.9700	1542820.5800	6587.32	75	6512.32	1	
DJ	491792.6100	1542820.9900	6588.86	75	6513.86	1	
DK	492094.3800	1542798.9000	6585.21	55	6530.21	1	
DL	492398.1200	1542813.1000	6581.97	55	6526.97	1	
DO	490048.8000	1542874.1000	6588.73	75	6513.73	1	
DR	489965.6100	1542883.7500	6588.13	85	6503.13	1	
DS	490117.6000	1542876.2600	6587.91	77	6510.91	1	

Attachment C6
Bedrock Elevation Data Used in Mapping
GRP Background Investigation

Boring_ID	SPCS Easting (feet)	SPCS Northing (feet)	Ground Elevation (feet amsl)	Depth to Bedrock (feet bgs)	Top of Bedrock Elevation (feet amsl)	Qualifier (include pre-BK=1, include post-BK=2,exclude=0)	Reason for Exclusion
DT	489292.6500	1542871.0300	6581.11	99	6482.11	1	
DU	490379.9100	1542878.8700	6588.17	81	6507.17	1	
DV	490702.4600	1542825.8600	6582.70	77	6505.70	1	
DW	492029.3400	1542818.1800	6585.06	59	6526.06	1	
DX	491074.4400	1542838.1000	6590.98	80	6510.98	1	
DY	492270.9200	1542736.9300	6578.31	56	6522.31	1	
E	490187.0800	1540553.4900	6567.24	60	6507.24	1	
EE	490522.5200	1542853.0800	6587.51	80	6507.51	1	
F	489553.6100	1539908.2600	6563.62	62	6501.62	1	
FB	488857.1600	1540417.4900	6563.66	58	6505.66	1	
FF	490016.9900	1542877.9800	6576.34	124	6452.34	1	
G	488889.9200	1538671.7700	6561.09	75	6486.09	1	
GA	489254.8800	1538657.4100	6560.99	62	6498.99	1	
GB	489456.4400	1538653.5500	6561.09	64	6497.09	1	
GC	489653.9300	1538650.4200	6562.67	78	6484.67	1	
GD	489854.8900	1538645.9900	6563.82	72	6491.82	1	
GE	489971.6600	1538637.4900	6563.87	65	6498.87	1	
GF	490097.4300	1538632.3400	6564.21	67	6497.21	1	
GG	489055.1500	1538661.5800	6561.33	57	6504.33	1	
GH	489508.8100	1538807.4500	6561.46	67	6494.46	1	
GI	490218.0300	1538630.5400	6564.35	67	6497.35	1	
GJ	490381.7300	1538629.1600	6564.15	65	6499.15	1	
GK	490482.2300	1538622.3700	6564.36	67	6497.36	1	
GL	490701.0100	1538613.5000	6565.05	71	6494.05	1	
GM	490824.3600	1538605.1300	6565.55	69	6496.55	1	
GN	490944.0400	1538601.6900	6566.17	70	6496.17	1	
GO	488973.2300	1538663.2600	6561.40	75	6486.40	1	
GP	489751.8600	1538649.4800	6562.77	68	6494.77	1	
GQ	491067.2000	1538599.2500	6567.26	71	6496.26	1	
GR	490618.9100	1538618.5400	6564.21	75	6489.21	1	
GS	491408.2100	1538596.7900	6572.31	80	6492.31	1	
GT	491565.1700	1538533.5900	6574.07	76	6498.07	1	
GU	491854.1100	1538366.9700	6573.65	73	6500.65	1	
GV	491428.1600	1537700.6700	6574.88	74	6500.88	1	
GW1	490529.9600	1539754.8100	6564.27	65	6499.27	1	
GW2	490497.4600	1539471.3400	6565.08	68	6497.08	1	
GW3	490835.4000	1539532.3700	6565.28	62	6503.28	1	
H	490582.3800	1538702.7300	6564.78	69	6495.78	1	
HCW	487785.0000	1541060.0000	6561.00	82	6479.00	1	
HW	487435.0000	1540920.0000	6557.00	95	6462.00	1	
I	490953.6100	1539319.4600	6565.60	68	6497.60	1	
J	491301.6400	1540173.7200	6566.79	56	6510.79	1	
J1	491584.7900	1540081.9200	6568.05	55	6513.05	1	
J10	491435.5100	1540138.3600	6567.41	36	6531.41	1	
J11	490909.1000	1540544.9200	6567.86	55	6512.86	1	
J12	490465.6300	1540826.6200	6567.30	60	6507.30	1	
J13	492217.7920	1540451.3130	6566.63	46	6520.63	1	
J14	492367.4750	1540584.7860	6567.31	44	6523.31	1	
J15	492520.6620	1540719.2060	6567.41	46	6521.41	1	
J2	491012.8900	1540270.7500	6567.29	55	6512.29	1	
J3	490498.8400	1540414.1500	6566.54	66	6500.54	1	
J4	489974.4700	1540643.0000	6565.62	68	6497.62	1	
J5	489746.9400	1540727.6900	6566.99	61	6505.99	1	
J6	489220.5600	1540919.0400	6566.40	65	6501.40	1	
J7	491892.4000	1540168.3900	6568.28	53	6515.28	1	
J8	492063.6300	1540318.2200	6568.39	52	6516.39	1	
J9	491758.7900	1540101.4500	6569.20	58	6511.20	1	
JC	491239.7900	1540215.3000	6566.64	50	6516.64	1	
K	491590.0500	1540729.6000	6569.71	60	6509.71	1	
K10	491638.0070	1541305.4780	6598.81	81	6517.81	1	
K11	491489.9720	1541324.7640	6598.61	78	6520.61	1	
K2	491586.9400	1540736.1400	6569.71	58	6511.71	1	
K4	492371.1700	1541210.9300	6599.52	80	6519.52	1	
K5	491934.7900	1541269.3500	6598.93	80	6518.93	1	
K7	492236.8700	1541231.5910	6599.53	79	6520.53	1	
K8	492080.9630	1541249.5620	6598.49	78	6520.49	1	
K9	491786.7540	1541287.1220	6598.34	79	6519.34	1	
KA	491330.5800	1540958.7900	6570.29	65	6505.29	1	
KB	491405.5400	1540893.2700	6570.85	60	6510.85	1	

Attachment C6
Bedrock Elevation Data Used in Mapping
GRP Background Investigation

Boring_ID	SPCS Easting (feet)	SPCS Northing (feet)	Ground Elevation (feet amsl)	Depth to Bedrock (feet bgs)	Top of Bedrock Elevation (feet amsl)	Qualifier (include pre-BK=1, include post-BK=2,exclude=0)	Reason for Exclusion
KC	491476.8400	1540825.9100	6569.61	59	6510.61	1	
KEB	491486.6000	1540570.0500	6568.23	50	6518.23	1	
KF	491169.1000	1540869.7500	6568.01	50	6518.01	1	
L	492149.6300	1538970.0600	6574.17	59	6515.17	1	
L1	493415.5100	1541256.1600	6578.00	63	6515.00	1	
L10	492310.0200	1539250.4800	6574.83	63	6511.83	1	
L2	492020.3000	1538846.6000	6574.00	65	6509.00	1	
L3	492085.1000	1538921.8000	6573.00	62	6511.00	1	
L4	492201.9000	1539057.5000	6576.00	61	6515.00	1	
L5	492730.4800	1539945.8200	6574.77	50	6524.77	1	
L6	493109.9000	1540526.1200	6572.54	50	6522.54	1	
L7	492841.6300	1540113.4100	6574.31	62	6512.31	1	
L8	492620.7800	1539772.9900	6574.39	65	6509.39	1	
L9	492463.2700	1539508.5400	6575.03	64	6511.03	1	
M1	489156.7700	1542797.4000	6583.47	120	6463.47	1	
M10	486722.9000	1543677.1200	6571.06	86	6485.06	1	
M11	486485.6100	1542357.9000	6570.02	109	6461.02	1	
M12	487209.0000	1542173.7000	6570.99	118	6452.99	1	
M13	487336.4000	1542450.0000	6573.20	108	6465.20	1	
M14	487216.3000	1542661.3000	6574.46	109	6465.46	1	
M15	487094.0000	1542872.3000	6575.62	93	6482.62	1	
m16	485112.1900	1543251.6800	6569.19	100	6469.19	1	
M3R	489078.1620	1542925.8920	6578.16	108	6470.16	1	
M5	489079.6700	1542359.6900	6572.14	84	6488.14	1	
M6	486673.9000	1543096.8500	6572.87	65	6507.87	1	
M7	486522.5400	1542789.7400	6570.43	71	6499.43	1	
M8	486566.7900	1542959.7100	6572.84	57	6515.84	1	
M9	486699.4700	1543310.4300	6573.31	78	6495.31	1	
MA	487766.6800	1541289.6900	6571.22	85	6486.22	1	
MB	487512.2800	1541296.1900	6571.06	85	6486.06	1	
MC	487263.8000	1541303.9800	6571.06	95	6476.06	1	
MD	487049.9400	1541310.8100	6570.46	105	6465.46	1	
ME	486933.5400	1541536.6700	6569.92	105	6464.92	1	
MF	486808.3400	1541756.7000	6571.28	110	6461.28	1	
MG	486693.6700	1541971.6000	6572.08	110	6462.08	1	
MH	486568.5500	1542207.5300	6572.92	110	6462.92	1	
MI	486412.6500	1542485.8100	6575.27	110	6465.27	1	
MJ	486350.3900	1542681.8400	6571.14	60	6511.14	1	
MK	486324.4500	1543372.5900	6572.29	92	6480.29	1	
ML	486691.4300	1543901.5700	6570.37	80	6490.37	1	
MM	486324.3900	1544153.5500	6575.05	50	6525.05	1	
MN	486325.1600	1544612.8000	6575.71	42	6533.71	1	
MO	485518.1500	1543619.7300	6570.87	80	6490.87	1	
MP	485491.8000	1544164.1300	6572.38	50	6522.38	1	
MQ	486325.6200	1543173.2200	6572.70	88	6484.70	1	
MR	483574.2000	1542608.9800	6564.46	100	6464.46	1	
MS	485570.0700	1542606.7800	6569.16	89	6480.16	1	
MT	483530.7100	1543221.3300	6565.13	87	6478.13	1	
MU	487142.7100	1544460.7100	6572.69	72	6500.69	1	
MV	484417.8200	1542617.5700	6568.48	95	6473.48	1	
MW	486346.3400	1543801.9400	6573.01	83	6490.01	1	
MX	486243.8600	1541287.0000	6566.91	94	6472.91	1	
MY	486212.6600	1542199.5500	6570.56	102	6468.56	1	
MZ	486756.9700	1543484.9800	6573.64	84	6489.64	1	
N	489664.8400	1545100.6200	6583.07	80	6503.07	1	
NA	491488.4600	1544999.6700	6589.88	80	6509.88	1	
NB	491296.3100	1545000.2600	6589.80	80	6509.80	1	
NC	491281.9900	1545219.9300	6585.03	85	6500.03	1	
ND	494872.3300	1545927.1400	6591.79	65	6526.79	1	
NE5	492332.1800	1544278.9100	6663.80	150	6513.80	1	
NW5	489432.7400	1544407.6700	6654.88	155	6499.88	1	
O	492725.4900	1545060.1200	6586.53	77	6509.53	1	
P	491057.5900	1546691.0000	6585.56	107	6478.56	1	
P1	491059.6400	1547016.5500	6591.67	105	6486.67	1	
P1A	??	??	??	100		0	Location Unknown
P1B	??	??	??	105		0	Location Unknown
P2	490912.1400	1546554.8400	6588.89	105	6483.89	1	
P3	490785.3000	1546158.6000	6587.75	85	6502.75	1	
P4	491899.2000	1546504.3000	6585.92	84	6501.92	1	

Attachment C6
Bedrock Elevation Data Used in Mapping
GRP Background Investigation

Boring_ID	SPCS Easting (feet)	SPCS Northing (feet)	Ground Elevation (feet amsl)	Depth to Bedrock (feet bgs)	Top of Bedrock Elevation (feet amsl)	Qualifier (include pre-BK=1, include post-BK=2,exclude=0)	Reason for Exclusion
Q	492152.7600	1548693.1100	6591.52	100	6491.52	1	
R	494513.6600	1550371.7700	6603.73	95	6508.73	1	
S	488816.0600	1543871.1600	6579.17	75	6504.17	1	
S1	488400.5800	1543287.6900	6569.89	85	6484.89	1	
S10	488850.0000	1544600.0000	6583.00	35	6548.00	1	
S11	488149.7100	1544793.1900	6576.49	70	6506.49	1	
S12	488628.2150	1543296.7010	6576.75	80	6496.75	1	
S2	488298.8300	1543127.0600	6571.72	100	6471.72	1	
S3	488714.3900	1542857.3500	6568.58	116	6452.58	1	
S4	488359.0800	1543343.9500	6572.99	108	6464.99	1	
S5	488923.4000	1543269.3200	6571.99	105	6466.99	1	
S5R	488938.1840	1543150.2180	6578.59	109	6469.59	1	
S6	488873.8900	1543515.4900	6578.77	105	6473.77	1	
S7	488873.5600	1543762.9900	6578.89	82	6496.89	1	
S8	488878.7000	1543967.9000	6579.34	40	6539.34	1	
S9	488880.0000	1544220.0000	6583.00	35	6548.00	1	
SA	488811.3800	1543122.1900	6579.31	115	6464.31	1	
SB	488811.3400	1543370.7600	6580.19	115	6465.19	1	
SC	488814.6700	1543616.7500	6577.60	103	6474.60	1	
SD	488563.9000	1543490.3900	6577.71	107	6470.71	1	
SD4	488555.9300	1543496.5300	6577.67	95	6482.67	1	
SE	488550.3600	1543300.8300	6577.49	88	6489.49	1	
SQ	488814.3700	1543507.4900	6578.30	95	6483.30	1	
SR	488669.1500	1543610.5700	6578.39	95	6483.39	1	
SS	488666.2700	1543373.8300	6577.18	90	6487.18	1	
ST	488688.4800	1543214.7300	6577.11	96	6481.11	1	
SU	488952.9800	1542945.9000	6577.40	110	6467.40	1	
SUB3	489420.0000	1538280.0000	6557.07	72	6485.07	1	
SUB4	489840.0000	1538440.0000	6565.00	78	6487.00	1	
SUB5	489470.0000	1537940.0000	6562.31	66	6496.31	1	
SUB6	490090.0000	1537940.0000	6566.00	80	6486.00	1	
SUB7	490630.0000	1537940.0000	6568.00	85	6483.00	1	
SUB8	490210.0000	1538450.0000	6568.00	72	6496.00	1	
SUR	488967.8800	1542991.3460	6578.14	106	6472.14	1	
SV	488812.5300	1543675.7400	6577.55	100	6477.55	1	
SW	488811.6000	1543782.7400	6578.39	75	6503.39	1	
SX	489024.7300	1544509.9500	6580.49	40	6540.49	1	
SZ	488832.8300	1544366.5800	6579.27	60	6519.27	1	
T	492260.1000	1542536.4900	6576.83	68	6508.83	1	
T1	490026.9500	1543285.2500	6662.91	161	6501.91	1	
T10	492790.6700	1543434.0800	6657.66	142	6515.66	1	
T11	489887.4500	1544584.7400	6654.11	160	6494.11	1	
T12	490316.9700	1544582.6600	6654.73	170	6484.73	1	
T17	489429.8630	1544007.7990	6654.31	170	6484.31	1	
T18	490333.1600	1543976.7200	6662.26	162	6500.26	1	
T19	490722.4920	1543958.4500	6665.26	162	6503.26	1	
T2	489302.5100	1543537.5100	6663.22	180	6483.22	1	
T20	491047.9370	1543935.4890	6669.19	162	6507.19	1	
T21	491881.8130	1543950.5690	6668.70	163	6505.70	1	
T22	492311.4530	1543875.5800	6665.09	160	6505.09	1	
T4	489699.3300	1543339.9000	6654.84	175	6479.84	1	
T40	491465.6980	1543818.5770	6667.97	165	6502.97	1	
T41	491079.4600	1543278.0200	6656.76	155	6501.76	1	
T5	490289.3500	1543307.0700	6654.23	151	6503.23	1	
T6	490654.9600	1543281.9900	6655.87	156	6499.87	1	
T7	491484.3500	1543271.9500	6657.67	142	6515.67	1	
T8	491914.2000	1543295.9200	6659.01	158	6501.01	1	
T9	492336.5100	1543347.2800	6660.65	138	6522.65	1	
TA	492426.0500	1542470.9600	6577.90	55	6522.90	1	
TB	492616.4200	1542351.4600	6581.67	55	6526.67	1	
W	487297.4800	1542301.6900	6571.84	117	6454.84	1	
WCW	488520.0000	1541045.0000	6566.57	83	6483.57	1	
WN4	489961.1900	1543958.3500	6659.78	165	6494.78	1	
WR10	487960.8000	1542388.5000	6572.49	110	6462.49	1	
WR11	487728.0800	1542585.7300	6574.19	110	6464.19	1	
WR12	488277.3100	1541279.9400	6567.09	85	6482.09	1	
WR13	488860.9100	1541068.1200	6565.97	60	6505.97	1	
WR14	488862.7000	1540638.3900	6564.61	61	6503.61	1	
WR15	488015.9200	1541279.9200	6571.19	75	6496.19	1	

Attachment C6
Bedrock Elevation Data Used in Mapping
GRP Background Investigation

Boring_ID	SPCS Easting (feet)	SPCS Northing (feet)	Ground Elevation (feet amsl)	Depth to Bedrock (feet bgs)	Top of Bedrock Elevation (feet amsl)	Qualifier (include pre-BK=1, include post-BK=2,exclude=0)	Reason for Exclusion
WR16	487495.0500	1543051.1900	6570.88	100	6470.88	1	
WR17	487485.0500	1543328.1600	6570.89	75	6495.89	1	
WR18	487465.4100	1543596.5900	6570.71	70	6500.71	1	
WR19	487457.7800	1543872.9900	6572.73	74	6498.73	1	
WR1R	488535.8000	1541301.8500	6568.47	85	6483.47	1	
WR2	488677.6200	1541289.8200	6567.69	85	6482.69	1	
WR20	487449.4500	1544059.3800	6572.37	80	6492.37	1	
WR21	487449.0300	1544241.2700	6573.95	77	6496.95	1	
WR22	487461.9600	1544434.3500	6575.49	86	6489.49	1	
WR23	487444.5600	1544631.6400	6574.27	77	6497.27	1	
WR24	487437.7300	1544938.2100	6585.67	82	6503.67	1	
WR25	487429.6700	1545267.0300	6583.66	50	6533.66	1	
WR3	488671.4200	1541489.5200	6566.84	83	6483.84	1	
WR5	488682.5200	1541813.3600	6570.63	80	6490.63	1	
WR6	488566.4800	1541902.3600	6571.73	84	6487.73	1	
WR7	488455.8300	1541996.8700	6571.78	84	6487.78	1	
WR8	488327.6200	1542095.0700	6572.20	100	6472.20	1	
WR9	488216.6400	1542185.3900	6572.25	100	6472.25	1	
X1	492129.0900	1540671.0300	6569.64	47	6522.64	1	
X10	492835.2000	1542352.2900	6578.83	53	6525.83	1	
X11	492781.6000	1542552.6000	6579.00	53	6526.00	1	
X12	492852.0000	1542861.1000	6580.33	53	6527.33	1	
X13	493665.0000	1543640.3000	6584.44	51	6533.44	1	
X14	493776.6000	1544001.5000	6584.10	49	6535.10	1	
X15	493799.8000	1544222.1000	6580.61	51	6529.61	1	
X16	493795.0800	1544472.7900	6582.49	47	6535.49	1	
X17	493793.2300	1544356.0000	6582.59	48	6534.59	1	
X18	493569.4500	1544592.8700	6583.23	49	6534.23	1	
X19	493436.9100	1544752.9700	6581.05	56	6525.05	1	
X2	492362.9800	1540836.0000	6570.03	45	6525.03	1	
X20	493255.7600	1544855.4100	6580.78	64	6516.78	1	
X21	493894.1100	1543606.4200	6583.63	51	6532.63	1	
X22	493945.5600	1543874.4400	6583.10	50	6533.10	1	
X23	494011.7300	1544063.9400	6583.14	47	6536.14	1	
X24	494010.5600	1544244.0100	6583.12	46	6537.12	1	
X25	494041.9600	1544445.4700	6582.88	46	6536.88	1	
X26	493701.9300	1544692.9300	6584.84	43	6541.84	1	
X27	493373.8800	1544952.7700	6579.35	64	6515.35	1	
X28	491970.7060	1540545.3540	6567.96	48	6519.96	1	
X29	492255.8330	1540735.4850	6568.03	43	6525.03	1	
X3	492598.5000	1540992.1800	6571.28	42	6529.28	1	
X30	492492.5210	1540896.6640	6570.53	43	6527.53	1	
X31	492731.4150	1541052.1810	6572.13	44	6528.13	1	
X4	492814.0800	1541209.9700	6573.74	45	6528.74	1	
X5	492820.5300	1541407.6200	6574.01	35	6539.01	1	
X6	492827.8600	1541609.0900	6575.22	35	6540.22	1	
X7	492851.0100	1541808.0700	6577.03	45	6532.03	1	
X8	492851.5700	1542007.0400	6578.36	51	6527.36	1	
X9	492852.2000	1542193.6100	6579.32	51	6528.32	1	
Y	491256.2000	1541025.1000	6570.48	57	6513.48	1	
Z	490700.5600	1540289.8700	6568.62	68	6500.62	1	
#1	492740.00	1544610.00	6585.00	70	6515.00	1	
#2	491820.00	1544970.00	6586.00	75	6511.00	1	
#3	490790.00	1544610.00	6584.00	73	6511.00	1	
#4	490200.00	1543580.00	6579.00	85	6494.00	1	
#5	488940.00	1545060.00	6580.00	70	6510.00	1	
#6	491015.00	1542545.00	6575.00	75	6500.00	1	
#7	492825.00	1542915.00	6579.00	50	6529.00	1	
#8	493330.00	1543765.00	6583.00	48	6535.00	1	
#9	493480.00	1544980.00	6586.00	50	6536.00	1	
#10	488995.00	1542495.00	6576.00	110	6466.00	1	
#11	493940.00	1542720.00	6590.00	30	6560.00	1	
#12	492780.00	1541115.00	6571.00	40	6531.00	1	
#13	491930.00	1540650.00	6571.00	48	6523.00	1	
#14	492745.00	1539950.00	6583.00	65	6518.00	1	
#15	491405.00	1538660.00	6570.00	69	6501.00	1	
#16	489130.00	1538650.00	6560.00	60	6500.00	1	
#17	489030.00	1541240.00	6568.00	61	6507.00	1	
#18	489805.00	1539590.00	6565.00	63	6502.00	1	

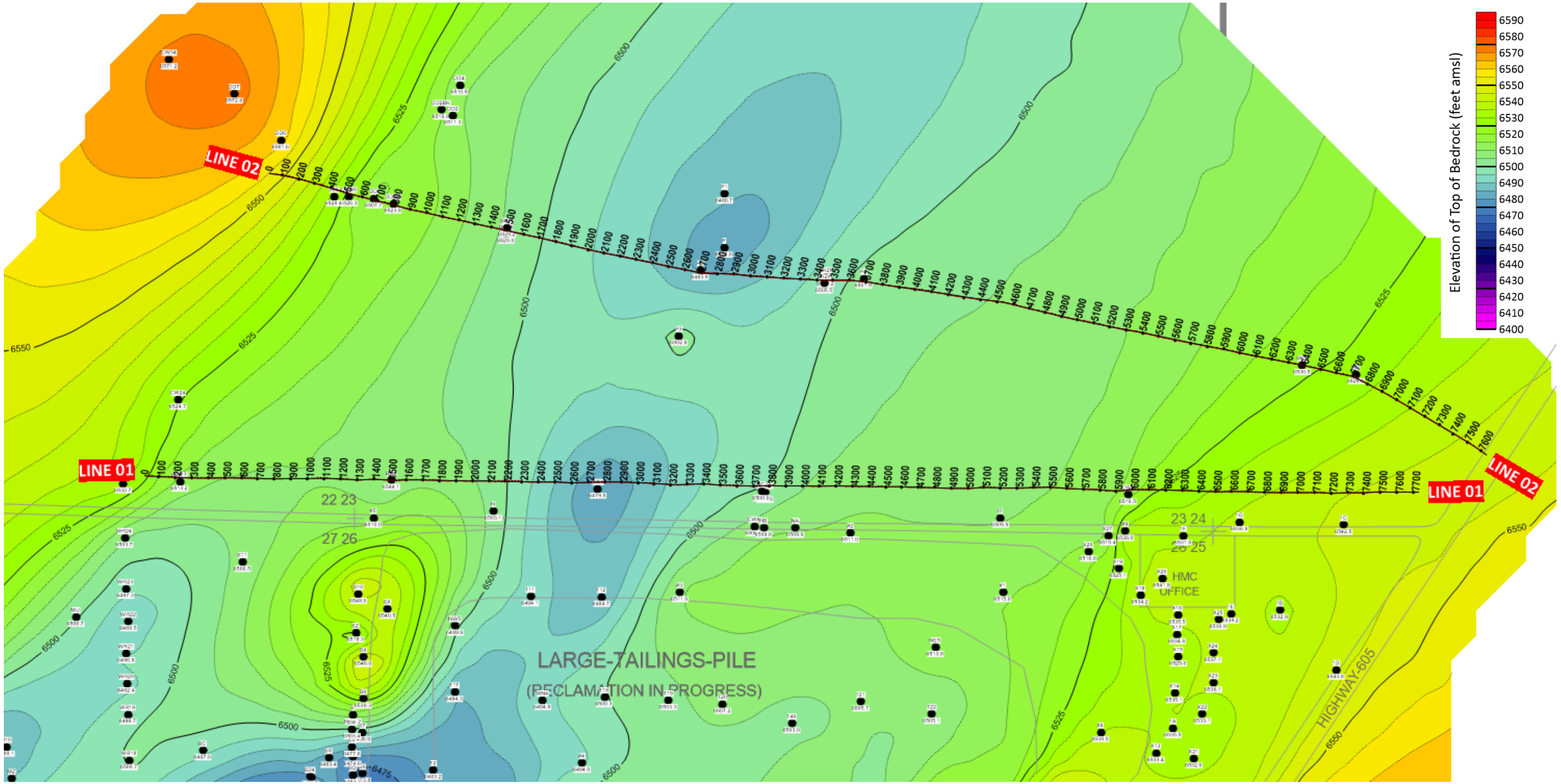
Attachment C6
Bedrock Elevation Data Used in Mapping
GRP Background Investigation

Boring_ID	SPCS Easting (feet)	SPCS Northing (feet)	Ground Elevation (feet amsl)	Depth to Bedrock (feet bgs)	Top of Bedrock Elevation (feet amsl)	Qualifier (include pre-BK=1, include post-BK=2,exclude=0)	Reason for Exclusion
#19	491030.00	1539515.00	6568.00	55	6513.00	1	
#20	490375.00	1538660.00	6564.00	60	6504.00	1	
DD7	488101.04	1547620.87	6592.64	20	6572.64	1	
DD6	488381.51	1547340.68	6594.15	32.5	6561.65	1	
DD5	488701.03	1547000.51	6593.42	65	6528.42	1	
DDBK	489059.41	1546956.47	6592.32	68.5	6523.82	1	
DD2BK	489349.6	1547523.69	6593.76	77	6516.76	1	
DD4	489460.41	1547672.58	6590.92	80	6510.92	1	
DD2	489421.8	1547489.41	6591.28	80	6511.28	1	
DD3	489592.93	1548258.88	6589.34	67	6522.34	1	
BK2f	491671.76	1546513.73	6585.75	81.5	6504.25	2	
BK2c	491662.42	1546475.18	6585.48	80	6505.48	2	
BK1c	489741.02	1546774.38	6587.45	62.5	6524.95	2	
BK1f	489748.34	1546812.43	6587.73	62.5	6525.23	2	
BK3	494548.28	1545981.75	6590.53	60	6530.53	2	
BK4	489049.05	1545287.36	6579.14	35	6544.14	2	

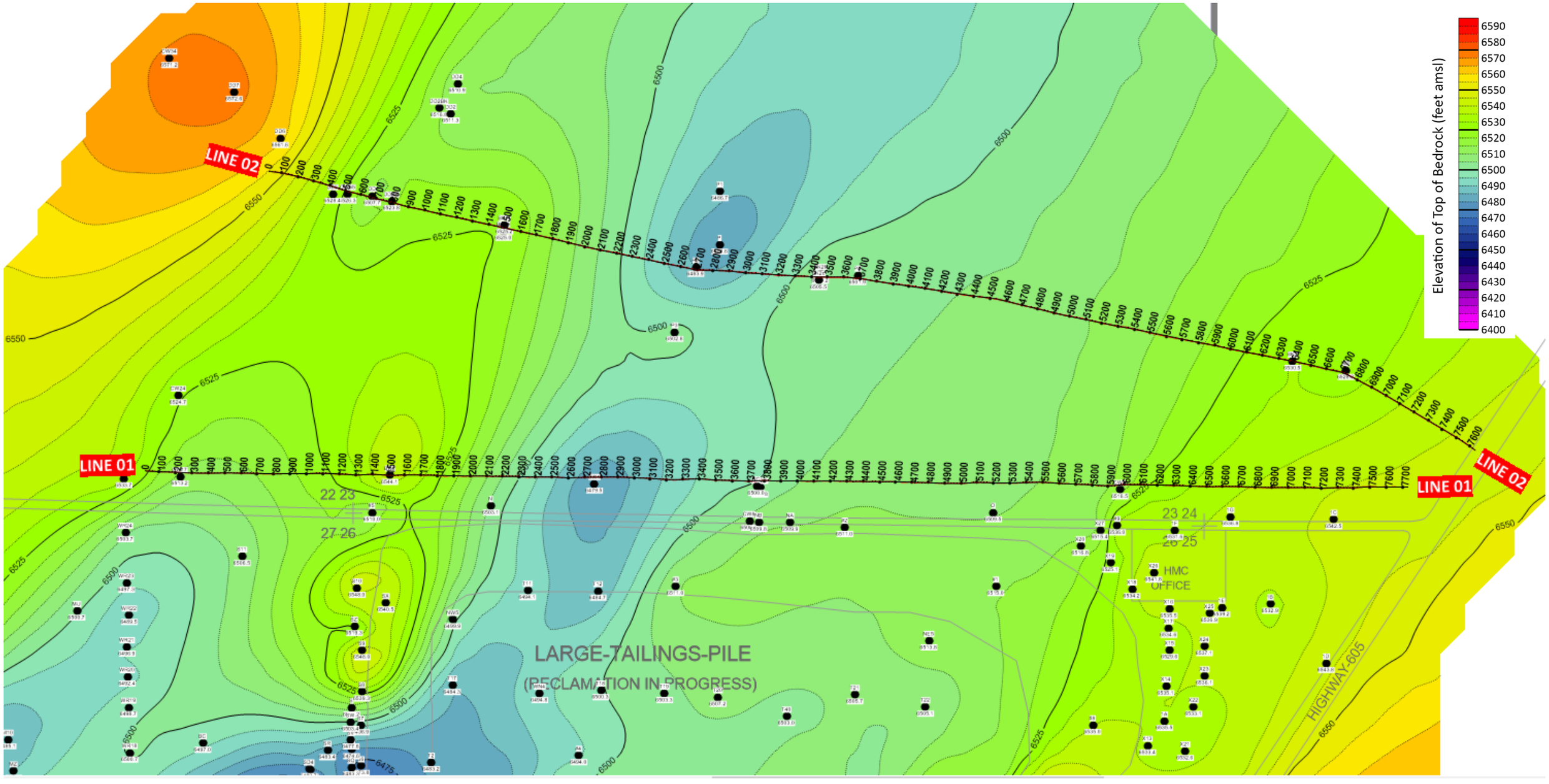
ATTACHMENT C7

Bedrock Interpretation Maps

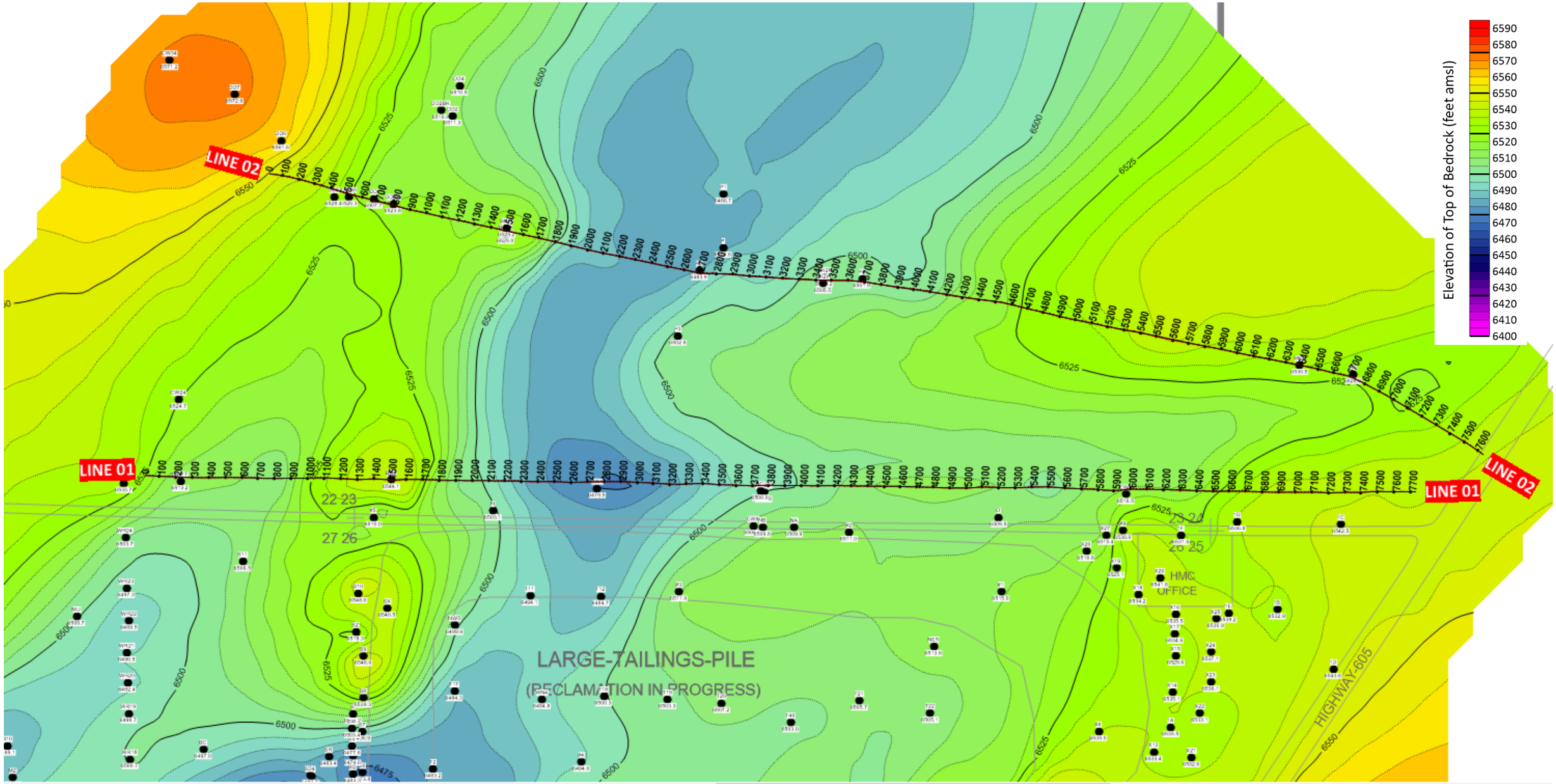
C7.1 - ARCADIS TOP OF ROCK CONTOUR MAP USING KRIGING. CREATED PRIOR TO BK BORINGS & ERT. 5 FT. C.I.



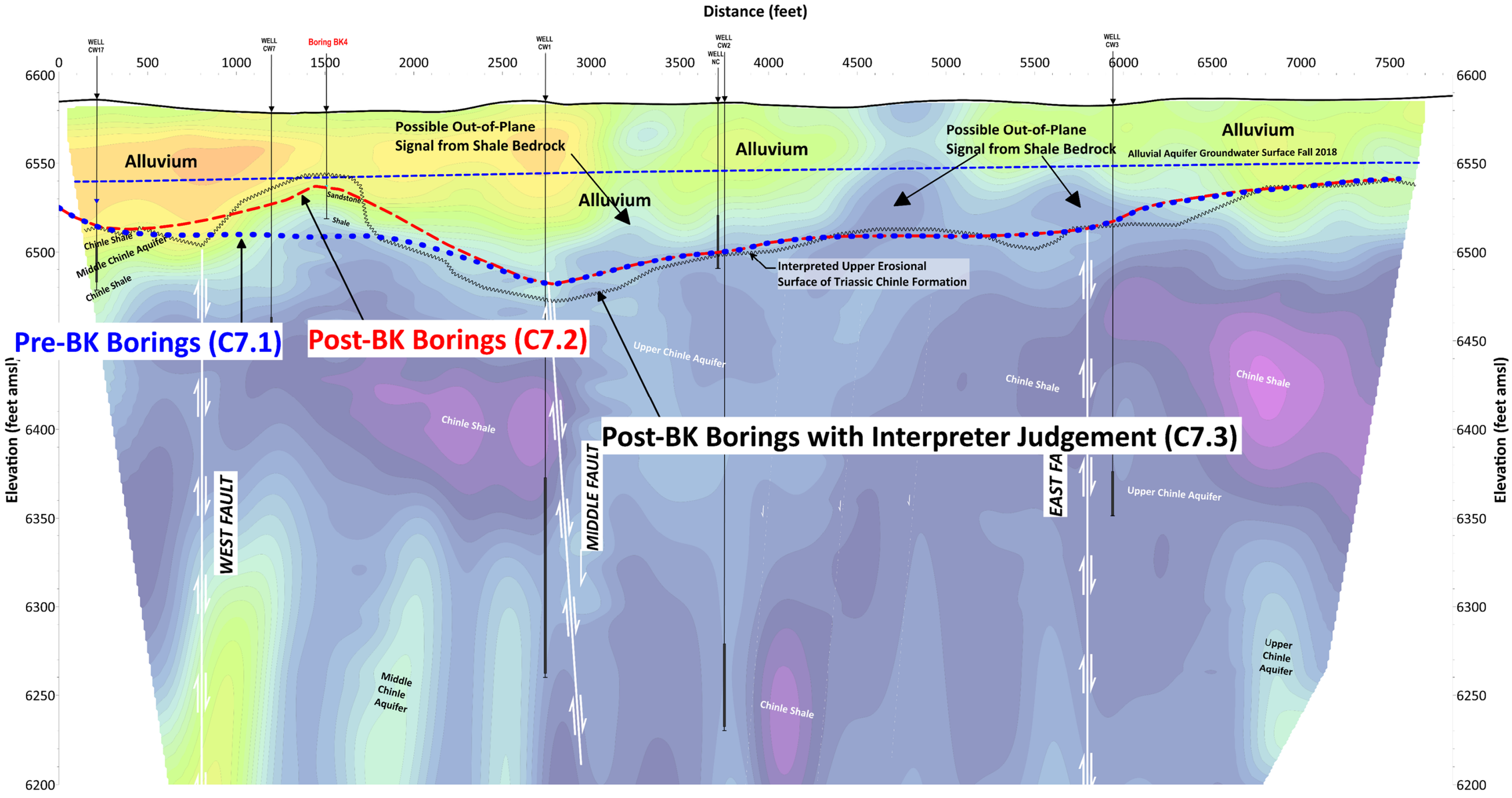
C7.2 - ARCADIS TOP OF ROCK CONTOUR MAP USING KRIGING. CREATED AFTER BK BORINGS. NO ERT INTERP. 5 FT. C.I.



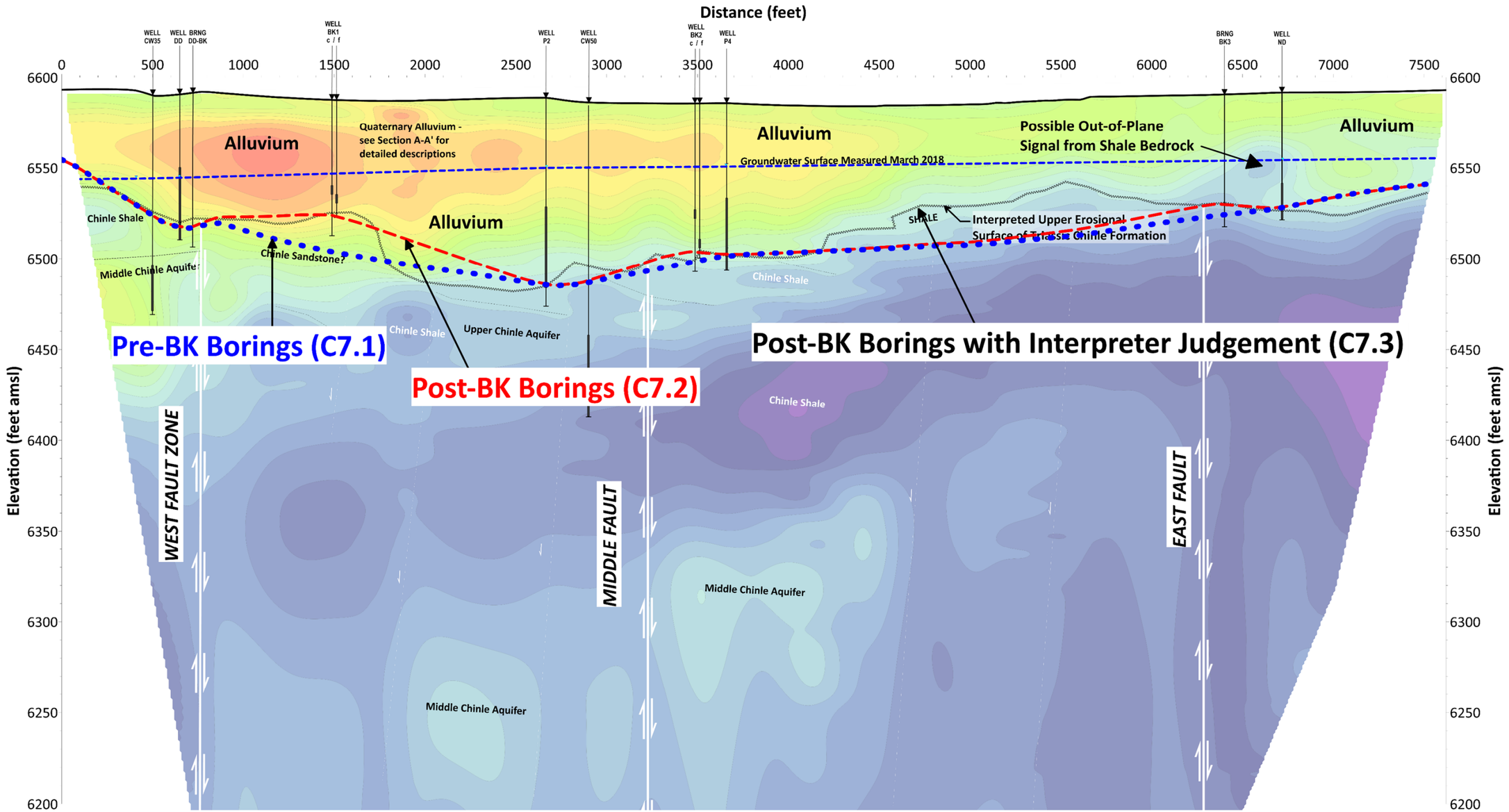
C7.3 - ARCADIS TOP OF ROCK CONTOUR MAP USING KRIGING. CREATED AFTER BK BORINGS. ERT INTERP. INCLUDED. 5 FT. C.I.



C7.4 – LINE 1. COMPARISON OF TOP OF BEDROCK BASED ON KRIGED MAPS VERSUS ADDITION OF INTERPRETER'S JUDGMENT

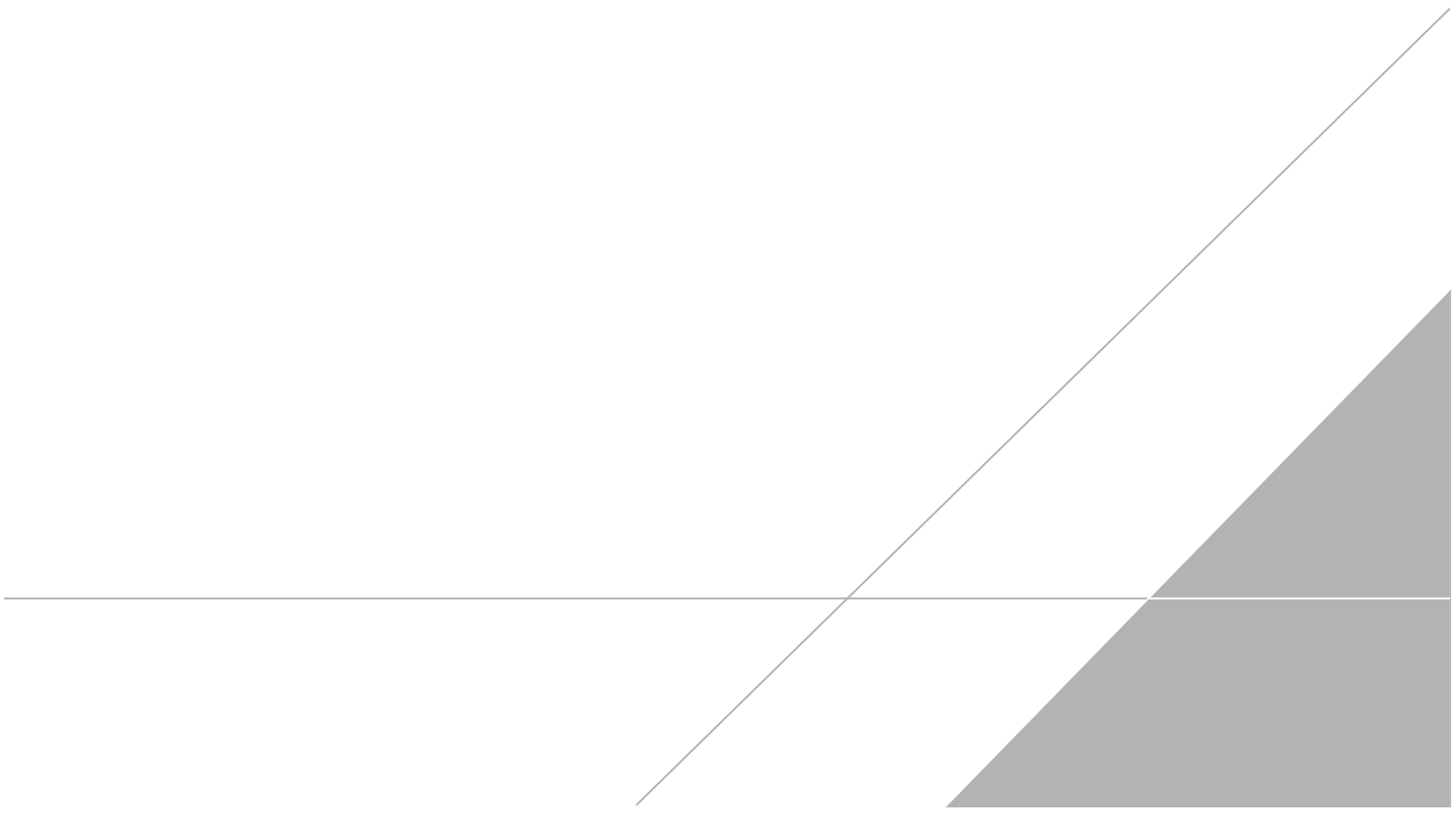


C7.5 – LINE 2. COMPARISON OF TOP OF BEDROCK BASED ON KRIGED MAPS VERSUS ADDITION OF INTERPRETER'S JUDGMENT



APPENDIX D

Comprised of parts D1 through D4



APPENDIX D1

Borehole Geophysical Graphic Logs

ARCADIS Design & Consultancy for natural and built assets

Geophysical Logging Services

Arcadis U.S., Inc.
630 Plaza Drive, Suite 200
Highlands Ranch, CO 80129

WELL NAME: WELL BK1c

CLIENT: BARRICK GOLD CORP.

PROJECT LOCATION: GRANTS, NEW MEXICO

WELL COORDINATES: 489725.8E, 1546819.3N

PROJECTION: NM WEST SPCS (FT), NAD27 Datum

SURFACE ELEVATION: 6587.5 FT. AMSL

CASING STICK-UP:

DEPTH TO GROUNDWATER:

CASING DIAM.: 6 IN. **LENGTH:** 75 FT.

O.H. DIAM.: **FROM:** **TO:**

DATE LOGGED: 05/20/2019

LOGGED BY: Gabriel Hebert

CASING TYPE: STEEL*

TOTAL DEPTH: 75 FT.

REMARKS:

*Natural Gamma and Spectral Gamma were collected on 5/20/19 in steel drilling pipe. Induction conductivity was collected in the final 2-in. PVC well on 5/29/19 after well construction.

Logging Probes Used

- [x] Natural Gamma
- [ ] SPR/SP
- [ ] Fluid Temperature/Resistivity
- [x] Induction Conductivity
- [ ] Normal Resistivity
- [ ] 3-Arm Caliper
- [ ] Acoustic Televiewer
- [ ] Optical Televiewer
- [ ] Heat Pulse Flow Meter
- [ ] Spinner Flow Meter
- [x] Spectral Gamma
- [ ] Full Waveform Sonic
- [ ] Nuclear Magnetic Resonance
- [ ] Other: _____

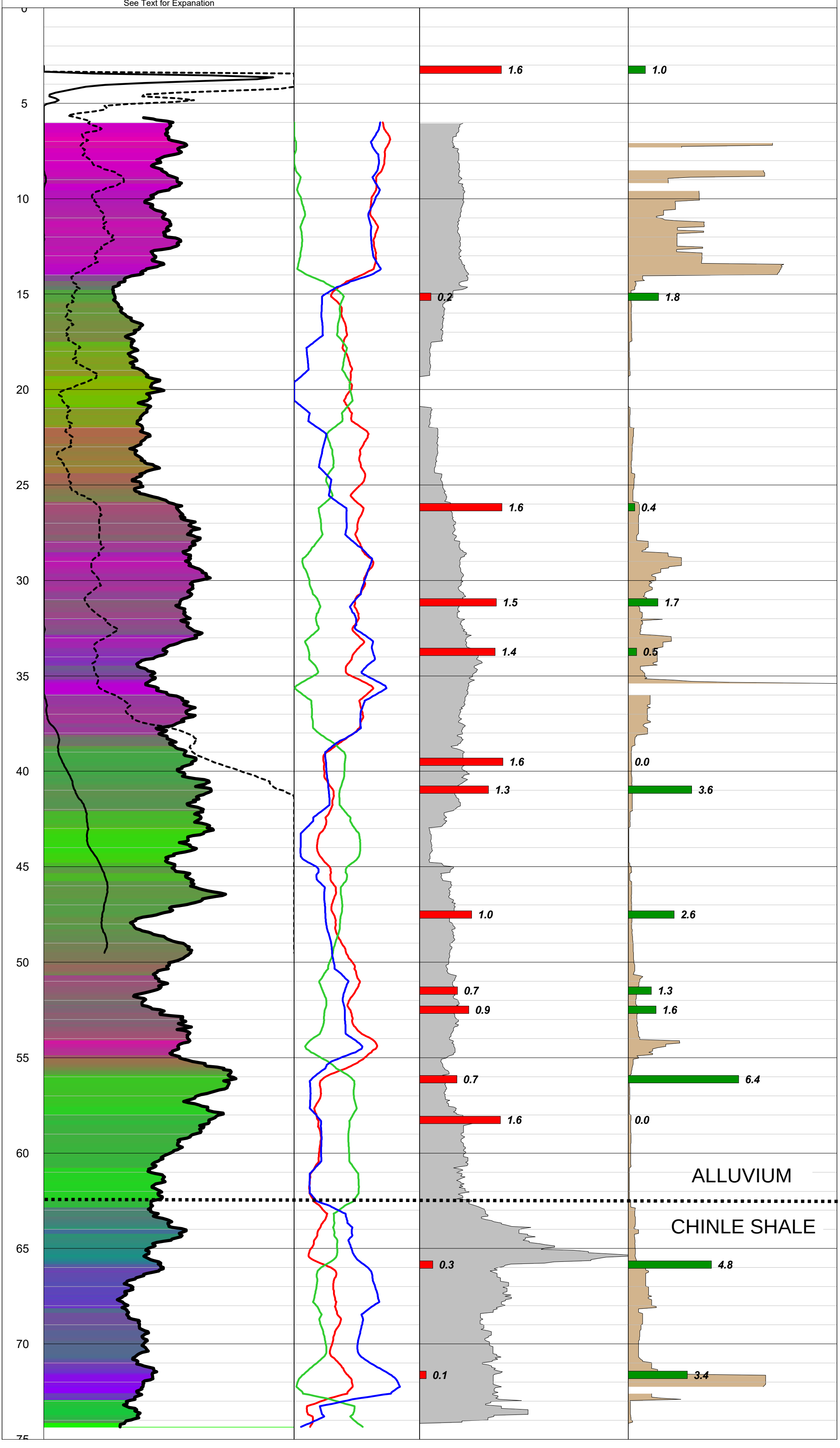
Depth 1ft:50ft

Natural Gamma (Corrected): 0 – API (units) – 140
Induction Conductivity (upper): -15 – mS/m – 40
Induction Conductivity (lower): 0 – mS/m – 300
KUT Color Cube (Color Fill Behind Nat. Gam.)
See Text for Expanation

GR_KRAT: 0 – unitless – 0.04
GR_URAT: 0 – unitless – 0.2
GR_THRAT: 0 – unitless – 0.2

Th/K: 0 – ppm/% – 25
K (static): 0 – % – 4

Th/U: 0 – ppm/ppm – 40
U (static): 0 – ppm – 12



Arcadis U.S., Inc.
630 Plaza Drive, Suite 200
Highlands Ranch, CO 80129

Geophysical Logging Services

WELL NAME: WELL BK2c

CLIENT: BARRICK GOLD CORP.

PROJECT LOCATION: GRANTS, NEW MEXICO

WELL COORDINATES: 491714.1E, 1546574.8N

PROJECTION: NM WEST SPCS (FT), NAD27 Datum

SURFACE ELEVATION: 6585.5 FT. AMSL

CASING STICK-UP:

DEPTH TO GROUNDWATER:

CASING DIAM.: 6 IN. **LENGTH:**

O.H. DIAM.: **FROM:** **TO:**

DATE LOGGED: 05/15/2019

LOGGED BY: Gabriel Hebert

CASING TYPE: STEEL*

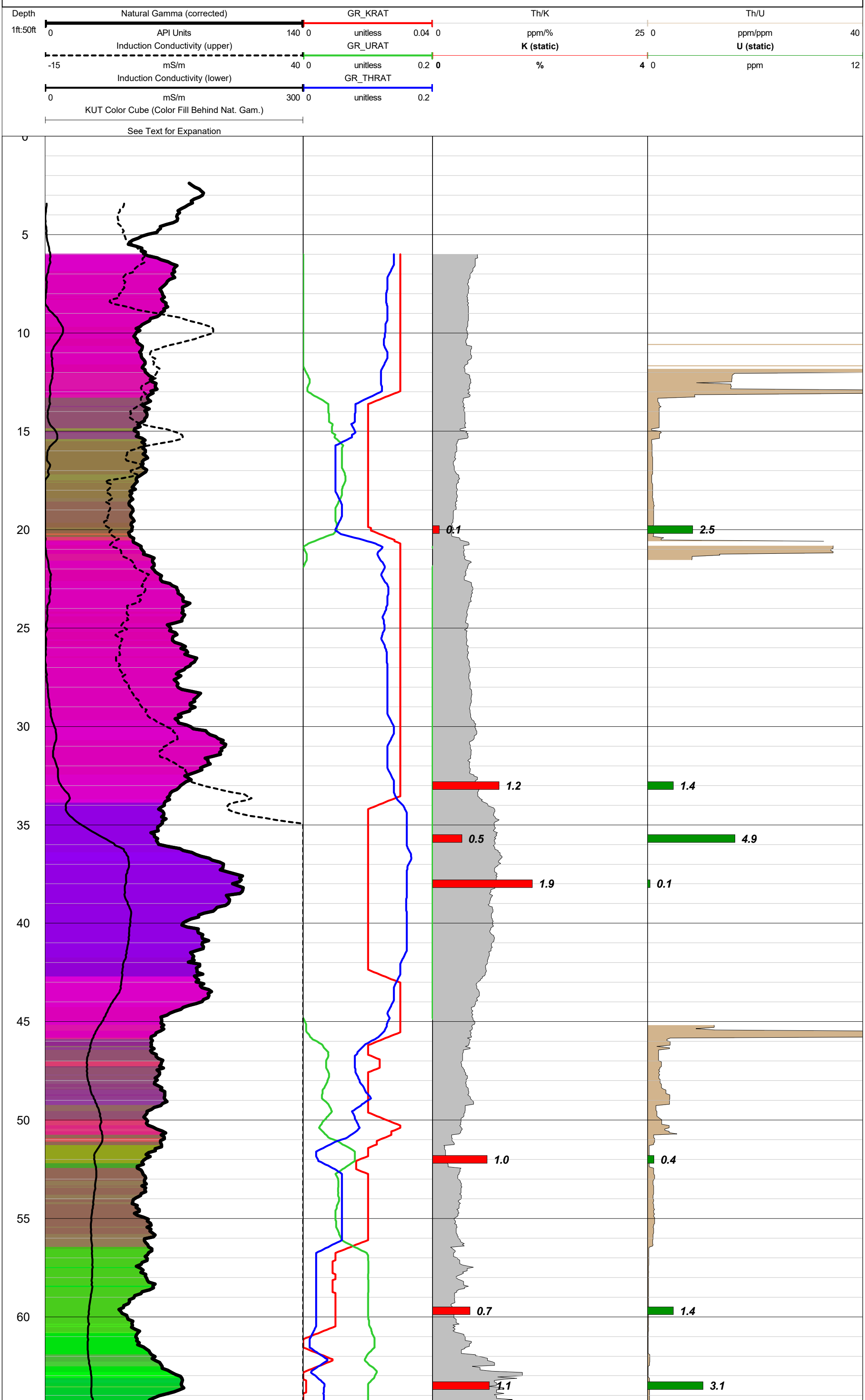
TOTAL DEPTH: 92.5 FT.

REMARKS:

*Natural Gamma and Spectral Gamma were collected on 5/15/19 in steel drilling pipe. Induction conductivity was collected in the final 2-in. PVC well on 5/18/19 after well construction.

Logging Probes Used

- [x] Natural Gamma
- [ ] SPR/SP
- [ ] Fluid Temperature/Resistivity
- [x] Induction Conductivity
- [ ] Normal Resistivity
- [ ] 3-Arm Caliper
- [ ] Acoustic Televiewer
- [ ] Optical Televiewer
- [ ] Heat Pulse Flow Meter
- [ ] Spinner Flow Meter
- [x] Spectral Gamma
- [ ] Full Waveform Sonic
- [ ] Nuclear Magnetic Resonance
- [ ] Other: _____



ARCADIS Design & Consultancy for natural and built assets

Arcadis U.S., Inc.
630 Plaza Drive, Suite 200
Highlands Ranch, CO 80129

Geophysical Logging Services

WELL NAME: BORING BK3 **CLIENT:** BARRICK GOLD CORP.

PROJECT LOCATION: GRANTS, NEW MEXICO

WELL COORDINATES: 494562.2E, 1545991.8N **DATE LOGGED:** 05/21/2019

PROJECTION: NM WEST SPCS (FT), NAD27 Datum **LOGGED BY:** Gabriel Hebert

SURFACE ELEVATION: 6590.5 FT. AMSL **CASING TYPE:** PVC RISER

CASING STICK-UP: **TOTAL DEPTH:** 73 FT.

DEPTH TO GROUNDWATER: **REMARKS:**

CASING DIAM.: 2 IN. **LENGTH:** 73.0

O.H. DIAM.: 6 IN. **FROM:** 0 **TO:** 73 FT.

Logging Probes Used

- [x] Natural Gamma
- [ ] SPR/SP
- [ ] Fluid Temperature/Resistivity
- [x] Induction Conductivity
- [ ] Normal Resistivity
- [ ] 3-Arm Caliper
- [ ] Acoustic Televiewer
- [ ] Optical Televiewer
- [ ] Heat Pulse Flow Meter
- [ ] Spinner Flow Meter
- [x] Spectral Gamma
- [ ] Full Waveform Sonic
- [ ] Nuclear Magnetic Resonance
- [ ] Other: _____

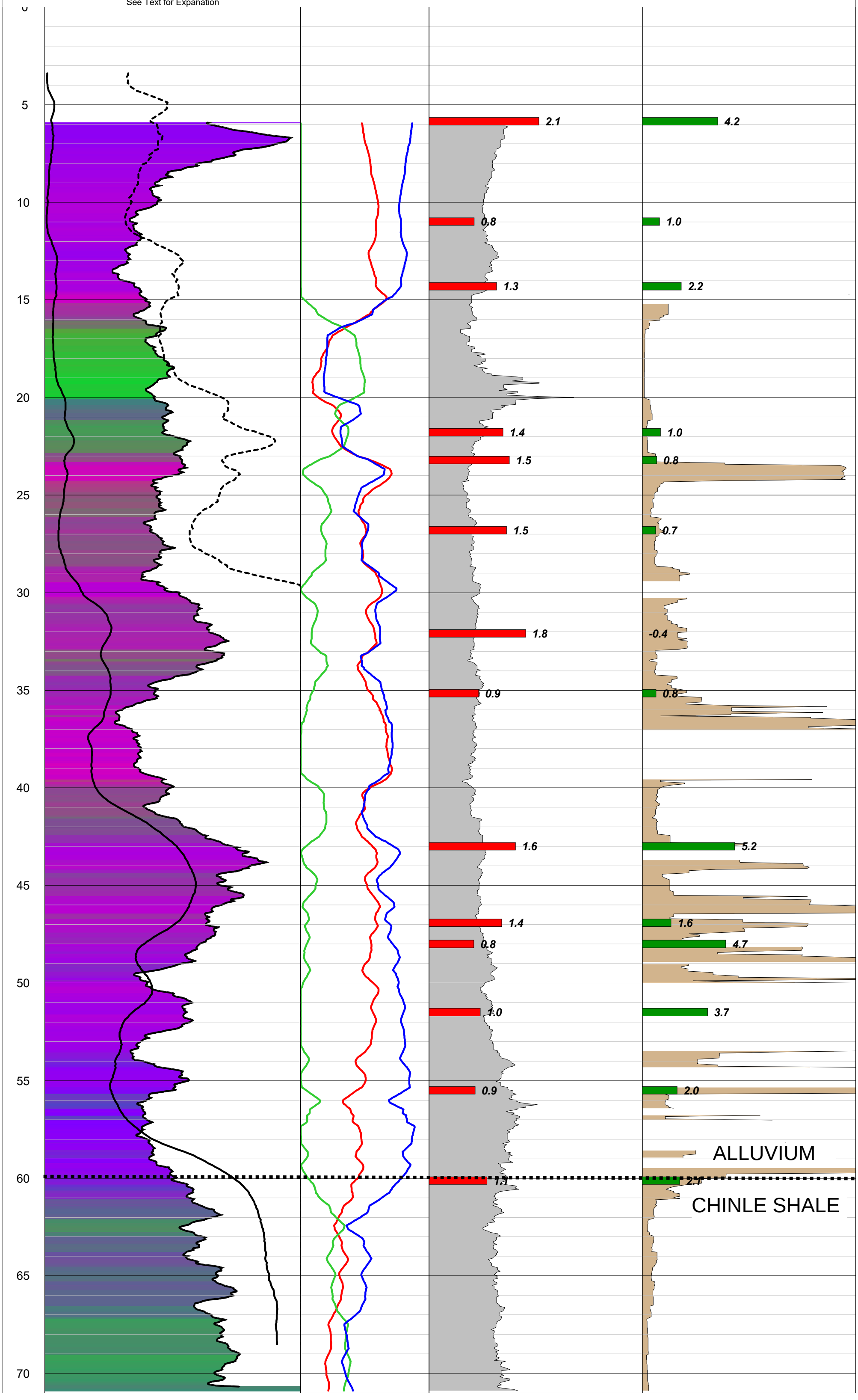
Depth 1ft:50ft

Natural Gamma: 0 API 140
Induction Conductivity (upper): -15 mS/m 40
Induction Conductivity (lower): 0 mS/m 300
KUT Color Cube (Color Fill Behind Nat. Gam.)
See Text for Expanation

GR_KRAT: 0 unitless 0.04
GR_URAT: 0 unitless 0.2
GR_THRAT: 0 unitless 0.2

Th/K: 0 ppm/% 25
K (static): 0 % 4

Th/U: 0 ppm/ppm 40
U (static): 0 ppm 12



Arcadis U.S., Inc.
630 Plaza Drive, Suite 200
Highlands Ranch, CO 80129

Geophysical Logging Services

WELL NAME: BORING BK4

CLIENT: BARRICK GOLD CORP.

PROJECT LOCATION: GRANTS, NEW MEXICO

WELL COORDINATES: 489011.6E, 1545301.8N

PROJECTION: NM WEST SPCS (FT), NAD27 Datum

SURFACE ELEVATION: 6579.1 FT. AMSL

CASING STICK-UP:

DEPTH TO GROUNDWATER:

CASING DIAM.: 2 IN. **LENGTH:**

O.H. DIAM.: 6 IN. **FROM:** 0 **TO:** 61 FT.

DATE LOGGED: 05/29/2019

LOGGED BY: Gabriel Hebert

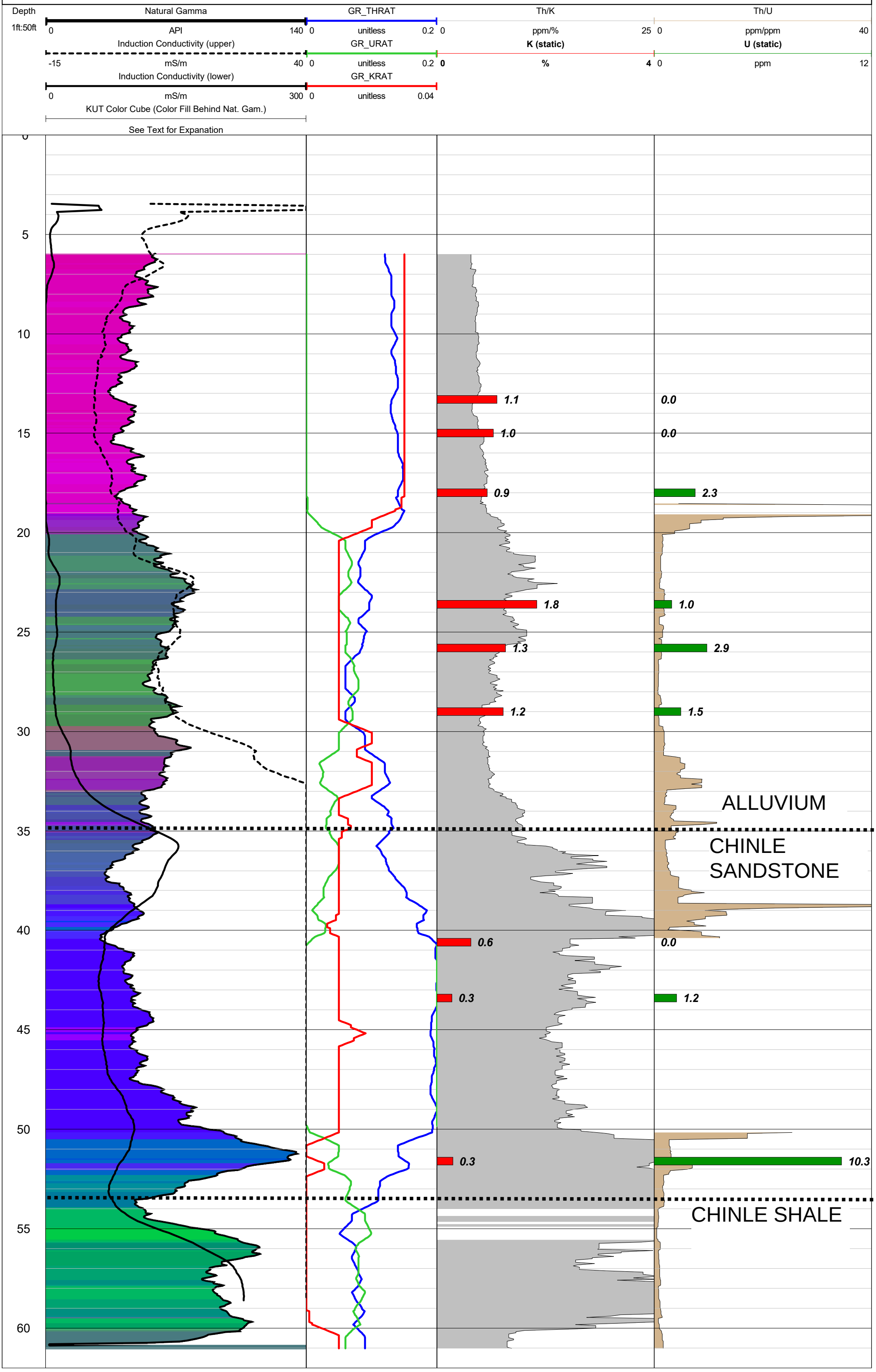
CASING TYPE: PVC RISER

TOTAL DEPTH: 61.0 FT.

REMARKS:

Logging Probes Used

- [x] Natural Gamma
- [ ] SPR/SP
- [ ] Fluid Temperature/Resistivity
- [x] Induction Conductivity
- [ ] Normal Resistivity
- [ ] 3-Arm Caliper
- [ ] Acoustic Televiewer
- [ ] Optical Televiewer
- [ ] Heat Pulse Flow Meter
- [ ] Spinner Flow Meter
- [x] Spectral Gamma
- [ ] Full Waveform Sonic
- [ ] Nuclear Magnetic Resonance
- [ ] Other: _____



ARCADIS Design & Consultancy for natural and built assets

Arcadis U.S., Inc.
630 Plaza Drive, Suite 200
Highlands Ranch, CO 80129

Geophysical Logging Services

WELL NAME: BORING DD-BK

CLIENT: BARRICK GOLD CORP.

PROJECT LOCATION: GRANTS, NEW MEXICO

WELL COORDINATES: 489349.6E, 1547523.7N

PROJECTION: NM WEST SPCS (FT), NAD27 Datum

SURFACE ELEVATION: 6593.8 FT. AMSL

CASING STICK-UP:

DEPTH TO GROUNDWATER:

CASING DIAM.: 2 IN. **LENGTH:** 100 FT

O.H. DIAM.: 6 IN. **FROM:** 0 **TO:** 100 FT.

DATE LOGGED: 01/24/2018

LOGGED BY: Gabriel Hebert

CASING TYPE: TEMPORARY PVC RISER

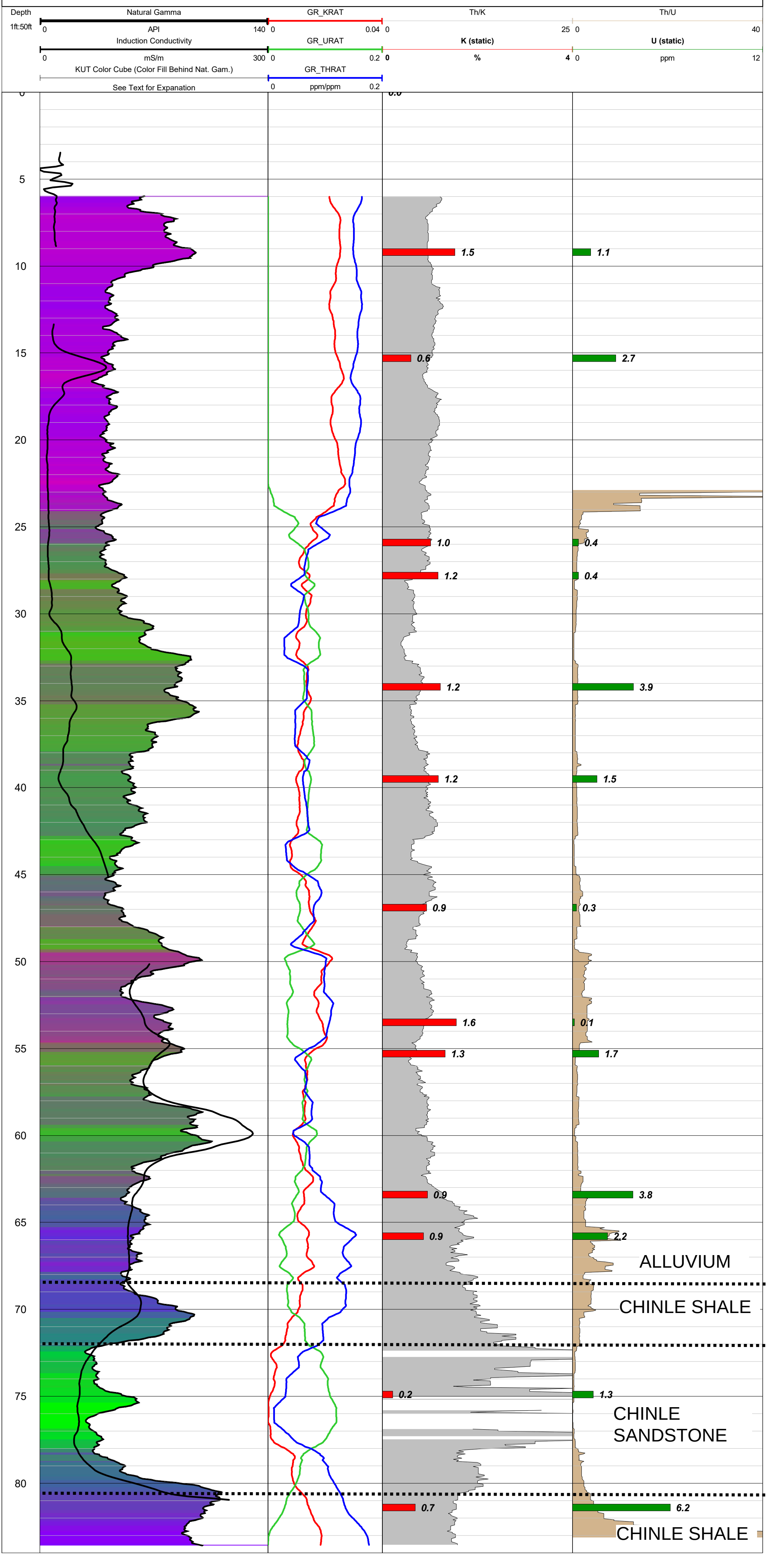
TOTAL DEPTH: 100 FEET

REMARKS:

Data Reprocessed 7/28/2019

Logging Probes Used

- [x] Natural Gamma
- [ ] SPR/SP
- [ ] Fluid Temperature/Resistivity
- [x] Induction Conductivity
- [ ] Normal Resistivity
- [ ] 3-Arm Caliper
- [ ] Acoustic Televiewer
- [ ] Optical Televiewer
- [ ] Heat Pulse Flow Meter
- [ ] Spinner Flow Meter
- [x] Spectral Gamma
- [ ] Full Waveform Sonic
- [ ] Nuclear Magnetic Resonance
- [ ] Other: _____



ARCADIS Design & Consultancy for natural and built assets

Geophysical Logging Services

Arcadis U.S., Inc.
630 Plaza Drive, Suite 200
Highlands Ranch, CO 80129

WELL NAME: BORING DD2-BK

CLIENT: BARRICK GOLD CORP.

PROJECT LOCATION: GRANTS, NEW MEXICO

WELL COORDINATES: 489349.6E, 1547523.7N

PROJECTION: NM WEST SPCS (FT), NAD27 Datum

SURFACE ELEVATION: 6593.8 FT. AMSL

CASING STICK-UP:

DEPTH TO GROUNDWATER:

CASING DIAM.: 2 IN. **LENGTH:** 100 FT.

O.H. DIAM.: 6 IN. **FROM:** 0 **TO:** 100 FT.

DATE LOGGED: 01/24/2018

LOGGED BY: Gabriel Hebert

CASING TYPE: TEMPORARY PVC RISER

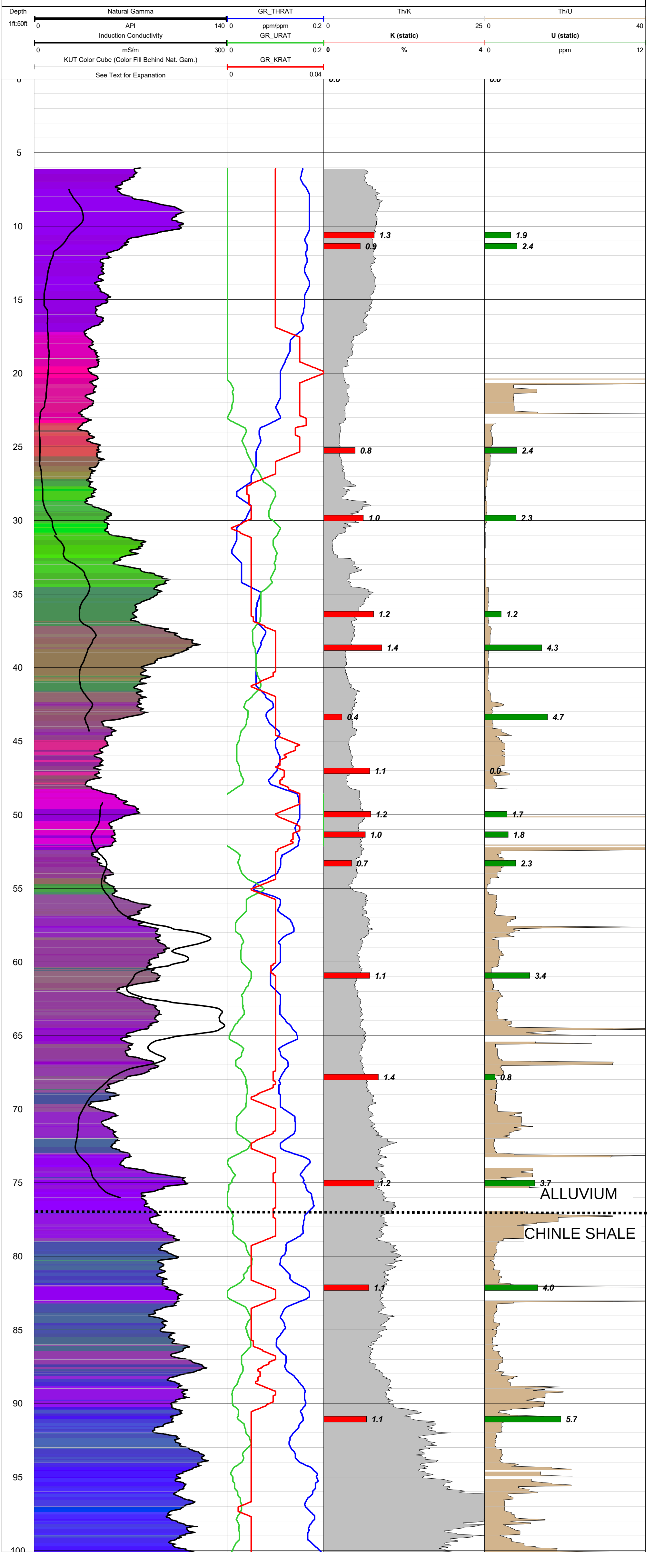
TOTAL DEPTH: 100 FEET

REMARKS:

Data Reprocessed 7/28/2019

Logging Probes Used

- [x] Natural Gamma
- [ ] SPR/SP
- [ ] Fluid Temperature/Resistivity
- [x] Induction Conductivity
- [ ] Normal Resistivity
- [ ] 3-Arm Caliper
- [ ] Acoustic Televiewer
- [ ] Optical Televiewer
- [ ] Heat Pulse Flow Meter
- [ ] Spinner Flow Meter
- [x] Spectral Gamma
- [ ] Full Waveform Sonic
- [ ] Nuclear Magnetic Resonance
- [ ] Other: _____



APPENDIX D2

Summary of Geophysical Logging Data

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
3.044	-9999.990	-133.377	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.104	-9999.990	-66.251	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.164	-9999.990	-66.251	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.224	-9999.990	-117.270	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	1.568	0.995
3.284	-9999.990	-117.270	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.344	-9999.990	-108.554	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.404	-9999.990	36.886	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.464	-9999.990	36.886	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.524	-9999.990	247.354	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.584	-9999.990	247.354	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.644	-9999.990	315.180	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.704	-9999.990	262.038	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.764	-9999.990	262.038	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.824	-9999.990	188.619	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.884	-9999.990	188.619	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
3.944	-9999.990	109.548	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.004	-9999.990	65.205	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.064	-9999.990	65.205	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.124	-9999.990	48.328	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.184	-9999.990	48.328	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.244	-9999.990	38.040	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.304	-9999.990	23.950	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.364	-9999.990	23.950	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.424	-9999.990	14.860	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.484	-9999.990	14.860	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.544	-9999.990	3.498	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.604	-9999.990	2.589	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.664	-9999.990	2.589	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.724	-9999.990	13.850	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.784	-9999.990	13.850	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.844	-9999.990	26.677	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.904	-9999.990	13.497	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
4.964	-9999.990	13.497	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.024	-9999.990	0.215	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.084	-9999.990	0.215	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.144	-9999.990	-2.411	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.204	-9999.990	-2.866	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.264	-9999.990	-2.866	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.324	-9999.990	1.680	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.384	-9999.990	1.680	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.444	-9999.990	-3.320	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.504	-9999.990	-10.138	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.564	-9999.990	-10.138	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.624	-9999.990	-10.592	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.684	-9999.990	-10.592	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.744	-9999.990	-8.320	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.804	-9999.990	-4.835	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.864	-9999.990	-4.835	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.924	-9999.990	-5.593	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
5.984	-9999.990	-5.593	-9999.9900	-9999.9900	-9999.9900		-9999.990	-9999.990	-9999.990	-9999.990
6.044	55.861	-3.775	0.0272	0.0000	0.1411	255.255.255	5.185	-9999.990	-9999.990	-9999.990
6.104	66.660	-6.350	0.0284	0.0000	0.1365	199.0.200	4.811	-9999.990	-9999.990	-9999.990
6.164	66.660	-6.350	0.0284	0.0000	0.1365	207.0.194	4.811	-9999.990	-9999.990	-9999.990
6.224	86.235	-3.775	0.0284	0.0000	0.1365	207.0.194	4.811	-9999.990	-9999.990	-9999.990
6.284	86.236	-3.775	0.0289	0.0000	0.1343	207.0.194	4.643	-9999.990	-9999.990	-9999.990
6.344	60.586	1.225	0.0287	0.0000	0.1350	211.0.191	4.698	-9999.990	-9999.990	-9999.990
6.404	72.735	-4.330	0.0287	0.0000	0.1350	210.0.192	4.698	-9999.990	-9999.990	-9999.990
6.464	72.735	-4.330	0.0287	0.0000	0.1350	210.0.192	4.698	-9999.990	-9999.990	-9999.990
6.524	65.986	-5.593	0.0293	0.0000	0.1329	210.0.192	4.537	-9999.990	-9999.990	-9999.990
6.584	65.985	-6.855	0.0298	0.0000	0.1308	214.0.188	4.387	-9999.990	-9999.990	-9999.990
6.644	54.513	-6.855	0.0298	0.0000	0.1308	218.0.185	4.387	-9999.990	-9999.990	-9999.990
6.704	62.611	-7.411	0.0298	0.0000	0.1308	218.0.185	4.387	-9999.990	-9999.990	-9999.990
6.764	62.611	-7.411	0.0313	0.0000	0.1249	218.0.185	3.992	-9999.990	-9999.990	-9999.990
6.824	72.735	-5.138	0.0313	0.0000	0.1249	228.0.177	3.992	-9999.990	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
6.884	72.735	-5.845	0.0313	0.0000	0.1249	228.0.177	3.992	-9999.990	-9999.990	-9999.990
6.944	87.923	-5.845	0.0313	0.0000	0.1249	228.0.177	3.992	-9999.990	-9999.990	-9999.990
7.004	76.112	-4.684	0.0318	0.0000	0.1230	228.0.177	3.874	-9999.990	-9999.990	-9999.990
7.064	76.110	-4.684	0.0300	0.0044	0.1211	232.0.174	4.030	27.665	-9999.990	-9999.990
7.124	69.360	-7.865	0.0300	0.0044	0.1211	219.8.172	4.030	27.665	-9999.990	-9999.990
7.184	69.360	-7.360	0.0300	0.0044	0.1211	219.8.172	4.030	27.665	-9999.990	-9999.990
7.244	84.885	-7.360	0.0277	0.0114	0.1163	219.8.172	4.200	10.174	-9999.990	-9999.990
7.304	92.986	-5.593	0.0287	0.0110	0.1132	202.23.165	3.948	10.269	-9999.990	-9999.990
7.364	92.987	-5.593	0.0290	0.0000	0.1339	209.22.161	4.613	-9999.990	-9999.990	-9999.990
7.424	78.811	-6.956	0.0290	0.0000	0.1339	212.0.190	4.613	-9999.990	-9999.990	-9999.990
7.484	78.810	-5.138	0.0294	0.0000	0.1323	212.0.190	4.496	-9999.990	-9999.990	-9999.990
7.544	59.237	-5.138	0.0293	0.0000	0.1328	215.0.188	4.534	-9999.990	-9999.990	-9999.990
7.604	60.586	-6.855	0.0288	0.0000	0.1350	214.0.188	4.694	-9999.990	-9999.990	-9999.990
7.664	60.586	-6.855	0.0288	0.0000	0.1350	210.0.191	4.694	-9999.990	-9999.990	-9999.990
7.724	79.485	-6.047	0.0288	0.0000	0.1350	210.0.191	4.694	-9999.990	-9999.990	-9999.990
7.784	79.485	-6.502	0.0288	0.0000	0.1350	210.0.191	4.694	-9999.990	-9999.990	-9999.990
7.844	79.485	-6.502	0.0288	0.0000	0.1350	210.0.191	4.694	-9999.990	-9999.990	-9999.990
7.904	69.698	-4.229	0.0288	0.0000	0.1350	210.0.191	4.694	-9999.990	-9999.990	-9999.990
7.964	69.698	-4.229	0.0288	0.0000	0.1350	210.0.191	4.694	-9999.990	-9999.990	-9999.990
8.024	52.487	-4.330	0.0292	0.0000	0.1333	210.0.191	4.571	-9999.990	-9999.990	-9999.990
8.084	52.487	-5.138	0.0292	0.0000	0.1333	213.0.189	4.571	-9999.990	-9999.990	-9999.990
8.144	60.585	-5.138	0.0286	0.0000	0.1355	213.0.189	4.734	-9999.990	-9999.990	-9999.990
8.204	45.739	-3.320	0.0285	0.0000	0.1361	209.0.192	4.777	-9999.990	-9999.990	-9999.990
8.264	45.738	-3.320	0.0285	0.0000	0.1361	208.0.193	4.777	-9999.990	-9999.990	-9999.990
8.324	81.845	-3.825	0.0285	0.0000	0.1361	208.0.193	4.777	-9999.990	-9999.990	-9999.990
8.384	81.848	-0.593	0.0285	0.0000	0.1361	208.0.193	4.777	-9999.990	-9999.990	-9999.990
8.444	52.488	-0.593	0.0289	0.0000	0.1344	208.0.193	4.652	-9999.990	-9999.990	-9999.990
8.504	59.236	-9999.990	0.0272	0.0051	0.1311	211.0.191	4.823	25.902	-9999.990	-9999.990
8.564	59.236	-9999.990	0.0272	0.0051	0.1311	198.10.186	4.823	25.902	-9999.990	-9999.990
8.624	81.846	-0.290	0.0276	0.0050	0.1296	198.10.186	4.694	26.136	-9999.990	-9999.990
8.684	79.486	2.134	0.0276	0.0050	0.1296	201.10.184	4.694	26.136	-9999.990	-9999.990
8.744	79.485	2.134	0.0276	0.0050	0.1296	201.10.184	4.694	26.136	-9999.990	-9999.990
8.804	57.549	1.730	0.0276	0.0050	0.1296	201.10.184	4.694	26.136	-9999.990	-9999.990
8.864	57.549	1.730	0.0258	0.0106	0.1256	201.10.184	4.869	11.790	-9999.990	-9999.990
8.924	62.610	3.043	0.0241	0.0160	0.1217	188.21.178	5.057	7.609	-9999.990	-9999.990
8.984	86.234	2.589	0.0245	0.0158	0.1204	176.32.173	4.914	7.630	-9999.990	-9999.990
9.044	86.236	2.589	0.0249	0.0156	0.1191	179.32.171	4.779	7.650	-9999.990	-9999.990
9.104	75.773	2.235	0.0253	0.0154	0.1179	182.31.169	4.652	7.671	-9999.990	-9999.990
9.164	75.773	2.235	0.0253	0.0154	0.1179	185.31.167	4.651	7.671	-9999.990	-9999.990
9.224	79.485	3.043	0.0273	0.0000	0.1409	185.31.167	5.168	-9999.990	-9999.990	-9999.990
9.284	79.485	-0.593	0.0276	0.0000	0.1395	199.0.200	5.049	-9999.990	-9999.990	-9999.990
9.344	79.485	-0.593	0.0275	0.0000	0.1400	202.0.198	5.089	-9999.990	-9999.990	-9999.990
9.404	81.848	0.215	0.0270	0.0000	0.1419	201.0.199	5.250	-9999.990	-9999.990	-9999.990
9.464	81.848	0.215	0.0270	0.0000	0.1419	197.0.201	5.250	-9999.990	-9999.990	-9999.990
9.524	45.740	-3.320	0.0273	0.0000	0.1410	197.0.201	5.170	-9999.990	-9999.990	-9999.990
9.584	62.609	-2.411	0.0246	0.0097	0.1323	199.0.200	5.387	13.571	-9999.990	-9999.990
9.644	62.611	-2.411	0.0246	0.0097	0.1323	179.19.188	5.387	13.571	-9999.990	-9999.990
9.704	63.623	-4.684	0.0249	0.0096	0.1311	179.19.188	5.258	13.622	-9999.990	-9999.990
9.764	63.623	-4.684	0.0249	0.0096	0.1311	182.19.186	5.258	13.622	-9999.990	-9999.990
9.824	69.360	-4.835	0.0249	0.0096	0.1311	182.19.186	5.258	13.622	-9999.990	-9999.990
9.884	45.402	-3.775	0.0249	0.0096	0.1311	182.19.186	5.258	13.622	-9999.990	-9999.990
9.944	45.401	-3.775	0.0249	0.0096	0.1311	182.19.186	5.258	13.622	-9999.990	-9999.990
10.004	69.358	-4.684	0.0249	0.0096	0.1311	182.19.186	5.258	13.622	-9999.990	-9999.990
10.064	69.360	-4.684	0.0253	0.0095	0.1298	182.19.186	5.134	13.675	-9999.990	-9999.990
10.124	60.586	-2.866	0.0239	0.0140	0.1265	184.19.184	5.304	9.004	-9999.990	-9999.990
10.184	62.611	-4.330	0.0239	0.0141	0.1265	174.28.179	5.304	9.004	-9999.990	-9999.990
10.244	62.611	-4.330	0.0242	0.0139	0.1254	174.28.179	5.177	9.027	-9999.990	-9999.990
10.304	42.365	-2.866	0.0242	0.0139	0.1254	177.28.178	5.177	9.027	-9999.990	-9999.990
10.364	42.364	-2.866	0.0246	0.0137	0.1242	177.28.178	5.054	9.050	-9999.990	-9999.990
10.424	52.487	-3.775	0.0246	0.0137	0.1242	179.28.176	5.054	9.050	-9999.990	-9999.990
10.484	69.360	-1.957	0.0249	0.0136	0.1231	179.28.176	4.940	9.073	-9999.990	-9999.990
10.544	69.360	-1.957	0.0249	0.0136	0.1231	182.27.175	4.940	9.073	-9999.990	-9999.990
10.604	69.698	-2.815	0.0239	0.0175	0.1192	182.27.175	4.978	6.792	-9999.990	-9999.990
10.664	69.698	-2.815	0.0239	0.0175	0.1192	175.35.169	4.978	6.792	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
10.724	55.861	-2.866	0.0243	0.0174	0.1182	175.35.169	4.868	6.805	-9999.990	-9999.990
10.784	72.735	-0.290	0.0243	0.0174	0.1182	177.35.168	4.868	6.805	-9999.990	-9999.990
10.844	72.735	-0.290	0.0243	0.0174	0.1182	177.35.168	4.868	6.805	-9999.990	-9999.990
10.904	76.110	-2.411	0.0233	0.0211	0.1144	177.35.168	4.905	5.418	-9999.990	-9999.990
10.964	76.110	-2.411	0.0237	0.0209	0.1135	170.43.162	4.797	5.426	-9999.990	-9999.990
11.024	48.440	-2.310	0.0247	0.0178	0.1157	173.42.161	4.685	6.509	-9999.990	-9999.990
11.084	65.985	-1.048	0.0249	0.0167	0.1171	180.36.164	4.705	7.019	-9999.990	-9999.990
11.144	65.985	-1.048	0.0255	0.0130	0.1219	182.34.166	4.772	9.402	-9999.990	-9999.990
11.204	62.611	-2.411	0.0273	0.0085	0.1239	186.26.173	4.541	14.572	-9999.990	-9999.990
11.264	62.611	-2.411	0.0269	0.0086	0.1250	199.17.176	4.639	14.512	-9999.990	-9999.990
11.324	75.772	-0.290	0.0269	0.0086	0.1250	197.17.177	4.639	14.512	-9999.990	-9999.990
11.384	82.861	-2.866	0.0273	0.0085	0.1239	197.17.177	4.543	14.571	-9999.990	-9999.990
11.444	82.861	-2.866	0.0273	0.0085	0.1239	199.17.176	4.543	14.571	-9999.990	-9999.990
11.504	76.111	-1.048	0.0259	0.0128	0.1209	199.17.176	4.673	9.413	-9999.990	-9999.990
11.564	76.110	-1.048	0.0259	0.0128	0.1209	189.26.171	4.673	9.413	-9999.990	-9999.990
11.624	81.848	-9999.990	0.0262	0.0127	0.1198	189.26.171	4.574	9.438	-9999.990	-9999.990
11.684	49.115	-1.957	0.0273	0.0086	0.1238	191.26.170	4.543	14.460	-9999.990	-9999.990
11.744	49.112	-1.957	0.0273	0.0086	0.1238	199.17.176	4.543	14.460	-9999.990	-9999.990
11.804	59.236	0.316	0.0259	0.0129	0.1208	199.17.176	4.673	9.382	-9999.990	-9999.990
11.864	59.236	0.316	0.0255	0.0130	0.1219	189.26.171	4.776	9.357	-9999.990	-9999.990
11.924	78.809	-0.795	0.0255	0.0130	0.1219	186.26.173	4.776	9.357	-9999.990	-9999.990
11.984	62.612	1.225	0.0252	0.0132	0.1229	186.26.173	4.883	9.333	-9999.990	-9999.990
12.044	62.611	1.225	0.0252	0.0132	0.1229	184.26.174	4.883	9.332	-9999.990	-9999.990
12.104	84.886	-0.593	0.0252	0.0132	0.1229	184.26.174	4.883	9.332	-9999.990	-9999.990
12.164	84.886	-0.593	0.0252	0.0132	0.1229	184.26.174	4.883	9.332	-9999.990	-9999.990
12.224	69.361	1.225	0.0255	0.0130	0.1219	184.26.174	4.774	9.357	-9999.990	-9999.990
12.284	100.074	-1.300	0.0252	0.0132	0.1229	186.26.173	4.880	9.333	-9999.990	-9999.990
12.344	100.076	-1.300	0.0252	0.0132	0.1229	184.26.174	4.880	9.333	-9999.990	-9999.990
12.404	69.361	-2.411	0.0252	0.0132	0.1229	184.26.174	4.877	9.334	-9999.990	-9999.990
12.464	69.360	-2.411	0.0252	0.0132	0.1229	184.26.174	4.877	9.334	-9999.990	-9999.990
12.524	60.586	-1.502	0.0266	0.0088	0.1260	184.26.174	4.737	14.264	-9999.990	-9999.990
12.584	59.236	-3.320	0.0266	0.0088	0.1260	194.18.179	4.737	14.264	-9999.990	-9999.990
12.644	59.236	-3.320	0.0252	0.0132	0.1228	194.18.179	4.880	9.284	-9999.990	-9999.990
12.704	72.734	-1.805	0.0248	0.0134	0.1239	184.27.174	4.992	9.259	-9999.990	-9999.990
12.764	72.735	-1.805	0.0252	0.0132	0.1228	181.27.176	4.880	9.283	-9999.990	-9999.990
12.824	65.986	-4.684	0.0266	0.0089	0.1259	184.27.174	4.739	14.179	-9999.990	-9999.990
12.884	49.113	-3.320	0.0266	0.0089	0.1259	194.18.179	4.739	14.179	-9999.990	-9999.990
12.944	49.112	-3.320	0.0266	0.0089	0.1259	194.18.179	4.739	14.179	-9999.990	-9999.990
13.004	51.474	-3.825	0.0259	0.0091	0.1282	194.18.179	4.952	14.069	-9999.990	-9999.990
13.064	51.474	-3.825	0.0266	0.0089	0.1259	189.18.182	4.736	14.181	-9999.990	-9999.990
13.124	76.110	-4.684	0.0266	0.0089	0.1259	194.18.179	4.736	14.181	-9999.990	-9999.990
13.184	63.623	-1.805	0.0259	0.0091	0.1282	194.18.179	4.951	14.069	-9999.990	-9999.990
13.244	63.623	-1.805	0.0259	0.0091	0.1282	189.18.182	4.951	14.069	-9999.990	-9999.990
13.304	72.735	-4.684	0.0255	0.0092	0.1294	189.18.182	5.072	14.012	-9999.990	-9999.990
13.364	72.735	-2.866	0.0255	0.0092	0.1294	186.18.184	5.072	14.012	-9999.990	-9999.990
13.424	63.623	-2.866	0.0263	0.0046	0.1356	186.18.184	5.153	29.775	-9999.990	-9999.990
13.484	52.487	-5.340	0.0256	0.0047	0.1383	192.9.192	5.411	29.284	-9999.990	-9999.990
13.544	52.487	-5.340	0.0259	0.0046	0.1370	186.9.196	5.281	29.524	-9999.990	-9999.990
13.604	82.858	-6.047	0.0256	0.0047	0.1383	189.9.194	5.410	29.285	-9999.990	-9999.990
13.664	82.861	-5.593	0.0256	0.0047	0.1383	186.9.196	5.410	29.285	-9999.990	-9999.990
13.724	55.861	-5.593	0.0252	0.0048	0.1397	186.9.196	5.547	29.050	-9999.990	-9999.990
13.784	48.438	-7.360	0.0252	0.0048	0.1397	184.9.198	5.547	29.050	-9999.990	-9999.990
13.844	48.438	-7.360	0.0248	0.0049	0.1411	184.9.198	5.691	28.818	-9999.990	-9999.990
13.904	35.616	-6.956	0.0244	0.0050	0.1425	181.10.200	5.843	28.590	-9999.990	-9999.990
13.964	35.616	-9.683	0.0244	0.0050	0.1425	178.10.202	5.843	28.590	-9999.990	-9999.990
14.024	69.694	-9.683	0.0183	0.0373	0.1022	178.10.202	5.590	2.740	-9999.990	-9999.990
14.084	42.365	-7.865	0.0179	0.0377	0.1031	133.76.145	5.776	2.734	-9999.990	-9999.990
14.144	42.364	-7.865	0.0179	0.0377	0.1031	130.77.146	5.776	2.734	-9999.990	-9999.990
14.204	65.984	-9.380	0.0179	0.0377	0.1031	130.77.146	5.776	2.734	-9999.990	-9999.990
14.264	65.985	-9.229	0.0187	0.0340	0.1070	130.77.146	5.709	3.145	-9999.990	-9999.990
14.324	30.220	-9.229	0.0146	0.0591	0.0736	137.69.152	5.060	1.246	-9999.990	-9999.990
14.384	32.242	-7.411	0.0166	0.0525	0.0786	106.120.104	4.739	1.498	-9999.990	-9999.990
14.444	32.242	-7.411	0.0166	0.0525	0.0786	121.107.111	4.739	1.498	-9999.990	-9999.990
14.504	42.363	-8.774	0.0166	0.0525	0.0786	121.107.111	4.737	1.498	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
14.564	42.364	-6.350	0.0153	0.0562	0.0764	121.107.111	4.990	1.360	-9999.990	-9999.990
14.624	32.243	-6.350	0.0132	0.0609	0.0757	111.115.108	5.753	1.243	-9999.990	-9999.990
14.684	36.290	-8.320	0.0136	0.0603	0.0750	96.124.107	5.501	1.244	-9999.990	-9999.990
14.744	36.290	-8.320	0.0146	0.0591	0.0736	99.123.106	5.054	1.246	-9999.990	-9999.990
14.804	49.112	-6.502	0.0108	0.0816	0.0436	106.120.104	4.038	0.533	-9999.990	-9999.990
14.864	49.112	-9.229	0.0114	0.0796	0.0452	78.167.61	3.974	0.568	-9999.990	-9999.990
14.924	45.401	-9.229	0.0114	0.0796	0.0452	83.163.64	3.974	0.568	-9999.990	-9999.990
14.984	28.869	-8.875	0.0114	0.0796	0.0452	83.163.64	3.974	0.568	-9999.990	-9999.990
15.044	28.868	-8.875	0.0114	0.0796	0.0452	83.163.64	3.974	0.568	-9999.990	-9999.990
15.104	38.990	-7.865	0.0114	0.0796	0.0452	83.163.64	3.974	0.568	-9999.990	-9999.990
15.164	38.990	-9.683	0.0114	0.0796	0.0452	83.163.64	3.974	0.568	0.216	1.753
15.224	42.364	-9.683	0.0123	0.0781	0.0445	83.163.64	3.612	0.569	-9999.990	-9999.990
15.284	38.990	-7.360	0.0117	0.0802	0.0429	90.160.63	3.663	0.535	-9999.990	-9999.990
15.344	38.990	-7.360	0.0121	0.0795	0.0425	85.164.60	3.501	0.535	-9999.990	-9999.990
15.404	39.327	-9.683	0.0141	0.0754	0.0430	88.162.60	3.058	0.570	-9999.990	-9999.990
15.464	49.112	-8.320	0.0152	0.0725	0.0442	102.154.61	2.916	0.610	-9999.990	-9999.990
15.524	49.112	-8.320	0.0163	0.0696	0.0455	110.148.62	2.787	0.655	-9999.990	-9999.990
15.584	36.291	-10.390	0.0163	0.0696	0.0455	119.142.64	2.787	0.655	-9999.990	-9999.990
15.644	36.290	-10.390	0.0163	0.0696	0.0455	119.142.64	2.787	0.655	-9999.990	-9999.990
15.704	38.989	-11.047	0.0152	0.0725	0.0443	119.142.64	2.915	0.610	-9999.990	-9999.990
15.764	45.738	-8.370	0.0147	0.0732	0.0446	111.148.62	3.027	0.610	-9999.990	-9999.990
15.824	45.738	-8.370	0.0152	0.0725	0.0443	107.149.63	2.917	0.610	-9999.990	-9999.990
15.884	42.364	-10.138	0.0145	0.0747	0.0427	110.148.62	2.946	0.572	-9999.990	-9999.990
15.944	42.364	-10.138	0.0145	0.0747	0.0427	105.152.60	2.946	0.572	-9999.990	-9999.990
16.004	52.486	-8.320	0.0145	0.0747	0.0427	105.152.60	2.946	0.572	-9999.990	-9999.990
16.064	42.365	-10.895	0.0145	0.0747	0.0427	105.152.60	2.946	0.572	-9999.990	-9999.990
16.124	42.364	-10.895	0.0149	0.0740	0.0423	105.152.60	2.840	0.572	-9999.990	-9999.990
16.184	45.738	-10.592	0.0160	0.0712	0.0435	109.151.60	2.720	0.611	-9999.990	-9999.990
16.244	45.738	-10.592	0.0152	0.0725	0.0443	117.145.61	2.917	0.610	-9999.990	-9999.990
16.304	48.437	-9.229	0.0156	0.0719	0.0439	111.148.62	2.814	0.611	-9999.990	-9999.990
16.364	49.112	-10.138	0.0156	0.0719	0.0439	114.147.62	2.813	0.611	-9999.990	-9999.990
16.424	49.112	-10.138	0.0163	0.0696	0.0455	114.147.62	2.787	0.655	-9999.990	-9999.990
16.484	60.585	-7.360	0.0163	0.0696	0.0455	119.142.64	2.787	0.655	-9999.990	-9999.990
16.544	60.586	-7.360	0.0168	0.0689	0.0451	119.142.64	2.692	0.655	-9999.990	-9999.990
16.604	38.991	-9.683	0.0163	0.0695	0.0455	122.141.64	2.785	0.655	-9999.990	-9999.990
16.664	57.547	-8.320	0.0163	0.0695	0.0455	119.142.64	2.785	0.655	-9999.990	-9999.990
16.724	57.549	-8.320	0.0164	0.0695	0.0455	119.142.64	2.784	0.655	-9999.990	-9999.990
16.784	65.985	-10.138	0.0168	0.0689	0.0451	119.142.64	2.690	0.655	-9999.990	-9999.990
16.844	65.985	-10.138	0.0176	0.0676	0.0443	122.141.64	2.517	0.656	-9999.990	-9999.990
16.904	54.512	-10.390	0.0164	0.0695	0.0455	128.138.63	2.776	0.655	-9999.990	-9999.990
16.964	38.991	-9.683	0.0164	0.0695	0.0455	119.142.64	2.776	0.655	-9999.990	-9999.990
17.024	38.990	-9.683	0.0164	0.0695	0.0455	119.142.64	2.776	0.655	-9999.990	-9999.990
17.084	51.474	-10.592	0.0164	0.0695	0.0455	119.142.64	2.777	0.655	-9999.990	-9999.990
17.144	51.474	-10.592	0.0168	0.0688	0.0451	119.142.64	2.684	0.655	-9999.990	-9999.990
17.204	35.616	-8.774	0.0168	0.0688	0.0451	122.141.64	2.684	0.655	-9999.990	-9999.990
17.264	48.437	-10.895	0.0168	0.0688	0.0451	122.141.64	2.684	0.655	-9999.990	-9999.990
17.324	48.438	-10.895	0.0180	0.0658	0.0464	122.141.64	2.577	0.706	-9999.990	-9999.990
17.384	42.364	-8.774	0.0172	0.0670	0.0473	131.134.66	2.751	0.705	-9999.990	-9999.990
17.444	42.364	-8.774	0.0172	0.0670	0.0473	125.137.67	2.751	0.705	-9999.990	-9999.990
17.504	49.112	-9.229	0.0133	0.0890	0.0188	125.137.67	1.418	0.212	-9999.990	-9999.990
17.564	63.622	-8.370	0.0142	0.0874	0.0185	97.182.26	1.309	0.212	-9999.990	-9999.990
17.624	63.623	-8.370	0.0137	0.0882	0.0187	103.179.26	1.362	0.212	-9999.990	-9999.990
17.684	55.862	-6.956	0.0144	0.0864	0.0196	100.180.26	1.358	0.226	-9999.990	-9999.990
17.744	55.861	-6.956	0.0156	0.0837	0.0203	105.176.27	1.304	0.243	-9999.990	-9999.990
17.804	33.254	-6.855	0.0160	0.0829	0.0201	113.171.28	1.258	0.243	-9999.990	-9999.990
17.864	42.364	-6.956	0.0164	0.0822	0.0200	117.169.28	1.215	0.243	-9999.990	-9999.990
17.924	42.364	-6.956	0.0164	0.0822	0.0200	120.168.28	1.215	0.243	-9999.990	-9999.990
17.984	45.738	-9.229	0.0164	0.0822	0.0200	120.168.28	1.215	0.243	-9999.990	-9999.990
18.044	45.738	-9.229	0.0164	0.0822	0.0200	120.168.28	1.215	0.243	-9999.990	-9999.990
18.104	48.437	-7.865	0.0160	0.0829	0.0201	120.168.28	1.259	0.243	-9999.990	-9999.990
18.164	72.735	-6.956	0.0160	0.0829	0.0201	117.169.28	1.259	0.243	-9999.990	-9999.990
18.224	72.735	-6.956	0.0160	0.0829	0.0201	117.169.28	1.259	0.243	-9999.990	-9999.990
18.284	38.991	-9.683	0.0172	0.0801	0.0209	117.169.28	1.214	0.261	-9999.990	-9999.990
18.344	38.990	-9.683	0.0181	0.0779	0.0219	125.164.29	1.214	0.281	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
18.404	39.327	-6.855	0.0181	0.0779	0.0219	132.159.31	1.214	0.281	-9999.990	-9999.990
18.464	42.364	-9.229	0.0181	0.0779	0.0219	132.159.31	1.214	0.281	-9999.990	-9999.990
18.524	42.364	-9.229	0.0176	0.0787	0.0221	132.159.31	1.255	0.281	-9999.990	-9999.990
18.584	60.585	-6.956	0.0190	0.0755	0.0230	128.161.31	1.212	0.305	-9999.990	-9999.990
18.644	60.586	-6.956	0.0176	0.0787	0.0221	138.154.32	1.255	0.281	-9999.990	-9999.990
18.704	52.487	-7.865	0.0172	0.0795	0.0223	128.161.31	1.300	0.281	-9999.990	-9999.990
18.764	52.487	-6.350	0.0172	0.0795	0.0223	125.162.31	1.300	0.281	-9999.990	-9999.990
18.824	52.487	-6.350	0.0172	0.0795	0.0223	125.162.31	1.300	0.281	-9999.990	-9999.990
18.884	51.474	-4.684	0.0176	0.0787	0.0221	125.162.31	1.256	0.281	-9999.990	-9999.990
18.944	51.474	-4.684	0.0176	0.0787	0.0221	128.161.31	1.256	0.281	-9999.990	-9999.990
19.004	49.113	-5.593	0.0190	0.0756	0.0230	128.161.31	1.213	0.304	-9999.990	-9999.990
19.064	36.292	-3.320	0.0204	0.0723	0.0239	138.154.32	1.174	0.331	-9999.990	-9999.990
19.124	36.290	-3.320	0.0199	0.0731	0.0242	148.148.34	1.213	0.331	-9999.990	-9999.990
19.184	76.108	-3.320	0.0199	0.0731	0.0242	145.149.34	1.212	0.331	-9999.990	-9999.990
19.244	76.110	-3.320	0.0199	0.0731	0.0242	145.149.34	1.212	0.331	-9999.990	-9999.990
19.304	75.773	-2.411	0.0150	0.0949	0.0000	145.149.34	0.000	0.000	-9999.990	-9999.990
19.364	59.237	-4.684	0.0150	0.0949	0.0000	110.194.0	0.000	0.000	-9999.990	-9999.990
19.424	59.236	-4.684	0.0163	0.0924	0.0000	110.194.0	0.000	0.000	-9999.990	-9999.990
19.484	60.586	-3.320	0.0176	0.0897	0.0000	119.189.0	0.000	0.000	-9999.990	-9999.990
19.544	60.586	-3.320	0.0176	0.0897	0.0000	129.183.0	0.000	0.000	-9999.990	-9999.990
19.604	42.365	-5.845	0.0181	0.0888	0.0000	129.183.0	0.000	0.000	-9999.990	-9999.990
19.664	65.984	-7.411	0.0192	0.0867	0.0000	132.181.0	0.000	0.000	-9999.990	-9999.990
19.724	65.985	-7.411	0.0192	0.0867	0.0000	140.177.0	0.000	0.000	-9999.990	-9999.990
19.784	72.735	-6.956	0.0192	0.0867	0.0000	140.177.0	0.000	0.000	-9999.990	-9999.990
19.844	72.735	-6.956	0.0187	0.0876	0.0000	140.177.0	0.000	0.000	-9999.990	-9999.990
19.904	49.114	-9.380	0.0187	0.0876	0.0000	136.179.0	0.000	0.000	-9999.990	-9999.990
19.964	57.548	-9.229	0.0192	0.0867	0.0000	136.179.0	0.000	0.000	-9999.990	-9999.990
20.024	57.549	-9.229	0.0177	0.0897	0.0000	140.177.0	0.000	0.000	-9999.990	-9999.990
20.084	55.861	-11.905	0.0177	0.0897	0.0000	129.183.0	0.000	0.000	-9999.990	-9999.990
20.144	55.861	-11.905	0.0172	0.0907	0.0000	129.183.0	0.000	0.000	-9999.990	-9999.990
20.204	72.735	-12.410	0.0172	0.0906	0.0000	125.185.0	0.000	0.000	-9999.990	-9999.990
20.264	89.610	-11.047	0.0172	0.0906	0.0000	125.185.0	0.000	0.000	-9999.990	-9999.990
20.324	89.611	-11.047	0.0158	0.0934	0.0000	125.185.0	0.000	0.000	-9999.990	-9999.990
20.384	35.620	-11.400	0.0158	0.0934	0.0000	115.191.0	0.000	0.000	-9999.990	-9999.990
20.444	35.616	-10.138	0.0158	0.0934	0.0000	115.191.0	0.000	0.000	-9999.990	-9999.990
20.504	33.254	-10.138	0.0158	0.0935	0.0000	115.191.0	0.000	0.000	-9999.990	-9999.990
20.564	62.609	-11.501	0.0162	0.0925	0.0000	115.191.0	0.000	0.000	-9999.990	-9999.990
20.624	62.611	-11.501	0.0158	0.0935	0.0000	118.189.0	0.000	0.000	-9999.990	-9999.990
20.684	59.236	-10.895	0.0162	0.0925	0.0000	115.191.0	0.000	0.000	-9999.990	-9999.990
20.744	59.236	-9.229	0.0172	0.0907	0.0000	118.189.0	0.000	0.000	-9999.990	-9999.990
20.804	45.401	-9.229	0.0139	0.0972	0.0000	125.185.0	0.000	0.000	-9999.990	-9999.990
20.864	62.610	-10.592	0.0144	0.0962	0.0000	101.198.0	0.000	0.000	-9999.990	-9999.990
20.924	62.611	-10.592	0.0196	0.0727	0.0263	105.196.0	1.342	0.362	-9999.990	-9999.990
20.984	62.611	-8.774	0.0191	0.0735	0.0266	143.148.37	1.392	0.361	-9999.990	-9999.990
21.044	62.611	-9.885	0.0171	0.0780	0.0258	139.150.37	1.509	0.330	-9999.990	-9999.990
21.104	63.623	-9.885	0.0185	0.0754	0.0250	124.159.36	1.346	0.331	-9999.990	-9999.990
21.164	54.512	-8.774	0.0185	0.0754	0.0250	135.154.35	1.346	0.331	-9999.990	-9999.990
21.224	54.511	-8.774	0.0185	0.0754	0.0250	135.154.35	1.346	0.331	-9999.990	-9999.990
21.284	52.487	-10.592	0.0195	0.0738	0.0245	135.154.35	1.255	0.331	-9999.990	-9999.990
21.344	52.487	-9.229	0.0176	0.0780	0.0237	142.151.34	1.349	0.304	-9999.990	-9999.990
21.404	62.610	-9.229	0.0181	0.0771	0.0235	128.159.33	1.301	0.304	-9999.990	-9999.990
21.464	45.401	-9.885	0.0181	0.0771	0.0235	132.157.33	1.301	0.304	-9999.990	-9999.990
21.524	45.401	-9.885	0.0185	0.0763	0.0233	132.157.33	1.255	0.305	-9999.990	-9999.990
21.584	55.861	-10.592	0.0180	0.0779	0.0219	135.156.33	1.214	0.281	-9999.990	-9999.990
21.644	55.861	-8.320	0.0180	0.0779	0.0219	132.159.31	1.214	0.281	-9999.990	-9999.990
21.704	54.512	-8.320	0.0176	0.0787	0.0221	132.159.31	1.257	0.281	-9999.990	-9999.990
21.764	59.235	-9.885	0.0176	0.0787	0.0221	128.161.31	1.257	0.281	-9999.990	-9999.990
21.824	59.236	-9.885	0.0180	0.0780	0.0219	128.161.31	1.215	0.281	-9999.990	-9999.990
21.884	42.364	-7.865	0.0202	0.0734	0.0224	131.159.31	1.106	0.305	-9999.990	-9999.990
21.944	42.364	-10.138	0.0202	0.0734	0.0224	147.150.31	1.106	0.305	-9999.990	-9999.990
22.004	52.486	-10.138	0.0254	0.0476	0.0534	147.150.31	2.106	1.122	-9999.990	-9999.990
22.064	60.585	-9.229	0.0238	0.0515	0.0517	185.97.75	2.172	1.005	-9999.990	-9999.990
22.124	60.586	-9.229	0.0238	0.0515	0.0517	174.105.73	2.172	1.005	-9999.990	-9999.990
22.184	59.236	-10.895	0.0238	0.0515	0.0517	174.105.73	2.172	1.005	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
22.244	59.236	-10.592	0.0238	0.0515	0.0517	174.105.73	2.172	1.005	-9999.990	-9999.990
22.304	59.236	-10.592	0.0238	0.0515	0.0518	174.105.73	2.174	1.005	-9999.990	-9999.990
22.364	54.512	-7.360	0.0238	0.0515	0.0518	174.105.73	2.174	1.005	-9999.990	-9999.990
22.424	54.511	-7.360	0.0242	0.0510	0.0513	174.105.73	2.118	1.006	-9999.990	-9999.990
22.484	49.113	-9.683	0.0224	0.0552	0.0502	176.104.72	2.246	0.911	-9999.990	-9999.990
22.544	66.660	-8.875	0.0228	0.0546	0.0498	163.112.71	2.186	0.911	-9999.990	-9999.990
22.604	66.660	-8.875	0.0231	0.0541	0.0493	166.111.70	2.130	0.912	-9999.990	-9999.990
22.664	62.611	-7.865	0.0231	0.0541	0.0493	169.110.70	2.130	0.912	-9999.990	-9999.990
22.724	62.611	-7.865	0.0231	0.0541	0.0493	169.110.70	2.130	0.912	-9999.990	-9999.990
22.784	35.617	-10.592	0.0239	0.0529	0.0484	169.110.70	2.025	0.915	-9999.990	-9999.990
22.844	54.510	-8.320	0.0212	0.0598	0.0457	174.108.68	2.154	0.764	-9999.990	-9999.990
22.904	54.511	-8.320	0.0208	0.0603	0.0461	155.122.64	2.213	0.764	-9999.990	-9999.990
22.964	45.739	-9.380	0.0212	0.0598	0.0457	152.123.65	2.154	0.764	-9999.990	-9999.990
23.024	45.738	-9.380	0.0212	0.0598	0.0457	155.122.64	2.154	0.764	-9999.990	-9999.990
23.084	52.486	-9.229	0.0216	0.0592	0.0453	155.122.64	2.099	0.765	-9999.990	-9999.990
23.144	51.474	-12.410	0.0212	0.0598	0.0457	157.121.64	2.156	0.764	-9999.990	-9999.990
23.204	51.474	-12.410	0.0212	0.0598	0.0457	154.122.64	2.156	0.764	-9999.990	-9999.990
23.264	49.112	-11.047	0.0203	0.0623	0.0440	154.122.64	2.168	0.706	-9999.990	-9999.990
23.324	49.112	-11.047	0.0203	0.0623	0.0440	148.127.62	2.168	0.706	-9999.990	-9999.990
23.384	39.327	-12.410	0.0207	0.0618	0.0437	148.127.62	2.111	0.707	-9999.990	-9999.990
23.444	65.985	-12.865	0.0207	0.0618	0.0437	151.126.62	2.111	0.707	-9999.990	-9999.990
23.504	65.985	-12.865	0.0214	0.0607	0.0430	151.126.62	2.006	0.708	-9999.990	-9999.990
23.564	45.401	-11.047	0.0214	0.0607	0.0430	156.124.61	2.006	0.708	-9999.990	-9999.990
23.624	45.401	-11.047	0.0218	0.0602	0.0426	156.124.61	1.956	0.708	-9999.990	-9999.990
23.684	49.112	-11.400	0.0218	0.0602	0.0426	159.123.60	1.957	0.708	-9999.990	-9999.990
23.744	63.622	-10.592	0.0194	0.0661	0.0403	159.123.60	2.080	0.610	-9999.990	-9999.990
23.804	63.623	-10.592	0.0204	0.0645	0.0394	141.135.57	1.930	0.611	-9999.990	-9999.990
23.864	59.236	-11.501	0.0204	0.0645	0.0394	149.132.56	1.930	0.611	-9999.990	-9999.990
23.924	59.236	-11.501	0.0204	0.0645	0.0394	149.132.56	1.930	0.611	-9999.990	-9999.990
23.984	42.365	-9.683	0.0204	0.0645	0.0394	149.132.56	1.930	0.611	-9999.990	-9999.990
24.044	62.609	-10.390	0.0211	0.0635	0.0388	149.132.56	1.842	0.611	-9999.990	-9999.990
24.104	62.611	-10.390	0.0225	0.0602	0.0395	154.129.55	1.755	0.657	-9999.990	-9999.990
24.164	81.847	-10.592	0.0225	0.0602	0.0395	164.123.56	1.755	0.657	-9999.990	-9999.990
24.224	81.848	-10.592	0.0225	0.0602	0.0395	164.123.56	1.755	0.657	-9999.990	-9999.990
24.284	52.488	-8.774	0.0225	0.0602	0.0395	164.123.56	1.755	0.657	-9999.990	-9999.990
24.344	72.734	-9.885	0.0214	0.0629	0.0385	164.123.56	1.799	0.613	-9999.990	-9999.990
24.404	72.735	-9.885	0.0228	0.0489	0.0610	156.128.54	2.673	1.248	-9999.990	-9999.990
24.464	28.870	-8.774	0.0228	0.0489	0.0610	166.100.86	2.673	1.248	-9999.990	-9999.990
24.524	28.868	-8.774	0.0231	0.0485	0.0605	166.100.86	2.618	1.249	-9999.990	-9999.990
24.584	42.363	-9.885	0.0231	0.0485	0.0606	169.99.86	2.620	1.249	-9999.990	-9999.990
24.644	33.254	-10.138	0.0229	0.0502	0.0579	169.99.86	2.526	1.152	-9999.990	-9999.990
24.704	33.254	-10.138	0.0229	0.0502	0.0579	167.102.82	2.525	1.153	-9999.990	-9999.990
24.764	76.108	-8.774	0.0226	0.0506	0.0583	167.102.82	2.578	1.153	-9999.990	-9999.990
24.824	76.110	-8.774	0.0220	0.0514	0.0592	165.103.82	2.690	1.151	-9999.990	-9999.990
24.884	55.863	-9.380	0.0220	0.0514	0.0592	160.105.84	2.690	1.151	-9999.990	-9999.990
24.944	48.438	-8.774	0.0209	0.0542	0.0579	160.105.84	2.764	1.067	-9999.990	-9999.990
25.004	48.438	-8.774	0.0209	0.0542	0.0579	153.111.82	2.764	1.067	-9999.990	-9999.990
25.064	72.735	-9.683	0.0209	0.0542	0.0579	153.111.82	2.764	1.067	-9999.990	-9999.990
25.124	72.735	-9.683	0.0209	0.0542	0.0579	153.111.82	2.764	1.067	-9999.990	-9999.990
25.184	39.330	-9.380	0.0199	0.0570	0.0566	153.111.82	2.845	0.993	-9999.990	-9999.990
25.244	38.990	-7.865	0.0189	0.0596	0.0553	145.116.80	2.931	0.928	-9999.990	-9999.990
25.304	38.990	-7.865	0.0182	0.0605	0.0561	138.122.78	3.076	0.926	-9999.990	-9999.990
25.364	42.364	-9.229	0.0189	0.0596	0.0553	133.123.79	2.931	0.927	-9999.990	-9999.990
25.424	42.364	-9.229	0.0185	0.0601	0.0557	137.122.78	3.002	0.927	-9999.990	-9999.990
25.484	57.548	-6.047	0.0179	0.0610	0.0565	135.123.79	3.156	0.926	-9999.990	-9999.990
25.544	55.861	-7.360	0.0179	0.0610	0.0565	130.124.80	3.154	0.926	-9999.990	-9999.990
25.604	55.861	-7.360	0.0169	0.0635	0.0552	130.124.80	3.261	0.870	-9999.990	-9999.990
25.664	72.734	-4.684	0.0173	0.0630	0.0548	123.130.78	3.176	0.870	-9999.990	-9999.990
25.724	72.735	-4.684	0.0173	0.0630	0.0548	126.129.78	3.176	0.870	-9999.990	-9999.990
25.784	103.113	-5.593	0.0176	0.0626	0.0545	126.129.78	3.095	0.870	-9999.990	-9999.990
25.844	66.663	-2.866	0.0186	0.0600	0.0557	128.128.77	2.999	0.927	-9999.990	-9999.990
25.904	66.660	-2.866	0.0220	0.0409	0.0804	135.122.79	3.660	1.964	-9999.990	-9999.990
25.964	65.985	-3.825	0.0216	0.0412	0.0809	160.83.114	3.740	1.963	-9999.990	-9999.990
26.024	65.985	-3.825	0.0224	0.0384	0.0834	158.84.115	3.716	2.169	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
26.084	66.660	-3.775	0.0224	0.0384	0.0834	164.78.118	3.716	2.169	-9999.990	-9999.990
26.144	65.985	-1.502	0.0224	0.0384	0.0834	164.78.118	3.716	2.169	1.580	0.375
26.204	65.985	-1.502	0.0221	0.0388	0.0840	164.78.118	3.799	2.167	-9999.990	-9999.990
26.264	86.235	-2.815	0.0221	0.0388	0.0840	161.79.119	3.799	2.167	-9999.990	-9999.990
26.324	86.236	-2.815	0.0224	0.0384	0.0834	161.79.119	3.716	2.169	-9999.990	-9999.990
26.384	109.190	-3.320	0.0221	0.0388	0.0840	164.78.118	3.799	2.167	-9999.990	-9999.990
26.444	69.700	-1.502	0.0218	0.0391	0.0847	161.79.119	3.887	2.165	-9999.990	-9999.990
26.504	69.698	-1.502	0.0218	0.0391	0.0847	159.80.120	3.887	2.165	-9999.990	-9999.990
26.564	72.735	-3.320	0.0210	0.0419	0.0822	159.80.120	3.915	1.959	-9999.990	-9999.990
26.624	72.735	-3.320	0.0210	0.0420	0.0822	153.85.116	3.915	1.959	-9999.990	-9999.990
26.684	69.361	-1.957	0.0206	0.0423	0.0828	153.85.116	4.009	1.957	-9999.990	-9999.990
26.744	75.773	-3.320	0.0210	0.0420	0.0822	151.86.117	3.918	1.958	-9999.990	-9999.990
26.804	75.773	-3.320	0.0206	0.0423	0.0828	153.85.116	4.012	1.957	-9999.990	-9999.990
26.864	69.361	-3.320	0.0203	0.0427	0.0834	150.86.117	4.110	1.956	-9999.990	-9999.990
26.924	69.360	-3.320	0.0196	0.0434	0.0848	148.87.118	4.325	1.953	-9999.990	-9999.990
26.984	115.266	-1.957	0.0196	0.0434	0.0848	143.88.120	4.325	1.953	-9999.990	-9999.990
27.044	86.238	-3.320	0.0199	0.0431	0.0842	143.88.120	4.224	1.954	-9999.990	-9999.990
27.104	86.236	-3.320	0.0206	0.0424	0.0829	145.88.119	4.025	1.957	-9999.990	-9999.990
27.164	106.151	-3.320	0.0203	0.0427	0.0835	150.86.117	4.124	1.955	-9999.990	-9999.990
27.224	106.152	-1.502	0.0203	0.0427	0.0835	148.87.118	4.124	1.955	-9999.990	-9999.990
27.284	45.741	-1.502	0.0199	0.0430	0.0842	148.87.118	4.225	1.957	-9999.990	-9999.990
27.344	65.983	-3.320	0.0199	0.0430	0.0842	145.88.119	4.225	1.957	-9999.990	-9999.990
27.404	65.985	-3.320	0.0203	0.0427	0.0836	145.88.119	4.122	1.959	-9999.990	-9999.990
27.464	93.998	-3.320	0.0206	0.0423	0.0830	148.87.118	4.030	1.960	-9999.990	-9999.990
27.524	94.000	-1.300	0.0210	0.0419	0.0823	150.86.118	3.924	1.961	-9999.990	-9999.990
27.584	92.987	-1.300	0.0199	0.0450	0.0805	153.85.116	4.046	1.789	-9999.990	-9999.990
27.644	72.736	-3.775	0.0182	0.0487	0.0799	145.92.114	4.396	1.641	-9999.990	-9999.990
27.704	72.735	-3.775	0.0182	0.0487	0.0799	132.99.113	4.397	1.641	-9999.990	-9999.990
27.764	89.611	-3.320	0.0185	0.0483	0.0793	132.99.113	4.286	1.642	-9999.990	-9999.990
27.824	89.611	-1.300	0.0188	0.0479	0.0788	135.98.112	4.180	1.643	-9999.990	-9999.990
27.884	99.738	-1.300	0.0188	0.0479	0.0788	137.98.112	4.179	1.643	-9999.990	-9999.990
27.944	81.849	-3.320	0.0220	0.0278	0.1062	137.98.112	4.819	3.823	-9999.990	-9999.990
28.004	81.848	-3.320	0.0220	0.0278	0.1062	161.56.151	4.819	3.823	-9999.990	-9999.990
28.064	92.986	-2.815	0.0220	0.0278	0.1062	161.56.151	4.819	3.823	-9999.990	-9999.990
28.124	92.987	-1.502	0.0224	0.0275	0.1054	161.56.151	4.712	3.827	-9999.990	-9999.990
28.184	78.812	-1.502	0.0224	0.0275	0.1054	163.56.149	4.712	3.827	-9999.990	-9999.990
28.244	65.986	-2.310	0.0224	0.0275	0.1054	163.56.149	4.712	3.827	-9999.990	-9999.990
28.304	65.985	-2.310	0.0212	0.0309	0.1032	163.56.149	4.855	3.335	-9999.990	-9999.990
28.364	90.960	-1.502	0.0212	0.0309	0.1032	155.63.146	4.855	3.335	-9999.990	-9999.990
28.424	90.962	-3.320	0.0191	0.0374	0.0988	155.63.146	5.173	2.645	-9999.990	-9999.990
28.484	65.987	-3.320	0.0191	0.0374	0.0988	139.76.140	5.173	2.645	-9999.990	-9999.990
28.544	87.923	-3.775	0.0226	0.0166	0.1264	139.76.140	5.583	7.628	-9999.990	-9999.990
28.604	87.924	-3.775	0.0226	0.0166	0.1264	165.33.179	5.583	7.628	-9999.990	-9999.990
28.664	76.111	-1.805	0.0232	0.0163	0.1245	165.33.179	5.361	7.655	-9999.990	-9999.990
28.724	76.110	-9999.990	0.0232	0.0163	0.1245	169.33.177	5.361	7.655	-9999.990	-9999.990
28.784	69.698	-9999.990	0.0252	0.0122	0.1245	169.33.177	4.932	10.167	-9999.990	-9999.990
28.844	82.860	-5.138	0.0252	0.0122	0.1245	184.25.177	4.932	10.167	-9999.990	-9999.990
28.904	82.861	-5.138	0.0255	0.0121	0.1236	184.25.177	4.843	10.191	-9999.990	-9999.990
28.964	90.961	-2.815	0.0258	0.0120	0.1227	186.24.175	4.751	10.216	-9999.990	-9999.990
29.024	90.962	-5.340	0.0255	0.0121	0.1236	188.24.174	4.837	10.193	-9999.990	-9999.990
29.084	79.486	-5.340	0.0255	0.0121	0.1236	186.24.175	4.837	10.192	-9999.990	-9999.990
29.144	78.810	-5.593	0.0255	0.0121	0.1236	186.24.175	4.837	10.192	-9999.990	-9999.990
29.204	78.810	-5.593	0.0258	0.0120	0.1227	186.24.175	4.749	10.217	-9999.990	-9999.990
29.264	65.986	-2.815	0.0250	0.0154	0.1194	188.24.174	4.780	7.773	-9999.990	-9999.990
29.324	89.610	-5.340	0.0247	0.0155	0.1202	182.31.169	4.870	7.758	-9999.990	-9999.990
29.384	89.611	-5.340	0.0239	0.0187	0.1170	180.31.171	4.901	6.247	-9999.990	-9999.990
29.444	72.736	-5.593	0.0239	0.0187	0.1170	174.38.166	4.903	6.247	-9999.990	-9999.990
29.504	72.735	-5.593	0.0239	0.0187	0.1170	174.38.166	4.903	6.247	-9999.990	-9999.990
29.564	106.487	-2.815	0.0236	0.0189	0.1179	174.38.166	4.998	6.238	-9999.990	-9999.990
29.624	109.866	-4.330	0.0226	0.0220	0.1156	172.38.167	5.125	5.246	-9999.990	-9999.990
29.684	109.866	-4.330	0.0216	0.0251	0.1135	165.45.164	5.259	4.520	-9999.990	-9999.990
29.744	90.964	-4.229	0.0216	0.0251	0.1135	157.51.161	5.259	4.520	-9999.990	-9999.990
29.804	90.962	-4.229	0.0226	0.0219	0.1157	157.51.161	5.121	5.272	-9999.990	-9999.990
29.864	76.111	-1.805	0.0229	0.0218	0.1149	165.44.164	5.023	5.278	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
29.924	90.961	-3.320	0.0229	0.0218	0.1149	167.44.163	5.023	5.278	-9999.990	-9999.990
29.984	90.962	-3.320	0.0232	0.0216	0.1142	167.44.163	4.929	5.285	-9999.990	-9999.990
30.044	86.236	-3.320	0.0212	0.0276	0.1100	169.44.162	5.187	3.991	-9999.990	-9999.990
30.104	86.236	-3.320	0.0225	0.0243	0.1114	155.56.156	4.949	4.580	-9999.990	-9999.990
30.164	84.886	-1.502	0.0218	0.0271	0.1086	164.49.158	4.982	4.000	-9999.990	-9999.990
30.224	72.736	-3.320	0.0218	0.0271	0.1086	159.55.154	4.982	4.000	-9999.990	-9999.990
30.284	72.735	-3.320	0.0223	0.0267	0.1072	159.55.154	4.798	4.008	-9999.990	-9999.990
30.344	78.810	-2.411	0.0236	0.0236	0.1085	163.54.152	4.600	4.602	-9999.990	-9999.990
30.404	78.810	-2.411	0.0236	0.0236	0.1085	172.48.154	4.600	4.602	-9999.990	-9999.990
30.464	82.861	-4.330	0.0233	0.0237	0.1092	172.48.154	4.682	4.601	-9999.990	-9999.990
30.524	90.961	-4.835	0.0223	0.0267	0.1072	170.48.155	4.797	4.015	-9999.990	-9999.990
30.584	90.962	-4.835	0.0212	0.0297	0.1060	163.54.152	5.010	3.567	-9999.990	-9999.990
30.644	89.612	-3.775	0.0199	0.0329	0.1046	154.60.150	5.255	3.184	-9999.990	-9999.990
30.704	89.611	-3.775	0.0199	0.0329	0.1046	145.67.148	5.255	3.184	-9999.990	-9999.990
30.764	72.736	-5.845	0.0196	0.0331	0.1053	145.67.148	5.364	3.181	-9999.990	-9999.990
30.824	69.360	-6.956	0.0187	0.0358	0.1034	143.67.149	5.517	2.889	-9999.990	-9999.990
30.884	69.360	-6.956	0.0208	0.0300	0.1066	137.73.147	5.115	3.548	-9999.990	-9999.990
30.944	87.924	-4.330	0.0206	0.0303	0.1073	152.61.151	5.218	3.545	-9999.990	-9999.990
31.004	87.924	-4.330	0.0206	0.0303	0.1073	150.61.152	5.218	3.545	-9999.990	-9999.990
31.064	76.111	-6.855	0.0176	0.0478	0.0841	150.61.152	4.785	1.759	-9999.990	-9999.990
31.124	72.735	-6.502	0.0185	0.0453	0.0857	128.97.119	4.643	1.892	1.474	1.702
31.184	72.735	-6.502	0.0196	0.0424	0.0868	134.92.121	4.420	2.048	-9999.990	-9999.990
31.244	72.735	-3.825	0.0188	0.0433	0.0884	143.86.123	4.714	2.045	-9999.990	-9999.990
31.304	72.735	-3.825	0.0191	0.0429	0.0879	137.88.125	4.610	2.046	-9999.990	-9999.990
31.364	86.235	-5.845	0.0188	0.0433	0.0885	139.87.124	4.718	2.045	-9999.990	-9999.990
31.424	69.699	-5.593	0.0197	0.0405	0.0902	137.88.125	4.580	2.227	-9999.990	-9999.990
31.484	69.698	-5.593	0.0197	0.0405	0.0902	144.82.128	4.581	2.227	-9999.990	-9999.990
31.544	65.986	-2.815	0.0197	0.0405	0.0902	144.82.128	4.581	2.227	-9999.990	-9999.990
31.604	65.985	-2.815	0.0191	0.0411	0.0914	144.82.128	4.790	2.224	-9999.990	-9999.990
31.664	100.074	-4.330	0.0211	0.0353	0.0952	139.84.130	4.521	2.702	-9999.990	-9999.990
31.724	96.363	-4.229	0.0211	0.0353	0.0952	154.72.135	4.521	2.702	-9999.990	-9999.990
31.784	96.363	-4.229	0.0211	0.0353	0.0952	154.72.135	4.521	2.702	-9999.990	-9999.990
31.844	69.362	-1.300	0.0211	0.0353	0.0952	154.72.135	4.521	2.702	-9999.990	-9999.990
31.904	69.360	-1.300	0.0211	0.0353	0.0952	154.72.135	4.521	2.702	-9999.990	-9999.990
31.964	81.847	-9999.990	0.0198	0.0385	0.0940	154.72.135	4.754	2.443	-9999.990	-9999.990
32.024	76.111	-2.815	0.0226	0.0187	0.1221	144.78.133	5.399	6.525	-9999.990	-9999.990
32.084	76.110	-2.815	0.0189	0.0389	0.0965	165.38.173	5.102	2.483	-9999.990	-9999.990
32.144	75.773	0.215	0.0199	0.0359	0.0985	138.79.137	4.944	2.747	-9999.990	-9999.990
32.204	75.773	0.215	0.0199	0.0359	0.0985	145.73.140	4.944	2.747	-9999.990	-9999.990
32.264	82.860	-1.957	0.0202	0.0356	0.0978	145.73.140	4.833	2.750	-9999.990	-9999.990
32.324	69.698	-0.290	0.0192	0.0386	0.0959	148.72.139	4.982	2.485	-9999.990	-9999.990
32.384	69.698	-0.290	0.0189	0.0389	0.0965	140.79.136	5.100	2.484	-9999.990	-9999.990
32.444	106.490	1.680	0.0189	0.0389	0.0965	138.79.137	5.100	2.484	-9999.990	-9999.990
32.504	106.490	1.680	0.0189	0.0389	0.0965	138.79.137	5.100	2.484	-9999.990	-9999.990
32.564	66.664	0.720	0.0176	0.0421	0.0953	138.79.137	5.402	2.264	-9999.990	-9999.990
32.624	76.110	1.680	0.0186	0.0392	0.0972	129.86.135	5.227	2.478	-9999.990	-9999.990
32.684	76.110	1.680	0.0173	0.0423	0.0960	135.80.138	5.537	2.267	-9999.990	-9999.990
32.744	86.235	0.215	0.0170	0.0427	0.0967	126.86.136	5.683	2.266	-9999.990	-9999.990
32.804	86.236	0.215	0.0174	0.0423	0.0959	124.87.137	5.529	2.267	-9999.990	-9999.990
32.864	87.924	-1.502	0.0200	0.0229	0.1240	126.86.136	6.197	5.408	-9999.990	-9999.990
32.924	93.999	0.720	0.0223	0.0157	0.1295	146.46.176	5.818	8.237	-9999.990	-9999.990
32.984	94.000	0.720	0.0229	0.0154	0.1276	162.32.184	5.574	8.269	-9999.990	-9999.990
33.044	92.987	-2.866	0.0229	0.0154	0.1276	167.31.181	5.577	8.268	-9999.990	-9999.990
33.104	92.987	-2.866	0.0232	0.0153	0.1267	167.31.181	5.463	8.284	-9999.990	-9999.990
33.164	75.774	-3.320	0.0232	0.0153	0.1267	169.31.180	5.469	8.283	-9999.990	-9999.990
33.224	76.110	-2.411	0.0221	0.0187	0.1242	169.31.180	5.625	6.627	-9999.990	-9999.990
33.284	76.110	-2.411	0.0221	0.0187	0.1242	161.38.176	5.625	6.627	-9999.990	-9999.990
33.344	51.476	-4.330	0.0224	0.0186	0.1233	161.38.176	5.512	6.637	-9999.990	-9999.990
33.404	51.474	-4.330	0.0221	0.0187	0.1243	163.38.175	5.626	6.653	-9999.990	-9999.990
33.464	59.235	-4.835	0.0221	0.0187	0.1243	161.38.176	5.626	6.653	-9999.990	-9999.990
33.524	76.109	-2.310	0.0204	0.0224	0.1236	161.38.176	6.057	5.529	-9999.990	-9999.990
33.584	76.110	-2.310	0.0190	0.0259	0.1220	149.45.175	6.410	4.705	-9999.990	-9999.990
33.644	69.698	-4.684	0.0190	0.0259	0.1220	139.53.173	6.410	4.705	-9999.990	-9999.990
33.704	69.698	-4.684	0.0187	0.0262	0.1229	139.53.173	6.576	4.699	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
33.764	79.485	-3.825	0.0184	0.0264	0.1238	136.53.174	6.746	4.694	1.445	0.486
33.824	62.612	-1.805	0.0195	0.0227	0.1267	134.54.176	6.497	5.593	-9999.990	-9999.990
33.884	62.611	-1.805	0.0185	0.0233	0.1296	142.46.180	7.020	5.571	-9999.990	-9999.990
33.944	75.772	-4.229	0.0185	0.0233	0.1296	135.47.184	7.020	5.571	-9999.990	-9999.990
34.004	75.773	-3.320	0.0185	0.0233	0.1296	135.47.184	7.020	5.571	-9999.990	-9999.990
34.064	45.741	-3.320	0.0188	0.0231	0.1286	135.47.184	6.840	5.578	-9999.990	-9999.990
34.124	57.548	-2.866	0.0188	0.0231	0.1286	137.47.182	6.840	5.578	-9999.990	-9999.990
34.184	57.549	-2.866	0.0181	0.0235	0.1306	137.47.182	7.218	5.564	-9999.990	-9999.990
34.244	49.113	-4.835	0.0177	0.0237	0.1317	132.48.185	7.422	5.556	-9999.990	-9999.990
34.304	49.112	-3.320	0.0171	0.0269	0.1280	129.48.187	7.499	4.759	-9999.990	-9999.990
34.364	60.585	-3.320	0.0178	0.0264	0.1261	124.55.181	7.104	4.769	-9999.990	-9999.990
34.424	33.255	-4.835	0.0188	0.0230	0.1288	129.54.179	6.853	5.596	-9999.990	-9999.990
34.484	33.254	-4.835	0.0155	0.0436	0.1010	137.47.183	6.540	2.319	-9999.990	-9999.990
34.544	59.233	-4.330	0.0155	0.0436	0.1010	113.89.143	6.540	2.318	-9999.990	-9999.990
34.604	59.236	-2.866	0.0151	0.0439	0.1018	113.89.143	6.743	2.317	-9999.990	-9999.990
34.664	66.660	-2.866	0.0147	0.0443	0.1025	110.89.144	6.956	2.315	-9999.990	-9999.990
34.724	54.513	-4.330	0.0160	0.0386	0.1089	107.90.145	6.804	2.822	-9999.990	-9999.990
34.784	54.511	-4.330	0.0160	0.0386	0.1089	117.79.154	6.804	2.822	-9999.990	-9999.990
34.844	75.772	-4.684	0.0171	0.0352	0.1113	117.79.154	6.524	3.164	-9999.990	-9999.990
34.904	75.773	-1.805	0.0174	0.0349	0.1105	124.72.158	6.340	3.167	-9999.990	-9999.990
34.964	62.611	-1.805	0.0174	0.0349	0.1105	127.71.157	6.340	3.167	-9999.990	-9999.990
35.024	66.660	-3.775	0.0174	0.0349	0.1105	127.71.157	6.340	3.167	-9999.990	-9999.990
35.084	66.660	-3.775	0.0189	0.0311	0.1122	127.71.157	5.936	3.603	-9999.990	-9999.990
35.144	42.365	-3.320	0.0182	0.0343	0.1088	138.63.159	5.994	3.176	-9999.990	-9999.990
35.204	42.364	-1.957	0.0207	0.0156	0.1359	132.70.154	6.559	8.725	-9999.990	-9999.990
35.264	49.112	-1.957	0.0223	0.0114	0.1380	151.31.193	6.196	12.060	-9999.990	-9999.990
35.324	75.771	-3.825	0.0235	0.0073	0.1413	162.23.196	6.002	19.363	-9999.990	-9999.990
35.384	75.773	-3.825	0.0248	0.0030	0.1446	172.14.200	5.822	48.313	-9999.990	-9999.990
35.444	51.476	-3.825	0.0252	0.0000	0.1491	181.6.205	5.909	-9999.990	-9999.990	-9999.990
35.504	51.474	-2.411	0.0252	0.0000	0.1491	184.0.212	5.909	-9999.990	-9999.990	-9999.990
35.564	66.659	-2.411	0.0255	0.0000	0.1478	184.0.212	5.786	-9999.990	-9999.990	-9999.990
35.624	52.488	-2.815	0.0255	0.0000	0.1478	186.0.210	5.786	-9999.990	-9999.990	-9999.990
35.684	52.487	-2.815	0.0255	0.0000	0.1479	186.0.210	5.791	-9999.990	-9999.990	-9999.990
35.744	66.660	-2.815	0.0260	0.0000	0.1461	186.0.210	5.626	-9999.990	-9999.990	-9999.990
35.804	66.660	-0.139	0.0255	0.0000	0.1479	189.0.207	5.792	-9999.990	-9999.990	-9999.990
35.864	78.809	-0.139	0.0255	0.0000	0.1479	186.0.210	5.796	-9999.990	-9999.990	-9999.990
35.924	65.986	-0.290	0.0255	0.0000	0.1479	186.0.210	5.796	-9999.990	-9999.990	-9999.990
35.984	65.985	-0.290	0.0204	0.0271	0.1141	186.0.210	5.588	4.210	-9999.990	-9999.990
36.044	75.772	0.215	0.0204	0.0271	0.1141	149.55.162	5.588	4.210	-9999.990	-9999.990
36.104	82.860	3.043	0.0208	0.0269	0.1132	149.55.162	5.452	4.214	-9999.990	-9999.990
36.164	82.861	3.043	0.0208	0.0269	0.1132	151.55.161	5.452	4.214	-9999.990	-9999.990
36.224	66.662	1.730	0.0208	0.0269	0.1132	151.55.161	5.452	4.214	-9999.990	-9999.990
36.284	66.660	1.730	0.0208	0.0269	0.1132	151.55.161	5.452	4.214	-9999.990	-9999.990
36.344	97.036	2.740	0.0211	0.0266	0.1123	151.55.161	5.325	4.219	-9999.990	-9999.990
36.404	86.237	4.407	0.0211	0.0266	0.1123	154.54.159	5.325	4.219	-9999.990	-9999.990
36.464	86.236	4.407	0.0207	0.0269	0.1133	154.54.159	5.458	4.214	-9999.990	-9999.990
36.524	72.736	3.245	0.0203	0.0299	0.1091	151.55.161	5.373	3.654	-9999.990	-9999.990
36.584	72.735	3.245	0.0206	0.0296	0.1083	148.61.155	5.247	3.658	-9999.990	-9999.990
36.644	97.037	4.407	0.0221	0.0258	0.1099	150.60.153	4.971	4.255	-9999.990	-9999.990
36.704	65.989	2.740	0.0210	0.0293	0.1075	161.52.156	5.125	3.674	-9999.990	-9999.990
36.764	65.985	2.740	0.0219	0.0285	0.1052	153.59.152	4.795	3.685	-9999.990	-9999.990
36.824	93.998	2.134	0.0216	0.0288	0.1060	160.58.149	4.902	3.681	-9999.990	-9999.990
36.884	94.000	2.134	0.0216	0.0288	0.1060	158.58.150	4.902	3.681	-9999.990	-9999.990
36.944	100.076	4.255	0.0219	0.0285	0.1052	158.58.150	4.796	3.685	-9999.990	-9999.990
37.004	72.737	-9999.990	0.0219	0.0285	0.1052	160.58.149	4.796	3.685	-9999.990	-9999.990
37.064	72.735	-9999.990	0.0222	0.0283	0.1044	160.58.149	4.693	3.689	-9999.990	-9999.990
37.124	69.360	3.245	0.0222	0.0283	0.1044	162.57.148	4.693	3.689	-9999.990	-9999.990
37.184	69.360	3.245	0.0219	0.0285	0.1052	162.57.148	4.792	3.685	-9999.990	-9999.990
37.244	75.773	5.770	0.0213	0.0290	0.1067	160.58.149	5.012	3.677	-9999.990	-9999.990
37.304	109.187	4.407	0.0219	0.0285	0.1052	155.59.151	4.792	3.685	-9999.990	-9999.990
37.364	109.191	4.407	0.0231	0.0251	0.1075	160.58.149	4.655	4.282	-9999.990	-9999.990
37.424	52.490	6.275	0.0231	0.0251	0.1075	168.51.152	4.655	4.282	-9999.990	-9999.990
37.484	52.487	6.275	0.0205	0.0320	0.1038	168.51.152	5.049	3.240	-9999.990	-9999.990
37.544	75.770	9.406	0.0192	0.0354	0.1024	150.65.147	5.328	2.891	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
37.604	87.923	10.315	0.0188	0.0357	0.1032	140.72.145	5.483	2.888	-9999.990	-9999.990
37.664	87.924	10.315	0.0199	0.0325	0.1055	137.73.146	5.301	3.248	-9999.990	-9999.990
37.724	48.442	14.406	0.0210	0.0291	0.1078	145.66.150	5.133	3.707	-9999.990	-9999.990
37.784	48.438	14.406	0.0210	0.0291	0.1078	153.59.153	5.133	3.707	-9999.990	-9999.990
37.844	55.861	14.355	0.0213	0.0288	0.1070	153.59.153	5.017	3.711	-9999.990	-9999.990
37.904	60.586	15.365	0.0213	0.0288	0.1070	156.59.152	5.019	3.711	-9999.990	-9999.990
37.964	60.586	15.365	0.0210	0.0291	0.1079	155.59.152	5.139	3.707	-9999.990	-9999.990
38.024	60.586	17.587	0.0210	0.0291	0.1079	153.59.153	5.141	3.707	-9999.990	-9999.990
38.084	60.586	17.587	0.0178	0.0494	0.0800	153.59.153	4.497	1.617	-9999.990	-9999.990
38.144	109.861	17.385	0.0178	0.0494	0.0800	130.101.113	4.497	1.617	-9999.990	-9999.990
38.204	66.665	18.395	0.0150	0.0574	0.0752	130.101.113	5.020	1.309	-9999.990	-9999.990
38.264	66.660	18.395	0.0150	0.0574	0.0752	109.117.106	5.020	1.309	-9999.990	-9999.990
38.324	69.360	18.395	0.0141	0.0599	0.0737	109.117.106	5.223	1.230	-9999.990	-9999.990
38.384	69.360	18.395	0.0145	0.0594	0.0733	103.122.104	5.063	1.233	-9999.990	-9999.990
38.444	78.810	19.405	0.0148	0.0590	0.0728	105.121.104	4.917	1.234	-9999.990	-9999.990
38.504	57.550	16.880	0.0148	0.0590	0.0728	108.120.103	4.917	1.234	-9999.990	-9999.990
38.564	57.549	16.880	0.0161	0.0559	0.0739	108.120.103	4.597	1.322	-9999.990	-9999.990
38.624	79.484	18.042	0.0161	0.0559	0.0739	117.114.105	4.597	1.322	-9999.990	-9999.990
38.684	79.485	18.042	0.0135	0.0728	0.0506	117.114.105	3.763	0.696	-9999.990	-9999.990
38.744	78.810	16.880	0.0127	0.0749	0.0496	98.149.72	3.919	0.663	-9999.990	-9999.990
38.804	69.699	16.224	0.0112	0.0779	0.0492	92.153.70	4.381	0.632	-9999.990	-9999.990
38.864	69.698	16.224	0.0102	0.0795	0.0501	82.159.70	4.897	0.631	-9999.990	-9999.990
38.924	82.860	19.405	0.0095	0.0814	0.0491	74.162.71	5.170	0.604	-9999.990	-9999.990
38.984	82.861	19.405	0.0092	0.0820	0.0495	69.166.69	5.398	0.603	-9999.990	-9999.990
39.044	75.774	16.678	0.0095	0.0815	0.0492	67.167.70	5.184	0.604	-9999.990	-9999.990
39.104	90.961	17.890	0.0095	0.0815	0.0492	69.166.69	5.184	0.604	-9999.990	-9999.990
39.164	90.962	17.890	0.0095	0.0815	0.0492	69.166.69	5.184	0.604	-9999.990	-9999.990
39.224	75.774	20.920	0.0095	0.0815	0.0492	69.166.69	5.184	0.604	-9999.990	-9999.990
39.284	75.773	20.920	0.0095	0.0815	0.0492	69.166.69	5.184	0.604	-9999.990	-9999.990
39.344	72.735	19.860	0.0091	0.0820	0.0495	69.166.69	5.420	0.603	-9999.990	-9999.990
39.404	75.773	20.920	0.0088	0.0825	0.0499	66.167.70	5.672	0.604	-9999.990	-9999.990
39.464	75.773	20.920	0.0088	0.0825	0.0499	64.168.70	5.672	0.604	-9999.990	-9999.990
39.524	109.189	23.950	0.0095	0.0805	0.0509	64.168.70	5.337	0.633	1.599	0.000
39.584	109.191	23.950	0.0092	0.0810	0.0513	69.164.72	5.582	0.633	-9999.990	-9999.990
39.644	86.238	22.587	0.0092	0.0810	0.0513	67.165.72	5.582	0.633	-9999.990	-9999.990
39.704	72.736	24.960	0.0099	0.0790	0.0523	67.165.72	5.264	0.663	-9999.990	-9999.990
39.764	72.735	24.960	0.0103	0.0784	0.0520	72.161.74	5.051	0.663	-9999.990	-9999.990
39.824	81.847	27.132	0.0103	0.0784	0.0520	75.160.73	5.051	0.663	-9999.990	-9999.990
39.884	81.848	27.132	0.0103	0.0784	0.0520	75.160.73	5.051	0.663	-9999.990	-9999.990
39.944	55.863	26.980	0.0095	0.0805	0.0509	75.160.73	5.349	0.633	-9999.990	-9999.990
40.004	51.475	29.404	0.0088	0.0825	0.0499	69.164.72	5.683	0.605	-9999.990	-9999.990
40.064	51.474	29.404	0.0088	0.0825	0.0499	64.168.70	5.683	0.605	-9999.990	-9999.990
40.124	78.809	30.010	0.0084	0.0831	0.0502	64.168.70	5.962	0.605	-9999.990	-9999.990
40.184	78.810	30.010	0.0099	0.0790	0.0523	61.170.71	5.284	0.662	-9999.990	-9999.990
40.244	109.189	31.020	0.0099	0.0791	0.0524	72.161.74	5.306	0.662	-9999.990	-9999.990
40.304	99.739	33.495	0.0107	0.0769	0.0535	72.161.74	5.019	0.696	-9999.990	-9999.990
40.364	99.738	33.495	0.0099	0.0780	0.0543	78.157.76	5.472	0.696	-9999.990	-9999.990
40.424	78.811	-9999.990	0.0095	0.0786	0.0547	72.159.77	5.728	0.696	-9999.990	-9999.990
40.484	78.810	-9999.990	0.0099	0.0780	0.0543	69.160.77	5.476	0.696	-9999.990	-9999.990
40.544	69.361	33.545	0.0103	0.0774	0.0540	72.159.77	5.237	0.697	-9999.990	-9999.990
40.604	93.998	35.767	0.0102	0.0784	0.0521	75.158.76	5.090	0.665	-9999.990	-9999.990
40.664	94.000	35.767	0.0110	0.0763	0.0533	74.160.74	4.824	0.698	-9999.990	-9999.990
40.724	106.151	34.555	0.0119	0.0739	0.0545	80.156.75	4.570	0.737	-9999.990	-9999.990
40.784	106.152	34.858	0.0119	0.0739	0.0545	87.151.77	4.570	0.737	-9999.990	-9999.990
40.844	82.862	34.858	0.0119	0.0739	0.0545	87.151.77	4.570	0.737	-9999.990	-9999.990
40.904	90.961	37.131	0.0119	0.0739	0.0545	87.151.77	4.570	0.737	-9999.990	-9999.990
40.964	90.962	37.131	0.0128	0.0716	0.0557	87.151.77	4.355	0.779	1.322	3.647
41.024	60.587	36.676	0.0128	0.0715	0.0557	93.146.79	4.353	0.779	-9999.990	-9999.990
41.084	60.586	40.110	0.0128	0.0715	0.0557	93.146.79	4.353	0.779	-9999.990	-9999.990
41.144	143.623	40.110	0.0132	0.0710	0.0553	93.146.79	4.206	0.779	-9999.990	-9999.990
41.204	97.040	38.494	0.0132	0.0710	0.0553	96.145.78	4.206	0.779	-9999.990	-9999.990
41.264	97.038	38.494	0.0128	0.0715	0.0557	96.145.78	4.351	0.779	-9999.990	-9999.990
41.324	94.000	40.615	0.0128	0.0715	0.0557	93.146.79	4.351	0.779	-9999.990	-9999.990
41.384	94.000	43.494	0.0124	0.0721	0.0561	93.146.79	4.515	0.778	-9999.990	-9999.990

Well BK1c
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
41.444	86.236	43.494	0.0121	0.0726	0.0565	90.147.79	4.685	0.778	-9999.990	-9999.990
41.504	66.662	43.494	0.0121	0.0726	0.0565	88.148.80	4.685	0.778	-9999.990	-9999.990
41.564	66.660	43.494	0.0121	0.0726	0.0565	88.148.80	4.685	0.778	-9999.990	-9999.990
41.624	72.735	47.685	0.0117	0.0732	0.0569	88.148.80	4.874	0.778	-9999.990	-9999.990
41.684	72.735	46.675	0.0117	0.0732	0.0569	85.149.80	4.874	0.778	-9999.990	-9999.990
41.744	63.623	46.675	0.0117	0.0732	0.0569	85.149.80	4.874	0.778	-9999.990	-9999.990
41.804	109.861	49.402	0.0117	0.0732	0.0569	85.149.80	4.874	0.778	-9999.990	-9999.990
41.864	109.866	49.402	0.0124	0.0721	0.0561	85.149.80	4.517	0.778	-9999.990	-9999.990
41.924	69.700	49.200	0.0128	0.0716	0.0557	90.147.79	4.359	0.779	-9999.990	-9999.990
41.984	69.698	49.402	0.0131	0.0710	0.0553	93.146.79	4.210	0.779	-9999.990	-9999.990
42.044	97.036	49.402	0.0141	0.0686	0.0566	96.145.78	4.028	0.825	-9999.990	-9999.990
42.104	106.490	52.129	0.0095	0.0903	0.0315	102.140.80	3.326	0.348	-9999.990	-9999.990
42.164	106.490	52.129	0.0105	0.0886	0.0309	69.185.44	2.938	0.349	-9999.990	-9999.990
42.224	87.926	50.715	0.0105	0.0886	0.0309	76.181.43	2.938	0.349	-9999.990	-9999.990
42.284	87.924	52.129	0.0105	0.0886	0.0309	76.181.43	2.938	0.349	-9999.990	-9999.990
42.344	60.589	52.129	0.0098	0.0904	0.0302	76.181.43	3.093	0.334	-9999.990	-9999.990
42.404	72.735	51.220	0.0094	0.0910	0.0304	71.185.42	3.230	0.334	-9999.990	-9999.990
42.464	72.735	51.220	0.0105	0.0885	0.0309	68.186.43	2.940	0.349	-9999.990	-9999.990
42.524	97.037	50.766	0.0105	0.0885	0.0309	76.181.43	2.940	0.349	-9999.990	-9999.990
42.584	97.038	53.745	0.0090	0.0922	0.0295	76.181.43	3.266	0.320	-9999.990	-9999.990
42.644	75.775	53.745	0.0098	0.0903	0.0302	66.188.41	3.089	0.334	-9999.990	-9999.990
42.704	103.113	51.220	0.0098	0.0903	0.0302	71.185.42	3.089	0.334	-9999.990	-9999.990
42.764	103.114	51.220	0.0109	0.0879	0.0307	71.185.42	2.829	0.349	-9999.990	-9999.990
42.824	94.001	52.230	0.0112	0.0874	0.0305	79.180.43	2.727	0.349	-9999.990	-9999.990
42.884	76.112	53.947	0.0118	0.0863	0.0302	81.178.43	2.550	0.349	-9999.990	-9999.990
42.944	76.110	53.947	0.0100	0.0995	0.0110	86.176.42	1.103	0.111	-9999.990	-9999.990
43.004	103.111	52.735	0.0093	0.1011	0.0107	73.203.15	1.148	0.105	-9999.990	-9999.990
43.064	103.114	52.735	0.0093	0.1011	0.0107	67.207.15	1.148	0.105	-9999.990	-9999.990
43.124	90.962	53.947	0.0086	0.1024	0.0108	67.207.15	1.252	0.105	-9999.990	-9999.990
43.184	89.612	51.220	0.0083	0.1033	0.0104	62.209.15	1.254	0.100	-9999.990	-9999.990
43.244	89.611	51.220	0.0083	0.1033	0.0104	60.211.14	1.254	0.100	-9999.990	-9999.990
43.304	109.190	51.725	0.0073	0.1054	0.0101	60.211.14	1.385	0.095	-9999.990	-9999.990
43.364	109.191	51.725	0.0076	0.1046	0.0105	53.215.14	1.380	0.100	-9999.990	-9999.990
43.424	66.663	52.129	0.0073	0.1054	0.0101	55.214.14	1.383	0.095	-9999.990	-9999.990
43.484	72.735	51.220	0.0073	0.1054	0.0101	53.215.14	1.383	0.095	-9999.990	-9999.990
43.544	72.735	51.220	0.0073	0.1054	0.0101	53.215.14	1.383	0.095	-9999.990	-9999.990
43.604	55.862	53.038	0.0079	0.1040	0.0104	53.215.14	1.313	0.100	-9999.990	-9999.990
43.664	55.861	53.038	0.0083	0.1031	0.0108	57.212.14	1.310	0.105	-9999.990	-9999.990
43.724	72.734	51.220	0.0076	0.1046	0.0105	60.211.15	1.380	0.100	-9999.990	-9999.990
43.784	90.961	52.735	0.0076	0.1046	0.0105	55.214.14	1.380	0.100	-9999.990	-9999.990
43.844	90.962	52.735	0.0069	0.1061	0.0101	55.214.14	1.463	0.095	-9999.990	-9999.990
43.904	92.987	54.856	0.0069	0.1061	0.0101	50.217.14	1.463	0.095	-9999.990	-9999.990
43.964	92.987	54.856	0.0076	0.1046	0.0105	50.217.14	1.382	0.100	-9999.990	-9999.990
44.024	69.699	54.250	0.0069	0.1061	0.0101	55.214.14	1.463	0.095	-9999.990	-9999.990
44.084	103.112	57.583	0.0069	0.1061	0.0101	50.217.14	1.463	0.095	-9999.990	-9999.990
44.144	103.114	57.583	0.0066	0.1068	0.0102	50.217.14	1.548	0.095	-9999.990	-9999.990
44.204	69.699	58.038	0.0072	0.1055	0.0100	48.218.14	1.388	0.095	-9999.990	-9999.990
44.264	69.698	58.038	0.0076	0.1049	0.0100	52.216.14	1.321	0.095	-9999.990	-9999.990
44.324	82.859	59.805	0.0082	0.1036	0.0099	55.214.14	1.202	0.095	-9999.990	-9999.990
44.384	63.625	62.583	0.0086	0.1028	0.0103	60.212.14	1.201	0.100	-9999.990	-9999.990
44.444	63.623	62.583	0.0082	0.1034	0.0103	62.210.14	1.254	0.100	-9999.990	-9999.990
44.504	57.549	62.330	0.0082	0.1034	0.0103	60.211.14	1.254	0.100	-9999.990	-9999.990
44.564	57.549	62.330	0.0082	0.1034	0.0103	60.211.14	1.254	0.100	-9999.990	-9999.990
44.624	59.236	65.764	0.0099	0.0996	0.0110	60.211.14	1.104	0.110	-9999.990	-9999.990
44.684	72.734	64.855	0.0092	0.1012	0.0106	72.204.15	1.149	0.105	-9999.990	-9999.990
44.744	72.735	64.855	0.0092	0.1012	0.0106	67.207.15	1.149	0.105	-9999.990	-9999.990
44.804	81.848	66.219	0.0110	0.0885	0.0290	67.207.15	2.636	0.327	-9999.990	-9999.990
44.864	81.848	66.219	0.0103	0.0903	0.0283	80.181.41	2.758	0.314	-9999.990	-9999.990
44.924	62.612	69.400	0.0096	0.0920	0.0277	75.184.40	2.896	0.301	-9999.990	-9999.990
44.984	75.771	68.037	0.0118	0.0776	0.0477	69.188.39	4.059	0.615	-9999.990	-9999.990
45.044	75.773	68.037	0.0118	0.0776	0.0477	85.158.67	4.059	0.615	-9999.990	-9999.990
45.104	82.860	69.905	0.0124	0.0766	0.0471	85.158.67	3.799	0.615	-9999.990	-9999.990
45.164	82.861	69.905	0.0127	0.0761	0.0468	90.156.67	3.680	0.615	-9999.990	-9999.990
45.224	57.551	71.673	0.0132	0.0746	0.0481	93.155.66	3.646	0.645	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
45.284	57.549	71.218	0.0132	0.0746	0.0481	96.152.68	3.646	0.645	-9999.990	-9999.990
45.344	57.549	71.218	0.0113	0.0880	0.0287	96.152.68	2.531	0.326	-9999.990	-9999.990
45.404	86.235	74.450	0.0110	0.0886	0.0289	82.180.40	2.620	0.326	-9999.990	-9999.990
45.464	86.236	74.450	0.0106	0.0898	0.0280	80.181.41	2.643	0.312	-9999.990	-9999.990
45.524	87.924	72.582	0.0109	0.0892	0.0279	77.183.39	2.551	0.313	-9999.990	-9999.990
45.584	112.228	73.945	0.0106	0.0897	0.0280	79.182.39	2.641	0.312	-9999.990	-9999.990
45.644	112.229	73.945	0.0103	0.0903	0.0282	77.183.39	2.738	0.312	-9999.990	-9999.990
45.704	65.988	76.218	0.0103	0.0903	0.0282	75.184.40	2.738	0.312	-9999.990	-9999.990
45.764	65.985	76.218	0.0129	0.0748	0.0486	75.184.40	3.758	0.649	-9999.990	-9999.990
45.824	84.884	74.400	0.0129	0.0748	0.0486	94.153.69	3.758	0.649	-9999.990	-9999.990
45.884	72.736	77.985	0.0134	0.0733	0.0499	94.153.69	3.723	0.681	-9999.990	-9999.990
45.944	72.735	77.985	0.0126	0.0754	0.0489	97.150.70	3.879	0.648	-9999.990	-9999.990
46.004	72.735	75.763	0.0129	0.0749	0.0485	92.154.69	3.758	0.648	-9999.990	-9999.990
46.064	72.735	75.763	0.0129	0.0749	0.0485	94.153.69	3.758	0.648	-9999.990	-9999.990
46.124	86.235	75.965	0.0140	0.0723	0.0492	94.153.69	3.508	0.681	-9999.990	-9999.990
46.184	106.150	77.581	0.0140	0.0723	0.0492	102.148.70	3.508	0.681	-9999.990	-9999.990
46.244	106.152	77.581	0.0132	0.0744	0.0482	102.148.70	3.644	0.648	-9999.990	-9999.990
46.304	97.038	74.854	0.0132	0.0744	0.0482	96.152.68	3.644	0.648	-9999.990	-9999.990
46.364	97.038	74.854	0.0135	0.0739	0.0479	96.152.68	3.538	0.648	-9999.990	-9999.990
46.424	86.237	77.480	0.0132	0.0744	0.0482	99.151.68	3.641	0.648	-9999.990	-9999.990
46.484	106.150	74.400	0.0131	0.0755	0.0467	96.152.68	3.566	0.618	-9999.990	-9999.990
46.544	106.152	74.400	0.0134	0.0750	0.0464	95.154.66	3.463	0.619	-9999.990	-9999.990
46.604	112.229	74.450	0.0136	0.0740	0.0479	97.153.65	3.534	0.648	-9999.990	-9999.990
46.664	112.229	74.450	0.0125	0.0764	0.0472	99.151.68	3.787	0.618	-9999.990	-9999.990
46.724	103.115	74.854	0.0118	0.0774	0.0478	91.156.67	4.040	0.618	-9999.990	-9999.990
46.784	65.987	72.935	0.0118	0.0774	0.0478	86.158.68	4.040	0.618	-9999.990	-9999.990
46.844	65.985	72.935	0.0126	0.0754	0.0488	86.158.68	3.870	0.647	-9999.990	-9999.990
46.904	60.586	73.945	0.0116	0.0769	0.0497	92.154.69	4.277	0.646	-9999.990	-9999.990
46.964	60.586	73.945	0.0120	0.0764	0.0494	85.157.70	4.131	0.647	-9999.990	-9999.990
47.024	96.359	71.420	0.0120	0.0764	0.0494	87.156.70	4.131	0.647	-9999.990	-9999.990
47.084	75.774	71.218	0.0116	0.0769	0.0497	87.156.70	4.277	0.646	-9999.990	-9999.990
47.144	75.773	71.218	0.0119	0.0764	0.0494	85.157.70	4.135	0.647	-9999.990	-9999.990
47.204	82.860	72.935	0.0119	0.0764	0.0494	87.156.70	4.135	0.647	-9999.990	-9999.990
47.264	82.861	72.935	0.0119	0.0764	0.0494	87.156.70	4.135	0.647	-9999.990	-9999.990
47.324	63.625	-9999.990	0.0119	0.0764	0.0494	87.156.70	4.135	0.647	-9999.990	-9999.990
47.384	54.512	70.410	0.0113	0.0774	0.0501	87.156.70	4.444	0.646	-9999.990	-9999.990
47.444	54.511	70.410	0.0119	0.0764	0.0494	82.158.71	4.141	0.647	-9999.990	-9999.990
47.504	72.733	70.764	0.0123	0.0759	0.0491	87.156.70	4.004	0.647	0.996	2.641
47.564	72.735	70.764	0.0123	0.0759	0.0491	89.155.69	4.004	0.647	-9999.990	-9999.990
47.624	48.439	68.946	0.0134	0.0733	0.0498	89.155.69	3.720	0.679	-9999.990	-9999.990
47.684	54.511	70.915	0.0142	0.0712	0.0508	97.150.70	3.580	0.714	-9999.990	-9999.990
47.744	54.511	70.915	0.0142	0.0712	0.0508	103.145.72	3.580	0.714	-9999.990	-9999.990
47.804	52.487	68.491	0.0142	0.0712	0.0508	103.145.72	3.580	0.714	-9999.990	-9999.990
47.864	52.487	70.309	0.0142	0.0712	0.0508	103.145.72	3.580	0.714	-9999.990	-9999.990
47.924	30.219	70.309	0.0130	0.0739	0.0501	103.145.72	3.840	0.678	-9999.990	-9999.990
47.984	36.290	68.037	0.0127	0.0743	0.0504	95.151.71	3.964	0.678	-9999.990	-9999.990
48.044	36.290	68.037	0.0127	0.0743	0.0504	93.152.71	3.964	0.678	-9999.990	-9999.990
48.104	54.511	69.400	0.0124	0.0749	0.0508	93.152.71	4.098	0.678	-9999.990	-9999.990
48.164	54.511	70.764	0.0120	0.0754	0.0511	90.153.72	4.241	0.678	-9999.990	-9999.990
48.224	59.235	70.764	0.0120	0.0754	0.0511	88.154.72	4.241	0.678	-9999.990	-9999.990
48.284	60.586	69.400	0.0142	0.0692	0.0548	88.154.72	3.852	0.792	-9999.990	-9999.990
48.344	60.586	69.400	0.0142	0.0692	0.0548	104.141.77	3.851	0.792	-9999.990	-9999.990
48.404	57.549	72.582	0.0133	0.0715	0.0536	104.141.77	4.019	0.749	-9999.990	-9999.990
48.464	57.549	72.127	0.0133	0.0716	0.0536	97.146.76	4.022	0.749	-9999.990	-9999.990
48.524	62.610	72.127	0.0138	0.0698	0.0551	97.146.76	3.981	0.790	-9999.990	-9999.990
48.584	51.476	74.400	0.0135	0.0703	0.0555	101.142.78	4.115	0.790	-9999.990	-9999.990
48.644	51.474	74.400	0.0140	0.0683	0.0572	98.143.78	4.071	0.837	-9999.990	-9999.990
48.704	72.734	75.185	0.0140	0.0683	0.0572	102.139.81	4.071	0.837	-9999.990	-9999.990
48.764	72.735	74.400	0.0137	0.0689	0.0576	102.139.81	4.209	0.836	-9999.990	-9999.990
48.824	66.661	74.400	0.0137	0.0689	0.0576	100.141.81	4.211	0.836	-9999.990	-9999.990
48.884	92.984	75.839	0.0146	0.0663	0.0589	99.141.81	4.030	0.888	-9999.990	-9999.990
48.944	92.987	75.839	0.0150	0.0658	0.0585	106.135.83	3.904	0.888	-9999.990	-9999.990
49.004	69.700	75.344	0.0163	0.0627	0.0594	109.134.83	3.642	0.947	-9999.990	-9999.990
49.064	69.698	76.867	0.0163	0.0627	0.0594	119.128.84	3.642	0.947	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
49.124	72.735	76.867	0.0163	0.0627	0.0594	119.128.84	3.642	0.947	-9999.990	-9999.990
49.184	81.847	75.282	0.0156	0.0637	0.0603	119.128.84	3.870	0.946	-9999.990	-9999.990
49.244	81.848	75.282	0.0156	0.0637	0.0603	113.130.85	3.870	0.946	-9999.990	-9999.990
49.304	84.886	74.663	0.0159	0.0632	0.0598	113.130.85	3.753	0.946	-9999.990	-9999.990
49.364	84.886	73.491	0.0163	0.0627	0.0594	116.129.85	3.644	0.947	-9999.990	-9999.990
49.424	79.486	73.491	0.0163	0.0627	0.0594	119.128.84	3.644	0.947	-9999.990	-9999.990
49.484	84.886	72.214	0.0169	0.0605	0.0612	119.128.84	3.613	1.011	-9999.990	-9999.990
49.544	84.886	-9999.990	0.0173	0.0600	0.0607	123.123.87	3.511	1.012	-9999.990	-9999.990
49.604	92.986	-9999.990	0.0169	0.0605	0.0612	126.122.86	3.612	1.011	-9999.990	-9999.990
49.664	92.987	-9999.990	0.0169	0.0605	0.0612	123.123.87	3.612	1.011	-9999.990	-9999.990
49.724	63.625	-9999.990	0.0169	0.0605	0.0612	123.123.87	3.612	1.011	-9999.990	-9999.990
49.784	72.735	-9999.990	0.0173	0.0600	0.0607	123.123.87	3.510	1.012	-9999.990	-9999.990
49.844	72.735	-9999.990	0.0173	0.0600	0.0607	126.122.86	3.510	1.012	-9999.990	-9999.990
49.904	76.110	-9999.990	0.0180	0.0577	0.0626	126.122.86	3.481	1.086	-9999.990	-9999.990
49.964	72.735	-9999.990	0.0180	0.0577	0.0626	131.118.89	3.481	1.086	-9999.990	-9999.990
50.024	72.735	-9999.990	0.0180	0.0577	0.0626	131.118.89	3.481	1.086	-9999.990	-9999.990
50.084	69.698	-9999.990	0.0187	0.0552	0.0647	131.118.89	3.453	1.171	-9999.990	-9999.990
50.144	69.698	-9999.990	0.0206	0.0512	0.0652	136.113.91	3.166	1.273	-9999.990	-9999.990
50.204	66.661	-9999.990	0.0206	0.0512	0.0652	150.104.92	3.166	1.273	-9999.990	-9999.990
50.264	65.985	-9999.990	0.0203	0.0516	0.0657	150.104.92	3.244	1.273	-9999.990	-9999.990
50.324	65.985	-9999.990	0.0199	0.0521	0.0662	148.105.93	3.328	1.272	-9999.990	-9999.990
50.384	69.698	-9999.990	0.0199	0.0521	0.0662	145.106.94	3.324	1.272	-9999.990	-9999.990
50.444	69.698	-9999.990	0.0203	0.0516	0.0657	145.106.94	3.238	1.273	-9999.990	-9999.990
50.504	57.550	-9999.990	0.0184	0.0573	0.0620	148.105.93	3.377	1.082	-9999.990	-9999.990
50.564	78.808	-9999.990	0.0184	0.0573	0.0620	134.117.88	3.377	1.082	-9999.990	-9999.990
50.624	78.810	-9999.990	0.0159	0.0634	0.0596	134.117.88	3.745	0.939	-9999.990	-9999.990
50.684	38.994	-9999.990	0.0202	0.0400	0.0891	116.129.84	4.409	2.227	-9999.990	-9999.990
50.744	38.990	-9999.990	0.0219	0.0336	0.0951	147.81.126	4.336	2.831	-9999.990	-9999.990
50.804	66.659	-9999.990	0.0214	0.0365	0.0913	160.68.135	4.265	2.498	-9999.990	-9999.990
50.864	54.513	-9999.990	0.0209	0.0393	0.0877	156.74.129	4.194	2.232	-9999.990	-9999.990
50.924	54.511	-9999.990	0.0209	0.0393	0.0877	152.80.124	4.194	2.232	-9999.990	-9999.990
50.984	76.109	-9999.990	0.0216	0.0386	0.0864	152.80.124	3.998	2.236	-9999.990	-9999.990
51.044	76.110	-9999.990	0.0211	0.0412	0.0832	157.79.122	3.936	2.020	-9999.990	-9999.990
51.104	66.661	-9999.990	0.0211	0.0412	0.0832	154.84.118	3.938	2.020	-9999.990	-9999.990
51.164	78.809	-9999.990	0.0211	0.0412	0.0832	154.84.118	3.938	2.020	-9999.990	-9999.990
51.224	78.810	-9999.990	0.0208	0.0415	0.0838	154.84.118	4.030	2.018	-9999.990	-9999.990
51.284	76.110	-9999.990	0.0197	0.0446	0.0820	152.85.119	4.158	1.838	-9999.990	-9999.990
51.344	76.110	-9999.990	0.0197	0.0446	0.0820	144.91.116	4.158	1.838	-9999.990	-9999.990
51.404	57.549	-9999.990	0.0197	0.0446	0.0820	144.91.116	4.158	1.838	-9999.990	-9999.990
51.464	33.255	-9999.990	0.0197	0.0446	0.0820	144.91.116	4.158	1.838	-9999.990	-9999.990
51.524	33.254	-9999.990	0.0200	0.0442	0.0814	144.91.116	4.059	1.839	0.728	1.339
51.584	69.358	-9999.990	0.0190	0.0472	0.0796	146.90.115	4.189	1.688	-9999.990	-9999.990
51.644	69.360	-9999.990	0.0193	0.0468	0.0790	139.96.113	4.088	1.689	-9999.990	-9999.990
51.704	60.586	-9999.990	0.0183	0.0497	0.0774	141.95.112	4.223	1.557	-9999.990	-9999.990
51.764	49.113	-9999.990	0.0190	0.0489	0.0763	133.101.110	4.022	1.559	-9999.990	-9999.990
51.824	49.112	-9999.990	0.0190	0.0489	0.0763	138.100.108	4.022	1.559	-9999.990	-9999.990
51.884	48.438	-9999.990	0.0186	0.0493	0.0768	138.100.108	4.122	1.558	-9999.990	-9999.990
51.944	48.438	-9999.990	0.0170	0.0528	0.0763	136.100.109	4.485	1.445	-9999.990	-9999.990
52.004	39.328	-9999.990	0.0167	0.0532	0.0768	124.108.108	4.607	1.444	-9999.990	-9999.990
52.064	52.486	-9999.990	0.0167	0.0532	0.0768	122.108.109	4.607	1.444	-9999.990	-9999.990
52.124	52.487	-9999.990	0.0163	0.0536	0.0774	122.108.109	4.737	1.443	-9999.990	-9999.990
52.184	78.808	-9999.990	0.0163	0.0536	0.0774	119.109.110	4.737	1.443	-9999.990	-9999.990
52.244	78.810	-9999.990	0.0183	0.0480	0.0808	119.109.110	4.414	1.681	-9999.990	-9999.990
52.304	60.587	-9999.990	0.0162	0.0522	0.0807	133.98.114	4.974	1.548	-9999.990	-9999.990
52.364	48.439	-9999.990	0.0166	0.0517	0.0801	118.106.114	4.831	1.549	-9999.990	-9999.990
52.424	48.438	-9999.990	0.0176	0.0488	0.0819	121.105.113	4.654	1.678	-9999.990	-9999.990
52.484	49.112	-9999.990	0.0176	0.0488	0.0819	128.99.116	4.654	1.678	0.942	1.597
52.544	49.112	-9999.990	0.0176	0.0488	0.0819	128.99.116	4.652	1.678	-9999.990	-9999.990
52.604	78.807	-9999.990	0.0180	0.0484	0.0813	128.99.116	4.528	1.679	-9999.990	-9999.990
52.664	60.588	-9999.990	0.0200	0.0444	0.0812	131.99.115	4.062	1.831	-9999.990	-9999.990
52.724	60.586	-9999.990	0.0189	0.0474	0.0794	146.90.115	4.197	1.675	-9999.990	-9999.990
52.784	103.114	-9999.990	0.0189	0.0474	0.0794	138.97.112	4.197	1.675	-9999.990	-9999.990
52.844	103.114	-9999.990	0.0189	0.0474	0.0794	138.97.112	4.197	1.675	-9999.990	-9999.990
52.904	60.590	-9999.990	0.0186	0.0478	0.0800	138.97.112	4.302	1.674	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
52.964	51.474	-9999.990	0.0183	0.0482	0.0806	136.97.113	4.413	1.673	-9999.990	-9999.990
53.024	51.474	-9999.990	0.0176	0.0489	0.0818	133.98.114	4.653	1.671	-9999.990	-9999.990
53.084	118.307	-9999.990	0.0176	0.0489	0.0818	128.100.116	4.653	1.671	-9999.990	-9999.990
53.144	118.307	-9999.990	0.0190	0.0455	0.0830	128.100.116	4.376	1.823	-9999.990	-9999.990
53.204	49.120	-9999.990	0.0193	0.0452	0.0824	138.93.118	4.266	1.824	-9999.990	-9999.990
53.264	66.658	-9999.990	0.0176	0.0489	0.0818	141.92.117	4.653	1.673	-9999.990	-9999.990
53.324	66.660	-9999.990	0.0179	0.0485	0.0812	128.100.116	4.527	1.674	-9999.990	-9999.990
53.384	84.884	-9999.990	0.0197	0.0448	0.0818	131.99.115	4.162	1.827	-9999.990	-9999.990
53.444	84.886	-9999.990	0.0200	0.0444	0.0812	143.91.116	4.063	1.829	-9999.990	-9999.990
53.504	76.111	-9999.990	0.0200	0.0444	0.0812	146.90.115	4.062	1.826	-9999.990	-9999.990
53.564	81.847	-9999.990	0.0200	0.0444	0.0812	146.91.115	4.062	1.826	-9999.990	-9999.990
53.624	81.848	-9999.990	0.0211	0.0414	0.0830	146.91.115	3.939	2.005	-9999.990	-9999.990
53.684	79.485	-9999.990	0.0214	0.0410	0.0824	154.84.118	3.851	2.007	-9999.990	-9999.990
53.744	79.485	-9999.990	0.0217	0.0407	0.0817	156.84.117	3.766	2.008	-9999.990	-9999.990
53.804	69.699	-9999.990	0.0217	0.0407	0.0817	158.83.116	3.766	2.008	-9999.990	-9999.990
53.864	90.960	-9999.990	0.0217	0.0407	0.0817	158.83.116	3.766	2.008	-9999.990	-9999.990
53.924	90.962	-9999.990	0.0232	0.0372	0.0830	158.83.116	3.584	2.231	-9999.990	-9999.990
53.984	79.487	-9999.990	0.0232	0.0372	0.0830	169.76.118	3.583	2.231	-9999.990	-9999.990
54.044	79.485	-9999.990	0.0232	0.0372	0.0830	169.76.118	3.583	2.231	-9999.990	-9999.990
54.104	72.735	-9999.990	0.0283	0.0115	0.1135	169.76.118	4.005	9.841	-9999.990	-9999.990
54.164	78.810	-9999.990	0.0283	0.0115	0.1135	207.23.161	4.005	9.841	-9999.990	-9999.990
54.224	78.810	-9999.990	0.0289	0.0113	0.1117	207.23.161	3.863	9.896	-9999.990	-9999.990
54.284	86.235	-9999.990	0.0270	0.0155	0.1109	211.23.158	4.102	7.169	-9999.990	-9999.990
54.344	86.236	-9999.990	0.0270	0.0155	0.1109	197.31.157	4.102	7.168	-9999.990	-9999.990
54.404	84.886	-9999.990	0.0270	0.0155	0.1109	197.31.157	4.100	7.169	-9999.990	-9999.990
54.464	60.588	-9999.990	0.0258	0.0192	0.1084	197.31.157	4.204	5.650	-9999.990	-9999.990
54.524	60.586	-9999.990	0.0249	0.0226	0.1053	188.39.154	4.230	4.663	-9999.990	-9999.990
54.584	69.359	-9999.990	0.0249	0.0226	0.1053	182.46.149	4.230	4.663	-9999.990	-9999.990
54.644	69.360	-9999.990	0.0249	0.0226	0.1053	182.46.149	4.230	4.663	-9999.990	-9999.990
54.704	75.772	-9999.990	0.0240	0.0258	0.1023	182.46.149	4.256	3.964	-9999.990	-9999.990
54.764	78.810	-9999.990	0.0255	0.0222	0.1037	175.52.145	4.070	4.669	-9999.990	-9999.990
54.824	78.810	-9999.990	0.0255	0.0222	0.1037	186.45.147	4.070	4.669	-9999.990	-9999.990
54.884	63.625	-9999.990	0.0211	0.0449	0.0756	186.45.147	3.580	1.684	-9999.990	-9999.990
54.944	63.623	-9999.990	0.0228	0.0414	0.0761	154.92.107	3.344	1.837	-9999.990	-9999.990
55.004	86.236	-9999.990	0.0241	0.0382	0.0772	166.84.108	3.201	2.019	-9999.990	-9999.990
55.064	69.699	-9999.990	0.0208	0.0566	0.0536	176.78.109	2.583	0.947	-9999.990	-9999.990
55.124	69.698	-9999.990	0.0208	0.0567	0.0536	151.116.76	2.583	0.947	-9999.990	-9999.990
55.184	90.960	-9999.990	0.0211	0.0562	0.0533	151.116.76	2.531	0.947	-9999.990	-9999.990
55.244	90.962	-9999.990	0.0205	0.0571	0.0540	153.115.75	2.639	0.946	-9999.990	-9999.990
55.304	66.663	-9999.990	0.0202	0.0575	0.0544	149.116.76	2.697	0.946	-9999.990	-9999.990
55.364	103.110	-9999.990	0.0192	0.0600	0.0532	147.117.77	2.773	0.887	-9999.990	-9999.990
55.424	103.114	-9999.990	0.0186	0.0620	0.0518	140.122.75	2.789	0.835	-9999.990	-9999.990
55.484	106.152	-9999.990	0.0180	0.0639	0.0504	135.126.73	2.806	0.789	-9999.990	-9999.990
55.544	106.152	-9999.990	0.0168	0.0666	0.0497	131.130.71	2.960	0.745	-9999.990	-9999.990
55.604	100.077	-9999.990	0.0165	0.0671	0.0500	122.136.70	3.033	0.745	-9999.990	-9999.990
55.664	82.861	-9999.990	0.0140	0.0735	0.0470	120.137.71	3.356	0.640	-9999.990	-9999.990
55.724	82.861	-9999.990	0.0133	0.0754	0.0461	102.150.66	3.481	0.611	-9999.990	-9999.990
55.784	133.501	-9999.990	0.0128	0.0769	0.0450	96.154.65	3.511	0.585	-9999.990	-9999.990
55.844	133.501	-9999.990	0.0128	0.0769	0.0450	93.157.63	3.511	0.585	-9999.990	-9999.990
55.904	86.241	-9999.990	0.0094	0.0934	0.0257	93.157.63	2.731	0.275	-9999.990	-9999.990
55.964	109.188	-9999.990	0.0088	0.0949	0.0251	68.191.36	2.868	0.265	-9999.990	-9999.990
56.024	109.191	-9999.990	0.0091	0.0944	0.0250	64.194.35	2.759	0.265	-9999.990	-9999.990
56.084	100.076	-9999.990	0.0081	0.0965	0.0246	66.193.35	3.029	0.255	-9999.990	-9999.990
56.144	100.076	-9999.990	0.0081	0.0964	0.0246	59.197.34	3.028	0.255	0.712	6.351
56.204	96.363	-9999.990	0.0078	0.0970	0.0247	59.197.34	3.163	0.255	-9999.990	-9999.990
56.264	109.190	-9999.990	0.0078	0.0970	0.0247	57.198.35	3.163	0.255	-9999.990	-9999.990
56.324	109.191	-9999.990	0.0081	0.0960	0.0254	57.198.35	3.123	0.265	-9999.990	-9999.990
56.384	96.364	-9999.990	0.0084	0.0955	0.0253	59.196.36	2.991	0.265	-9999.990	-9999.990
56.444	96.363	-9999.990	0.0081	0.0960	0.0254	61.195.35	3.122	0.265	-9999.990	-9999.990
56.504	94.000	-9999.990	0.0081	0.0960	0.0254	59.196.36	3.122	0.265	-9999.990	-9999.990
56.564	115.266	-9999.990	0.0081	0.0956	0.0263	59.196.36	3.223	0.275	-9999.990	-9999.990
56.624	115.268	-9999.990	0.0081	0.0956	0.0263	59.195.37	3.223	0.275	-9999.990	-9999.990
56.684	106.153	-9999.990	0.0085	0.0950	0.0261	59.195.37	3.081	0.275	-9999.990	-9999.990
56.744	96.363	-9999.990	0.0085	0.0950	0.0261	61.194.37	3.081	0.275	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
56.804	96.363	-9999.990	0.0091	0.0934	0.0267	61.194.37	2.924	0.286	-9999.990	-9999.990
56.864	94.000	-9999.990	0.0091	0.0934	0.0267	66.191.37	2.924	0.286	-9999.990	-9999.990
56.924	94.000	-9999.990	0.0085	0.0951	0.0261	66.191.37	3.087	0.274	-9999.990	-9999.990
56.984	75.775	-9999.990	0.0088	0.0945	0.0259	61.194.37	2.957	0.275	-9999.990	-9999.990
57.044	69.361	-9999.990	0.0085	0.0950	0.0261	64.193.36	3.084	0.274	-9999.990	-9999.990
57.104	69.360	-9999.990	0.0085	0.0950	0.0261	61.194.37	3.084	0.274	-9999.990	-9999.990
57.164	75.772	-9999.990	0.0085	0.0950	0.0261	61.194.37	3.084	0.274	-9999.990	-9999.990
57.224	75.773	-9999.990	0.0072	0.0977	0.0258	61.194.37	3.591	0.264	-9999.990	-9999.990
57.284	90.960	-9999.990	0.0078	0.0966	0.0255	52.200.36	3.264	0.264	-9999.990	-9999.990
57.344	93.999	-9999.990	0.0078	0.0966	0.0255	57.197.36	3.264	0.264	-9999.990	-9999.990
57.404	94.000	-9999.990	0.0072	0.0981	0.0250	57.197.36	3.471	0.255	-9999.990	-9999.990
57.464	72.735	-9999.990	0.0072	0.0981	0.0250	52.200.35	3.471	0.255	-9999.990	-9999.990
57.524	72.735	-9999.990	0.0072	0.0981	0.0250	52.200.35	3.471	0.255	-9999.990	-9999.990
57.584	69.698	-9999.990	0.0060	0.1007	0.0247	52.200.35	4.143	0.245	-9999.990	-9999.990
57.644	106.149	-9999.990	0.0056	0.1013	0.0248	43.206.35	4.402	0.245	-9999.990	-9999.990
57.704	106.152	-9999.990	0.0059	0.1004	0.0255	41.207.35	4.314	0.254	-9999.990	-9999.990
57.764	96.363	-9999.990	0.0059	0.1004	0.0255	43.205.36	4.314	0.254	-9999.990	-9999.990
57.824	96.363	-9999.990	0.0062	0.0998	0.0254	43.205.36	4.070	0.254	-9999.990	-9999.990
57.884	109.190	-9999.990	0.0056	0.1013	0.0249	45.204.36	4.407	0.245	-9999.990	-9999.990
57.944	90.964	-9999.990	0.0056	0.1013	0.0249	41.207.35	4.407	0.245	-9999.990	-9999.990
58.004	90.962	-9999.990	0.0085	0.0860	0.0440	41.207.35	5.181	0.511	-9999.990	-9999.990
58.064	103.112	-9999.990	0.0085	0.0860	0.0440	62.176.62	5.181	0.511	-9999.990	-9999.990
58.124	103.114	-9999.990	0.0085	0.0860	0.0440	62.176.62	5.181	0.511	-9999.990	-9999.990
58.184	130.459	-9999.990	0.0085	0.0860	0.0440	62.176.62	5.181	0.511	-9999.990	-9999.990
58.244	72.741	-9999.990	0.0085	0.0860	0.0440	62.176.62	5.181	0.511	1.551	0.000
58.304	72.735	-9999.990	0.0066	0.0911	0.0415	62.176.62	6.326	0.456	-9999.990	-9999.990
58.364	92.987	-9999.990	0.0066	0.0911	0.0415	48.186.59	6.327	0.456	-9999.990	-9999.990
58.424	92.987	-9999.990	0.0066	0.0911	0.0415	48.186.59	6.327	0.456	-9999.990	-9999.990
58.484	78.812	-9999.990	0.0072	0.0895	0.0423	48.186.59	5.890	0.473	-9999.990	-9999.990
58.544	87.923	-9999.990	0.0081	0.0873	0.0429	52.183.60	5.266	0.492	-9999.990	-9999.990
58.604	87.924	-9999.990	0.0081	0.0873	0.0429	59.178.61	5.266	0.492	-9999.990	-9999.990
58.664	96.362	-9999.990	0.0081	0.0873	0.0429	59.178.61	5.266	0.492	-9999.990	-9999.990
58.724	96.363	-9999.990	0.0081	0.0873	0.0429	59.178.61	5.266	0.492	-9999.990	-9999.990
58.784	78.810	-9999.990	0.0081	0.0873	0.0429	59.178.61	5.266	0.492	-9999.990	-9999.990
58.844	100.074	-9999.990	0.0081	0.0873	0.0429	59.178.61	5.266	0.492	-9999.990	-9999.990
58.904	100.076	-9999.990	0.0081	0.0873	0.0429	59.178.61	5.266	0.492	-9999.990	-9999.990
58.964	69.363	-9999.990	0.0088	0.0855	0.0437	59.178.61	4.966	0.511	-9999.990	-9999.990
59.024	69.360	-9999.990	0.0088	0.0855	0.0437	64.175.62	4.966	0.511	-9999.990	-9999.990
59.084	97.038	-9999.990	0.0085	0.0860	0.0440	64.175.62	5.182	0.511	-9999.990	-9999.990
59.144	84.887	-9999.990	0.0082	0.0866	0.0442	62.176.62	5.420	0.511	-9999.990	-9999.990
59.204	84.886	-9999.990	0.0085	0.0860	0.0440	59.177.62	5.179	0.511	-9999.990	-9999.990
59.264	66.662	-9999.990	0.0088	0.0855	0.0437	62.176.62	4.958	0.511	-9999.990	-9999.990
59.324	66.660	-9999.990	0.0088	0.0855	0.0437	64.175.62	4.958	0.511	-9999.990	-9999.990
59.384	82.857	-9999.990	0.0088	0.0855	0.0437	64.175.62	4.955	0.511	-9999.990	-9999.990
59.444	78.810	-9999.990	0.0085	0.0860	0.0440	64.175.62	5.170	0.511	-9999.990	-9999.990
59.504	78.810	-9999.990	0.0082	0.0872	0.0429	62.176.62	5.250	0.491	-9999.990	-9999.990
59.564	57.551	-9999.990	0.0082	0.0872	0.0429	59.178.60	5.250	0.491	-9999.990	-9999.990
59.624	57.549	-9999.990	0.0082	0.0872	0.0429	59.178.60	5.250	0.491	-9999.990	-9999.990
59.684	78.810	-9999.990	0.0078	0.0878	0.0431	59.178.60	5.498	0.491	-9999.990	-9999.990
59.744	86.236	-9999.990	0.0078	0.0878	0.0431	57.179.61	5.498	0.491	-9999.990	-9999.990
59.804	86.236	-9999.990	0.0082	0.0872	0.0429	57.179.61	5.253	0.491	-9999.990	-9999.990
59.864	81.849	-9999.990	0.0082	0.0872	0.0429	59.178.60	5.253	0.491	-9999.990	-9999.990
59.924	81.848	-9999.990	0.0078	0.0878	0.0431	59.178.60	5.501	0.491	-9999.990	-9999.990
59.984	81.848	-9999.990	0.0078	0.0878	0.0431	57.179.61	5.501	0.491	-9999.990	-9999.990
60.044	65.987	-9999.990	0.0082	0.0872	0.0429	57.179.61	5.255	0.491	-9999.990	-9999.990
60.104	65.985	-9999.990	0.0082	0.0872	0.0429	59.178.60	5.255	0.491	-9999.990	-9999.990
60.164	54.513	-9999.990	0.0082	0.0872	0.0429	59.178.60	5.255	0.491	-9999.990	-9999.990
60.224	54.511	-9999.990	0.0075	0.0883	0.0434	59.178.60	5.777	0.491	-9999.990	-9999.990
60.284	38.991	-9999.990	0.0075	0.0883	0.0434	54.180.61	5.777	0.491	-9999.990	-9999.990
60.344	66.657	-9999.990	0.0075	0.0883	0.0434	54.180.61	5.777	0.491	-9999.990	-9999.990
60.404	66.660	-9999.990	0.0075	0.0883	0.0434	54.180.61	5.777	0.491	-9999.990	-9999.990
60.464	72.735	-9999.990	0.0078	0.0878	0.0431	54.180.61	5.510	0.491	-9999.990	-9999.990
60.524	72.735	-9999.990	0.0075	0.0883	0.0434	57.179.61	5.787	0.491	-9999.990	-9999.990
60.584	92.985	-9999.990	0.0075	0.0883	0.0434	54.180.61	5.789	0.491	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
60.644	60.589	-9999.990	0.0078	0.0871	0.0445	54.180.61	5.684	0.511	-9999.990	-9999.990
60.704	60.586	-9999.990	0.0092	0.0842	0.0449	57.178.63	4.892	0.533	-9999.990	-9999.990
60.764	42.366	-9999.990	0.0062	0.0998	0.0254	67.172.63	4.072	0.255	-9999.990	-9999.990
60.824	42.364	-9999.990	0.0048	0.1035	0.0237	45.204.36	4.943	0.229	-9999.990	-9999.990
60.884	49.112	-9999.990	0.0047	0.1033	0.0245	35.212.33	5.183	0.237	-9999.990	-9999.990
60.944	63.621	-9999.990	0.0053	0.1019	0.0250	34.211.34	4.715	0.245	-9999.990	-9999.990
61.004	63.623	-9999.990	0.0056	0.1013	0.0249	38.208.35	4.417	0.245	-9999.990	-9999.990
61.064	48.439	-9999.990	0.0050	0.1025	0.0251	41.207.35	5.055	0.245	-9999.990	-9999.990
61.124	48.438	-9999.990	0.0050	0.1025	0.0251	36.209.35	5.055	0.245	-9999.990	-9999.990
61.184	78.807	-9999.990	0.0052	0.1016	0.0258	36.209.35	4.931	0.254	-9999.990	-9999.990
61.244	82.860	-9999.990	0.0046	0.1031	0.0253	38.208.36	5.445	0.245	-9999.990	-9999.990
61.304	82.861	-9999.990	0.0050	0.1025	0.0251	33.211.35	5.045	0.245	-9999.990	-9999.990
61.364	84.886	-9999.990	0.0053	0.1019	0.0250	36.209.35	4.703	0.245	-9999.990	-9999.990
61.424	84.886	-9999.990	0.0056	0.1013	0.0248	38.208.35	4.413	0.245	-9999.990	-9999.990
61.484	48.441	-9999.990	0.0050	0.1028	0.0243	41.207.35	4.824	0.237	-9999.990	-9999.990
61.544	55.860	-9999.990	0.0048	0.1036	0.0237	36.210.34	4.944	0.228	-9999.990	-9999.990
61.604	55.861	-9999.990	0.0045	0.1042	0.0238	34.212.33	5.324	0.228	-9999.990	-9999.990
61.664	57.548	-9999.990	0.0050	0.1028	0.0243	32.213.33	4.833	0.236	-9999.990	-9999.990
61.724	57.549	-9999.990	0.0047	0.1034	0.0244	36.210.34	5.196	0.236	-9999.990	-9999.990
61.784	57.549	-9999.990	0.0053	0.1020	0.0250	34.211.34	4.721	0.245	-9999.990	-9999.990
61.844	51.475	-9999.990	0.0046	0.1031	0.0252	38.208.35	5.459	0.245	-9999.990	-9999.990
61.904	51.474	-9999.990	0.0046	0.1031	0.0252	33.211.35	5.459	0.245	-9999.990	-9999.990
61.964	72.733	-9999.990	0.0046	0.1031	0.0252	33.211.35	5.459	0.245	-9999.990	-9999.990
62.024	72.735	-9999.990	0.0043	0.1037	0.0254	33.211.35	5.917	0.245	-9999.990	-9999.990
62.084	84.885	-9999.990	0.0052	0.1017	0.0258	31.212.36	4.946	0.253	-9999.990	-9999.990
62.144	69.698	-9999.990	0.0055	0.1011	0.0256	38.208.36	4.621	0.254	-9999.990	-9999.990
62.204	69.698	-9999.990	0.0049	0.1026	0.0251	40.207.36	5.068	0.245	-9999.990	-9999.990
62.264	69.360	-9999.990	0.0047	0.1034	0.0244	36.210.35	5.196	0.236	-9999.990	-9999.990
62.324	69.360	-9999.990	0.0047	0.1034	0.0244	34.211.34	5.196	0.236	-9999.990	-9999.990
62.384	33.258	-9999.990	0.0056	0.1014	0.0248	34.211.34	4.424	0.245	-9999.990	-9999.990
62.444	57.549	-9999.990	0.0068	0.0901	0.0424	41.207.35	6.213	0.471	-9999.990	-9999.990
62.504	57.549	-9999.990	0.0068	0.0901	0.0424	49.184.60	6.213	0.471	-9999.990	-9999.990
62.564	72.734	-9999.990	0.0072	0.0896	0.0422	49.184.60	5.898	0.471	-9999.990	-9999.990
62.624	72.735	-9999.990	0.0072	0.0896	0.0422	52.183.60	5.898	0.471	-9999.990	-9999.990
62.684	66.661	-9999.990	0.0068	0.0901	0.0424	52.183.60	6.216	0.471	-9999.990	-9999.990
62.744	45.740	-9999.990	0.0062	0.0918	0.0416	49.184.60	6.704	0.454	-9999.990	-9999.990
62.804	45.738	-9999.990	0.0059	0.0923	0.0419	45.187.59	7.120	0.454	-9999.990	-9999.990
62.864	69.695	-9999.990	0.0113	0.0606	0.0835	43.189.59	7.385	1.377	-9999.990	-9999.990
62.924	69.698	-9999.990	0.0106	0.0629	0.0820	82.124.118	7.759	1.304	-9999.990	-9999.990
62.984	66.661	-9999.990	0.0106	0.0629	0.0820	77.128.116	7.759	1.304	-9999.990	-9999.990
63.044	45.740	-9999.990	0.0102	0.0646	0.0801	77.128.116	7.867	1.240	-9999.990	-9999.990
63.104	45.738	-9999.990	0.0102	0.0646	0.0801	74.132.113	7.868	1.240	-9999.990	-9999.990
63.164	57.547	-9999.990	0.0102	0.0646	0.0801	74.132.113	7.868	1.240	-9999.990	-9999.990
63.224	57.549	-9999.990	0.0099	0.0650	0.0806	74.132.113	8.171	1.240	-9999.990	-9999.990
63.284	87.921	-9999.990	0.0099	0.0650	0.0806	72.133.114	8.173	1.240	-9999.990	-9999.990
63.344	63.626	-9999.990	0.0113	0.0606	0.0835	72.133.114	7.388	1.377	-9999.990	-9999.990
63.404	63.623	-9999.990	0.0113	0.0606	0.0835	82.124.118	7.388	1.377	-9999.990	-9999.990
63.464	76.110	-9999.990	0.0106	0.0615	0.0845	82.124.118	7.945	1.376	-9999.990	-9999.990
63.524	54.514	-9999.990	0.0100	0.0623	0.0856	77.125.120	8.581	1.374	-9999.990	-9999.990
63.584	54.511	-9999.990	0.0096	0.0627	0.0861	72.127.121	8.947	1.374	-9999.990	-9999.990
63.644	84.883	-9999.990	0.0089	0.0636	0.0872	70.128.122	9.791	1.372	-9999.990	-9999.990
63.704	84.886	-9999.990	0.0089	0.0636	0.0872	65.130.124	9.791	1.372	-9999.990	-9999.990
63.764	72.735	-9999.990	0.0082	0.0659	0.0855	65.130.124	10.475	1.297	-9999.990	-9999.990
63.824	72.735	-9999.990	0.0078	0.0664	0.0861	59.135.121	11.025	1.297	-9999.990	-9999.990
63.884	72.735	-9999.990	0.0061	0.0725	0.0808	57.135.122	13.330	1.115	-9999.990	-9999.990
63.944	63.624	-9999.990	0.0067	0.0704	0.0823	44.148.114	12.237	1.169	-9999.990	-9999.990
64.004	63.623	-9999.990	0.0089	0.0542	0.1059	49.144.117	11.914	1.953	-9999.990	-9999.990
64.064	69.696	-9999.990	0.0089	0.0542	0.1059	65.111.150	11.914	1.953	-9999.990	-9999.990
64.124	76.110	-9999.990	0.0089	0.0542	0.1059	65.111.150	11.914	1.953	-9999.990	-9999.990
64.184	76.110	-9999.990	0.0089	0.0542	0.1059	65.111.150	11.914	1.953	-9999.990	-9999.990
64.244	112.226	-9999.990	0.0064	0.0705	0.0833	65.111.150	12.961	1.181	-9999.990	-9999.990
64.304	112.229	-9999.990	0.0064	0.0705	0.0833	46.144.118	12.961	1.180	-9999.990	-9999.990
64.364	84.889	-9999.990	0.0060	0.0710	0.0838	46.144.118	13.851	1.180	-9999.990	-9999.990
64.424	51.478	-9999.990	0.0067	0.0688	0.0854	44.145.119	12.668	1.240	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
64.484	51.474	-9999.990	0.0067	0.0688	0.0854	49.140.121	12.684	1.240	-9999.990	-9999.990
64.544	76.110	-9999.990	0.0071	0.0671	0.0875	49.141.121	12.389	1.305	-9999.990	-9999.990
64.604	76.110	-9999.990	0.0067	0.0675	0.0881	51.137.124	13.135	1.306	-9999.990	-9999.990
64.664	57.551	-9999.990	0.0067	0.0675	0.0881	49.138.125	13.153	1.306	-9999.990	-9999.990
64.724	45.739	-9999.990	0.0060	0.0697	0.0865	49.138.125	14.410	1.240	-9999.990	-9999.990
64.784	45.738	-9999.990	0.0059	0.0684	0.0893	43.142.123	15.018	1.305	-9999.990	-9999.990
64.844	69.695	-9999.990	0.0056	0.0689	0.0899	43.140.127	16.189	1.304	-9999.990	-9999.990
64.904	69.698	-9999.990	0.0056	0.0689	0.0899	40.141.127	16.189	1.304	-9999.990	-9999.990
64.964	65.986	-9999.990	0.0059	0.0685	0.0893	40.141.127	15.043	1.305	-9999.990	-9999.990
65.024	60.586	-9999.990	0.0063	0.0665	0.0918	43.140.127	14.558	1.381	-9999.990	-9999.990
65.084	60.586	-9999.990	0.0051	0.0680	0.0937	46.136.130	18.445	1.379	-9999.990	-9999.990
65.144	57.549	-9999.990	0.0047	0.0685	0.0944	37.139.133	20.233	1.379	-9999.990	-9999.990
65.204	57.549	-9999.990	0.0047	0.0685	0.0944	34.140.134	20.233	1.379	-9999.990	-9999.990
65.264	55.861	-9999.990	0.0043	0.0690	0.0950	34.140.134	22.360	1.378	-9999.990	-9999.990
65.324	42.364	-9999.990	0.0035	0.0714	0.0931	31.141.135	26.333	1.305	-9999.990	-9999.990
65.384	42.364	-9999.990	0.0035	0.0713	0.0931	25.146.132	26.295	1.305	-9999.990	-9999.990
65.444	66.658	-9999.990	0.0043	0.0690	0.0950	25.146.132	22.338	1.378	-9999.990	-9999.990
65.504	66.660	-9999.990	0.0046	0.0670	0.0977	31.141.135	21.386	1.458	-9999.990	-9999.990
65.564	69.697	-9999.990	0.0049	0.0650	0.1005	33.137.138	20.526	1.547	-9999.990	-9999.990
65.624	48.440	-9999.990	0.0049	0.0650	0.1005	35.133.142	20.526	1.547	-9999.990	-9999.990
65.684	48.438	-9999.990	0.0065	0.0595	0.1049	35.133.142	16.117	1.764	-9999.990	-9999.990
65.744	72.733	-9999.990	0.0070	0.0590	0.1041	47.121.149	14.976	1.764	-9999.990	-9999.990
65.804	72.735	-9999.990	0.0101	0.0496	0.1105	50.120.148	10.975	2.227	-9999.990	-9999.990
65.864	69.698	-9999.990	0.0110	0.0464	0.1130	73.101.157	10.253	2.435	0.252	4.785
65.924	75.772	-9999.990	0.0116	0.0435	0.1167	80.95.160	10.066	2.684	-9999.990	-9999.990
65.984	75.773	-9999.990	0.0126	0.0400	0.1195	84.89.165	9.459	2.989	-9999.990	-9999.990
66.044	52.489	-9999.990	0.0137	0.0363	0.1225	92.81.169	8.923	3.372	-9999.990	-9999.990
66.104	52.487	-9999.990	0.0133	0.0367	0.1235	100.74.174	9.297	3.368	-9999.990	-9999.990
66.164	81.845	-9999.990	0.0149	0.0324	0.1256	97.75.175	8.429	3.881	-9999.990	-9999.990
66.224	66.660	-9999.990	0.0145	0.0327	0.1268	109.66.178	8.770	3.877	-9999.990	-9999.990
66.284	66.660	-9999.990	0.0133	0.0366	0.1236	105.66.180	9.287	3.381	-9999.990	-9999.990
66.344	48.439	-9999.990	0.0133	0.0366	0.1236	97.74.175	9.287	3.381	-9999.990	-9999.990
66.404	48.438	-9999.990	0.0133	0.0366	0.1236	97.74.175	9.287	3.381	-9999.990	-9999.990
66.464	69.358	-9999.990	0.0133	0.0366	0.1236	97.74.175	9.287	3.381	-9999.990	-9999.990
66.524	36.294	-9999.990	0.0129	0.0369	0.1247	97.74.175	9.703	3.378	-9999.990	-9999.990
66.584	36.290	-9999.990	0.0129	0.0369	0.1247	94.75.177	9.703	3.378	-9999.990	-9999.990
66.644	54.508	-9999.990	0.0129	0.0369	0.1247	94.75.177	9.703	3.378	-9999.990	-9999.990
66.704	54.511	-9999.990	0.0129	0.0369	0.1247	94.75.177	9.703	3.378	-9999.990	-9999.990
66.764	25.497	-9999.990	0.0119	0.0377	0.1270	94.75.177	10.663	3.371	-9999.990	-9999.990
66.824	60.586	-9999.990	0.0119	0.0377	0.1270	87.77.180	10.663	3.371	-9999.990	-9999.990
66.884	60.586	-9999.990	0.0119	0.0377	0.1270	87.77.180	10.663	3.371	-9999.990	-9999.990
66.944	33.257	-9999.990	0.0119	0.0377	0.1270	87.77.180	10.663	3.371	-9999.990	-9999.990
67.004	33.254	-9999.990	0.0131	0.0336	0.1304	87.77.180	9.967	3.879	-9999.990	-9999.990
67.064	45.737	-9999.990	0.0126	0.0340	0.1317	95.68.185	10.455	3.875	-9999.990	-9999.990
67.124	54.511	-9999.990	0.0126	0.0340	0.1317	92.69.187	10.455	3.875	-9999.990	-9999.990
67.184	54.511	-9999.990	0.0126	0.0340	0.1317	92.69.187	10.455	3.875	-9999.990	-9999.990
67.244	62.610	-9999.990	0.0126	0.0340	0.1317	92.69.187	10.455	3.875	-9999.990	-9999.990
67.304	62.611	-9999.990	0.0131	0.0336	0.1304	92.69.187	9.967	3.879	-9999.990	-9999.990
67.364	45.402	-9999.990	0.0131	0.0337	0.1304	95.68.185	9.978	3.869	-9999.990	-9999.990
67.424	36.292	-9999.990	0.0121	0.0344	0.1328	95.68.185	10.971	3.861	-9999.990	-9999.990
67.484	36.290	-9999.990	0.0133	0.0302	0.1364	88.70.188	10.253	4.520	-9999.990	-9999.990
67.544	33.254	-9999.990	0.0121	0.0345	0.1327	97.61.194	10.989	3.848	-9999.990	-9999.990
67.604	33.254	-9999.990	0.0121	0.0345	0.1327	88.70.188	10.989	3.848	-9999.990	-9999.990
67.664	45.737	-9999.990	0.0133	0.0303	0.1363	88.70.188	10.270	4.501	-9999.990	-9999.990
67.724	39.328	-9999.990	0.0133	0.0303	0.1363	97.62.193	10.270	4.501	-9999.990	-9999.990
67.784	39.327	-9999.990	0.0138	0.0299	0.1350	97.62.193	9.791	4.507	-9999.990	-9999.990
67.844	48.437	-9999.990	0.0138	0.0299	0.1350	100.61.191	9.791	4.507	-9999.990	-9999.990
67.904	48.438	-9999.990	0.0138	0.0299	0.1350	100.61.191	9.791	4.507	-9999.990	-9999.990
67.964	45.738	-9999.990	0.0133	0.0303	0.1362	100.61.191	10.240	4.501	-9999.990	-9999.990
68.024	57.547	-9999.990	0.0146	0.0259	0.1400	97.61.193	9.615	5.415	-9999.990	-9999.990
68.084	57.549	-9999.990	0.0151	0.0255	0.1386	106.52.199	9.186	5.424	-9999.990	-9999.990
68.144	42.365	-9999.990	0.0110	0.0519	0.1023	110.52.197	9.315	1.972	-9999.990	-9999.990
68.204	42.364	-9999.990	0.0115	0.0514	0.1013	80.106.145	8.818	1.973	-9999.990	-9999.990
68.264	51.473	-9999.990	0.0115	0.0514	0.1013	84.105.144	8.818	1.973	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
68.324	24.145	-9999.990	0.0115	0.0514	0.1013	84.105.144	8.818	1.973	-9999.990	-9999.990
68.384	24.145	-9999.990	0.0151	0.0397	0.1100	84.105.144	7.273	2.769	-9999.990	-9999.990
68.444	59.236	-9999.990	0.0151	0.0397	0.1100	110.81.156	7.273	2.769	-9999.990	-9999.990
68.504	59.236	-9999.990	0.0151	0.0397	0.1100	110.81.156	7.273	2.769	-9999.990	-9999.990
68.564	48.439	-9999.990	0.0151	0.0397	0.1100	110.81.156	7.273	2.769	-9999.990	-9999.990
68.624	54.511	-9999.990	0.0151	0.0397	0.1100	110.81.156	7.273	2.769	-9999.990	-9999.990
68.684	54.511	-9999.990	0.0146	0.0402	0.1111	110.81.156	7.589	2.766	-9999.990	-9999.990
68.744	49.113	-9999.990	0.0152	0.0397	0.1099	107.82.158	7.241	2.769	-9999.990	-9999.990
68.804	49.112	-9999.990	0.0152	0.0397	0.1099	111.81.156	7.241	2.769	-9999.990	-9999.990
68.864	51.474	-9999.990	0.0152	0.0397	0.1099	111.81.156	7.241	2.769	-9999.990	-9999.990
68.924	48.438	-9999.990	0.0152	0.0397	0.1099	111.81.156	7.241	2.769	-9999.990	-9999.990
68.984	48.438	-9999.990	0.0139	0.0437	0.1069	111.81.156	7.683	2.444	-9999.990	-9999.990
69.044	62.609	-9999.990	0.0139	0.0437	0.1069	101.89.152	7.683	2.444	-9999.990	-9999.990
69.104	62.611	-9999.990	0.0139	0.0437	0.1069	101.89.152	7.683	2.444	-9999.990	-9999.990
69.164	51.476	-9999.990	0.0139	0.0437	0.1069	101.89.152	7.683	2.444	-9999.990	-9999.990
69.224	55.861	-9999.990	0.0144	0.0433	0.1059	101.89.152	7.363	2.446	-9999.990	-9999.990
69.284	55.861	-9999.990	0.0127	0.0475	0.1041	105.88.150	8.181	2.193	-9999.990	-9999.990
69.344	51.475	-9999.990	0.0122	0.0480	0.1051	93.97.148	8.593	2.191	-9999.990	-9999.990
69.404	51.474	-9999.990	0.0122	0.0480	0.1051	89.98.149	8.593	2.191	-9999.990	-9999.990
69.464	49.113	-9999.990	0.0122	0.0480	0.1051	89.98.149	8.593	2.191	-9999.990	-9999.990
69.524	66.658	-9999.990	0.0122	0.0480	0.1051	89.98.149	8.605	2.191	-9999.990	-9999.990
69.584	66.660	-9999.990	0.0127	0.0475	0.1042	89.98.149	8.205	2.192	-9999.990	-9999.990
69.644	66.660	-9999.990	0.0127	0.0476	0.1041	92.97.148	8.208	2.187	-9999.990	-9999.990
69.704	66.660	-9999.990	0.0132	0.0471	0.1031	92.97.148	7.819	2.189	-9999.990	-9999.990
69.764	39.330	-9999.990	0.0132	0.0471	0.1031	96.96.146	7.819	2.189	-9999.990	-9999.990
69.824	45.738	-9999.990	0.0125	0.0503	0.0995	96.96.146	7.956	1.979	-9999.990	-9999.990
69.884	45.738	-9999.990	0.0120	0.0509	0.1002	91.102.141	8.363	1.969	-9999.990	-9999.990
69.944	57.547	-9999.990	0.0120	0.0509	0.1002	87.104.142	8.363	1.969	-9999.990	-9999.990
70.004	57.549	-9999.990	0.0120	0.0509	0.1002	87.104.142	8.363	1.969	-9999.990	-9999.990
70.064	72.734	-9999.990	0.0120	0.0509	0.1002	87.104.142	8.363	1.969	-9999.990	-9999.990
70.124	52.489	-9999.990	0.0115	0.0514	0.1011	87.104.142	8.787	1.967	-9999.990	-9999.990
70.184	52.487	-9999.990	0.0115	0.0514	0.1011	84.105.143	8.787	1.967	-9999.990	-9999.990
70.244	60.585	-9999.990	0.0115	0.0514	0.1011	84.105.143	8.787	1.967	-9999.990	-9999.990
70.304	60.586	-9999.990	0.0115	0.0514	0.1011	84.105.143	8.787	1.967	-9999.990	-9999.990
70.364	60.586	-9999.990	0.0115	0.0514	0.1011	84.105.143	8.787	1.967	-9999.990	-9999.990
70.424	52.489	-9999.990	0.0115	0.0514	0.1011	84.105.143	8.787	1.967	-9999.990	-9999.990
70.484	52.487	-9999.990	0.0115	0.0514	0.1011	84.105.143	8.787	1.967	-9999.990	-9999.990
70.544	51.474	-9999.990	0.0110	0.0519	0.1020	84.105.143	9.248	1.966	-9999.990	-9999.990
70.604	63.622	-9999.990	0.0110	0.0519	0.1020	80.106.145	9.248	1.966	-9999.990	-9999.990
70.664	63.623	-9999.990	0.0105	0.0524	0.1030	80.106.145	9.773	1.965	-9999.990	-9999.990
70.724	35.619	-9999.990	0.0117	0.0487	0.1058	77.107.146	9.060	2.172	-9999.990	-9999.990
70.784	35.616	-9999.990	0.0119	0.0458	0.1109	85.99.150	9.357	2.419	-9999.990	-9999.990
70.844	42.363	-9999.990	0.0131	0.0417	0.1141	86.93.157	8.708	2.735	-9999.990	-9999.990
70.904	51.474	-9999.990	0.0131	0.0417	0.1141	95.85.162	8.708	2.735	-9999.990	-9999.990
70.964	51.474	-9999.990	0.0168	0.0281	0.1265	95.85.162	7.520	4.493	-9999.990	-9999.990
71.024	49.113	-9999.990	0.0168	0.0281	0.1265	122.57.179	7.520	4.494	-9999.990	-9999.990
71.084	49.112	-9999.990	0.0157	0.0289	0.1293	122.57.179	8.221	4.480	-9999.990	-9999.990
71.144	78.807	-9999.990	0.0152	0.0293	0.1308	115.59.183	8.626	4.473	-9999.990	-9999.990
71.204	59.238	-9999.990	0.0152	0.0293	0.1308	110.59.186	8.626	4.473	-9999.990	-9999.990
71.264	59.236	-9999.990	0.0146	0.0296	0.1324	110.59.186	9.073	4.466	-9999.990	-9999.990
71.324	60.586	-9999.990	0.0156	0.0246	0.1386	106.60.188	8.894	5.641	-9999.990	-9999.990
71.384	60.586	-9999.990	0.0150	0.0249	0.1403	113.50.197	9.377	5.630	-9999.990	-9999.990
71.444	55.862	-9999.990	0.0143	0.0253	0.1421	109.51.199	9.909	5.618	-9999.990	-9999.990
71.504	75.773	-9999.990	0.0154	0.0196	0.1492	104.51.202	9.694	7.616	-9999.990	-9999.990
71.564	75.773	-9999.990	0.0172	0.0131	0.1549	112.40.212	9.002	11.826	-9999.990	-9999.990
71.624	52.489	-9999.990	0.0185	0.0062	0.1635	125.26.220	8.825	26.298	0.126	3.397
71.684	52.487	-9999.990	0.0185	0.0062	0.1635	135.12.232	8.825	26.300	-9999.990	-9999.990
71.744	63.621	-9999.990	0.0185	0.0062	0.1635	135.12.232	8.825	26.300	-9999.990	-9999.990
71.804	54.511	-9999.990	0.0185	0.0062	0.1635	135.12.232	8.825	26.300	-9999.990	-9999.990
71.864	54.511	-9999.990	0.0185	0.0062	0.1635	135.12.232	8.825	26.300	-9999.990	-9999.990
71.924	62.610	-9999.990	0.0185	0.0062	0.1635	135.12.232	8.825	26.300	-9999.990	-9999.990
71.984	62.611	-9999.990	0.0185	0.0062	0.1635	135.12.232	8.825	26.300	-9999.990	-9999.990
72.044	60.586	-9999.990	0.0185	0.0062	0.1635	135.12.232	8.825	26.300	-9999.990	-9999.990
72.104	57.549	-9999.990	0.0185	0.0062	0.1635	135.12.232	8.825	26.300	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
72.164	57.549	-9999.990	0.0179	0.0064	0.1658	135.12.232	9.285	26.066	-9999.990	-9999.990
72.224	42.364	-9999.990	0.0172	0.0065	0.1683	130.13.235	9.798	25.835	-9999.990	-9999.990
72.284	42.364	-9999.990	0.0191	0.0000	0.1737	125.13.239	9.102	-9999.990	-9999.990	-9999.990
72.344	57.547	-9999.990	0.0193	0.0000	0.1726	139.0.247	8.928	-9999.990	-9999.990	-9999.990
72.404	57.549	-9999.990	0.0193	0.0000	0.1726	141.0.245	8.928	-9999.990	-9999.990	-9999.990
72.464	57.549	-9999.990	0.0193	0.0000	0.1727	141.0.245	8.928	-9999.990	-9999.990	-9999.990
72.524	52.487	-9999.990	0.0187	0.0000	0.1753	141.0.245	9.393	-9999.990	-9999.990	-9999.990
72.584	52.487	-9999.990	0.0150	0.0292	0.1316	136.0.249	8.764	4.509	-9999.990	-9999.990
72.644	66.659	-9999.990	0.0150	0.0292	0.1316	109.59.187	8.764	4.509	-9999.990	-9999.990
72.704	42.366	-9999.990	0.0142	0.0297	0.1336	109.59.187	9.384	4.499	-9999.990	-9999.990
72.764	42.364	-9999.990	0.0142	0.0297	0.1336	104.60.190	9.384	4.499	-9999.990	-9999.990
72.824	59.236	-9999.990	0.0156	0.0228	0.1422	104.60.190	9.131	6.238	-9999.990	-9999.990
72.884	59.236	-9999.990	0.0162	0.0154	0.1544	113.46.202	9.532	10.047	-9999.990	-9999.990
72.944	54.512	-9999.990	0.0030	0.1007	0.0366	118.31.219	12.213	0.364	-9999.990	-9999.990
73.004	36.290	-9999.990	0.0045	0.0967	0.0385	21.206.51	8.511	0.398	-9999.990	-9999.990
73.064	36.290	-9999.990	0.0045	0.0967	0.0385	33.198.54	8.511	0.398	-9999.990	-9999.990
73.124	55.859	-9999.990	0.0052	0.0940	0.0412	33.198.54	7.877	0.438	-9999.990	-9999.990
73.184	55.861	-9999.990	0.0052	0.0940	0.0412	38.192.58	7.877	0.438	-9999.990	-9999.990
73.244	18.076	-9999.990	0.0043	0.0956	0.0418	38.192.58	9.814	0.438	-9999.990	-9999.990
73.304	48.434	-9999.990	0.0043	0.0956	0.0418	31.195.59	9.814	0.438	-9999.990	-9999.990
73.364	48.438	-9999.990	0.0043	0.0956	0.0418	31.195.59	9.814	0.438	-9999.990	-9999.990
73.424	39.329	-9999.990	0.0033	0.0972	0.0425	31.195.59	13.001	0.437	-9999.990	-9999.990
73.484	39.327	-9999.990	0.0033	0.0972	0.0425	23.199.60	13.001	0.437	-9999.990	-9999.990
73.544	75.773	-9999.990	0.0033	0.0972	0.0425	23.199.60	13.001	0.437	-9999.990	-9999.990
73.604	72.736	-9999.990	0.0033	0.0972	0.0425	23.199.60	13.001	0.437	-9999.990	-9999.990
73.664	72.735	-9999.990	0.0033	0.0972	0.0425	23.199.60	13.001	0.437	-9999.990	-9999.990
73.724	45.127	-9999.990	0.0051	0.0924	0.0450	23.199.60	8.898	0.487	-9999.990	-9999.990
73.784	45.125	-9999.990	0.0051	0.0924	0.0450	37.189.64	8.898	0.487	-9999.990	-9999.990
73.844	65.724	-9999.990	0.0060	0.0887	0.0487	37.189.64	8.187	0.549	-9999.990	-9999.990
73.904	40.846	-9999.990	0.0060	0.0887	0.0487	43.181.69	8.187	0.549	-9999.990	-9999.990
73.964	40.846	-9999.990	0.0060	0.0887	0.0487	43.181.69	8.187	0.549	-9999.990	-9999.990
74.024	38.446	-9999.990	0.0120	0.0707	0.0606	43.181.69	5.050	0.857	-9999.990	-9999.990
74.084	38.446	-9999.990	0.0120	0.0707	0.0606	87.144.86	5.050	0.857	-9999.990	-9999.990
74.144	50.198	-9999.990	0.0036	0.1178	0.0000	87.144.86	0.001	0.000	-9999.990	-9999.990
74.204	50.201	-9999.990	0.0036	0.1178	0.0000	26.241.0	0.000	0.000	-9999.990	-9999.990
74.264	50.201	-9999.990	0.0036	0.1178	0.0000	26.241.0	0.000	0.000	-9999.990	-9999.990
74.324	40.405	-9999.990	0.0036	0.1178	0.0000	26.241.0	0.000	0.000	-9999.990	-9999.990

Notes:

R.G.B - Red/Green/Blue color values, each between 0 and 255, corresponding to GR_KRAT, GR_URAT and GR_THRAT, respectively
GR_KRAT, GR_URAT, GR_THRAT - Ratios of K, U, and Th to Total Gamma Ray, values used to create color cube values
-9999.99 - no data
1 - natural gamma was logged through steel casing and value was corrected to equate to values in PVC casing

Well BK2c
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
2.349	69.974	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.409	69.974	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.469	81.848	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.529	81.848	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.589	106.689	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.649	92.264	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.709	92.264	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.769	70.566	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.829	70.566	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.889	90.094	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.949	83.584	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.009	83.584	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.069	89.092	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.129	89.092	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.189	95.519	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.249	82.861	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.309	82.861	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.369	82.861	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.429	82.861	1.492	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.489	64.451	2.562	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.549	61.690	2.562	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.609	61.690	1.225	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.669	75.497	1.225	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.729	75.497	0.958	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.789	75.497	0.690	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.849	78.258	0.690	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.909	78.258	1.225	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.969	64.451	1.225	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.029	64.451	-0.038	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.089	64.451	0.156	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.149	66.660	0.156	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.209	66.660	1.225	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.269	75.773	1.225	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.329	75.773	0.176	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.389	94.000	0.812	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.449	69.360	0.812	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.509	69.360	0.316	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.569	60.586	0.316	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.629	60.586	1.638	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.689	65.985	2.051	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.749	72.735	2.051	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.809	72.735	0.771	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.869	52.487	0.771	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.929	52.487	2.589	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.989	36.290	1.225	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.049	28.868	1.225	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.109	28.868	1.680	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.169	65.985	1.680	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.229	65.985	3.245	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.289	51.474	1.680	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.349	69.360	1.680	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.409	69.360	3.245	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.469	42.364	3.245	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.529	42.364	4.861	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.589	32.242	3.245	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.649	38.990	3.245	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.709	38.990	5.316	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.769	32.242	5.316	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.829	32.242	5.770	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.889	55.861	3.952	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.949	42.364	3.952	-9999.990	-9999.990	-9999.990	219.0.199	-9999.990	-9999.990	-9999.990	-9999.990
6.009	42.364	7.790	0.030	0.000	0.140	219.0.199	5.200	-9999.990	-9999.990	-9999.990
6.069	82.861	7.790	0.030	0.000	0.140	219.0.199	5.200	-9999.990	-9999.990	-9999.990
6.129	82.861	5.770	0.030	0.000	0.140	219.0.199	5.200	-9999.990	-9999.990	-9999.990
6.189	63.623	5.265	0.030	0.000	0.140	219.0.199	5.250	-9999.990	-9999.990	-9999.990
6.249	62.611	5.265	0.030	0.000	0.140	219.0.199	4.970	-9999.990	-9999.990	-9999.990
6.309	62.611	6.225	0.030	0.000	0.140	219.0.199	4.970	-9999.990	-9999.990	-9999.990
6.369	76.110	6.225	0.030	0.000	0.140	219.0.199	4.970	-9999.990	-9999.990	-9999.990
6.429	76.110	5.770	0.030	0.000	0.140	219.0.199	4.970	-9999.990	-9999.990	-9999.990

Well BK2c
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
6.489	59.236	6.679	0.030	0.000	0.140	219.0.199	4.970	-9999.990	-9999.990	-9999.990
6.549	69.360	6.679	0.030	0.000	0.140	219.0.199	4.970	-9999.990	-9999.990	-9999.990
6.609	69.360	3.498	0.030	0.000	0.140	219.0.199	4.970	-9999.990	-9999.990	-9999.990
6.669	86.236	3.498	0.030	0.000	0.140	219.0.199	4.830	-9999.990	-9999.990	-9999.990
6.729	86.236	3.750	0.030	0.000	0.140	219.0.199	4.700	-9999.990	-9999.990	-9999.990
6.789	62.611	5.316	0.030	0.000	0.140	219.0.199	4.700	-9999.990	-9999.990	-9999.990
6.849	72.735	5.316	0.030	0.000	0.140	219.0.184	4.700	-9999.990	-9999.990	-9999.990
6.909	72.735	2.235	0.030	0.000	0.130	219.0.184	4.580	-9999.990	-9999.990	-9999.990
6.969	76.110	2.235	0.030	0.000	0.130	219.0.184	4.470	-9999.990	-9999.990	-9999.990
7.029	76.110	3.498	0.030	0.000	0.130	219.0.184	4.360	-9999.990	-9999.990	-9999.990
7.089	76.110	0.771	0.030	0.000	0.130	219.0.184	4.360	-9999.990	-9999.990	-9999.990
7.149	69.360	0.771	0.030	0.000	0.130	219.0.184	4.360	-9999.990	-9999.990	-9999.990
7.209	69.360	1.225	0.030	0.000	0.130	219.0.184	4.360	-9999.990	-9999.990	-9999.990
7.269	55.861	1.225	0.030	0.000	0.130	219.0.184	4.260	-9999.990	-9999.990	-9999.990
7.329	55.861	2.589	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
7.389	69.360	1.225	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
7.449	59.236	1.225	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
7.509	59.236	2.589	0.030	0.000	0.130	219.0.184	4.060	-9999.990	-9999.990	-9999.990
7.569	66.660	1.730	0.030	0.000	0.130	219.0.184	4.090	-9999.990	-9999.990	-9999.990
7.629	66.660	1.730	0.030	0.000	0.130	219.0.184	4.220	-9999.990	-9999.990	-9999.990
7.689	79.485	0.771	0.030	0.000	0.130	219.0.184	4.220	-9999.990	-9999.990	-9999.990
7.749	55.861	0.771	0.030	0.000	0.130	219.0.184	4.250	-9999.990	-9999.990	-9999.990
7.809	55.861	3.245	0.030	0.000	0.130	219.0.184	4.150	-9999.990	-9999.990	-9999.990
7.869	49.112	0.316	0.030	0.000	0.130	219.0.184	4.150	-9999.990	-9999.990	-9999.990
7.929	49.112	0.316	0.030	0.000	0.130	219.0.184	4.150	-9999.990	-9999.990	-9999.990
7.989	65.985	0.720	0.030	0.000	0.130	219.0.184	4.150	-9999.990	-9999.990	-9999.990
8.049	65.985	0.720	0.030	0.000	0.130	219.0.184	4.060	-9999.990	-9999.990	-9999.990
8.109	65.985	1.225	0.030	0.000	0.130	219.0.170	4.060	-9999.990	-9999.990	-9999.990
8.169	62.611	0.215	0.030	0.000	0.120	219.0.184	3.970	-9999.990	-9999.990	-9999.990
8.229	62.611	0.215	0.030	0.000	0.130	219.0.170	4.090	-9999.990	-9999.990	-9999.990
8.289	55.861	0.771	0.030	0.000	0.120	219.0.184	4.000	-9999.990	-9999.990	-9999.990
8.349	62.611	0.771	0.030	0.000	0.130	219.0.184	4.120	-9999.990	-9999.990	-9999.990
8.409	62.611	-4.330	0.030	0.000	0.130	219.0.184	4.020	-9999.990	-9999.990	-9999.990
8.469	76.110	-0.139	0.030	0.000	0.130	219.0.184	4.150	-9999.990	-9999.990	-9999.990
8.529	62.611	-0.139	0.030	0.000	0.130	219.0.184	4.150	-9999.990	-9999.990	-9999.990
8.589	62.611	2.589	0.030	0.000	0.130	219.0.184	4.050	-9999.990	-9999.990	-9999.990
8.649	76.110	2.589	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
8.709	76.110	1.730	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
8.769	62.611	5.316	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
8.829	62.611	5.316	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
8.889	62.611	5.770	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
8.949	69.698	5.770	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
9.009	69.698	8.497	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
9.069	62.611	12.588	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
9.129	78.810	12.588	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
9.189	78.810	12.840	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
9.249	38.990	12.840	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
9.309	38.990	15.769	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
9.369	59.236	15.870	0.030	0.000	0.130	219.0.184	4.180	-9999.990	-9999.990	-9999.990
9.429	42.364	15.870	0.030	0.000	0.130	219.0.184	4.080	-9999.990	-9999.990	-9999.990
9.489	42.364	17.133	0.030	0.000	0.130	219.0.184	4.080	-9999.990	-9999.990	-9999.990
9.549	69.360	17.133	0.030	0.000	0.130	219.0.184	4.080	-9999.990	-9999.990	-9999.990
9.609	69.360	20.920	0.030	0.000	0.130	219.0.184	4.080	-9999.990	-9999.990	-9999.990
9.669	48.438	19.860	0.030	0.000	0.130	219.0.170	4.080	-9999.990	-9999.990	-9999.990
9.729	35.616	19.860	0.030	0.000	0.120	219.0.170	3.990	-9999.990	-9999.990	-9999.990
9.789	35.616	20.920	0.030	0.000	0.120	219.0.170	3.990	-9999.990	-9999.990	-9999.990
9.849	55.861	20.920	0.030	0.000	0.120	219.0.184	3.900	-9999.990	-9999.990	-9999.990
9.909	55.861	21.678	0.030	0.000	0.130	219.0.184	4.010	-9999.990	-9999.990	-9999.990
9.969	38.990	19.910	0.030	0.000	0.130	219.0.184	4.010	-9999.990	-9999.990	-9999.990
10.029	48.438	19.910	0.030	0.000	0.130	219.0.184	4.010	-9999.990	-9999.990	-9999.990
10.089	48.438	20.769	0.030	0.000	0.130	219.0.184	4.140	-9999.990	-9999.990	-9999.990
10.149	52.487	20.769	0.030	0.000	0.130	219.0.184	4.040	-9999.990	-9999.990	-9999.990
10.209	52.487	17.890	0.030	0.000	0.130	219.0.184	4.040	-9999.990	-9999.990	-9999.990
10.269	52.487	15.769	0.030	0.000	0.130	219.0.170	4.040	-9999.990	-9999.990	-9999.990
10.329	62.611	15.769	0.030	0.000	0.120	219.0.170	3.950	-9999.990	-9999.990	-9999.990
10.389	62.611	16.880	0.030	0.000	0.120	219.0.170	3.860	-9999.990	-9999.990	-9999.990
10.449	38.990	16.880	0.030	0.000	0.120	219.0.170	3.860	-9999.990	-9999.990	-9999.990
10.509	38.990	12.588	0.030	0.000	0.120	219.0.170	3.860	-9999.990	-9999.990	-9999.990
10.569	35.616	11.325	0.030	0.000	0.120	219.0.170	3.980	48.210	-9999.990	-9999.990

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ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
10.629	59.236	11.325	0.030	0.000	0.120	219.0.184	3.890	49.050	-9999.990	-9999.990
10.689	59.236	11.224	0.030	0.000	0.130	219.0.184	4.530	-9999.990	-9999.990	-9999.990
10.749	60.586	11.224	0.030	0.000	0.130	219.0.184	4.530	-9999.990	-9999.990	-9999.990
10.809	60.586	8.043	0.030	0.000	0.130	219.0.184	4.530	-9999.990	-9999.990	-9999.990
10.869	45.738	8.800	0.030	0.000	0.130	219.0.184	4.440	-9999.990	-9999.990	-9999.990
10.929	52.487	8.800	0.030	0.000	0.130	219.0.184	4.440	-9999.990	-9999.990	-9999.990
10.989	52.487	6.225	0.030	0.000	0.130	219.0.184	4.440	-9999.990	-9999.990	-9999.990
11.049	52.487	6.225	0.030	0.000	0.130	219.0.184	4.440	-9999.990	-9999.990	-9999.990
11.109	52.487	7.285	0.030	0.000	0.130	219.0.184	4.440	-9999.990	-9999.990	-9999.990
11.169	69.360	8.497	0.030	0.000	0.130	219.0.184	4.530	-9999.990	-9999.990	-9999.990
11.229	49.112	8.497	0.030	0.000	0.130	219.0.184	4.530	-9999.990	-9999.990	-9999.990
11.289	49.112	7.134	0.030	0.000	0.130	219.0.184	4.520	-9999.990	-9999.990	-9999.990
11.349	49.112	7.134	0.030	0.000	0.130	219.0.184	4.410	-9999.990	-9999.990	-9999.990
11.409	49.112	9.810	0.030	0.000	0.130	219.0.184	4.140	-9999.990	-9999.990	-9999.990
11.469	51.474	6.679	0.030	0.000	0.130	219.0.184	4.060	-9999.990	-9999.990	-9999.990
11.529	49.112	6.679	0.030	0.000	0.130	219.0.184	4.140	-9999.990	-9999.990	-9999.990
11.589	49.112	8.295	0.030	0.000	0.130	219.0.170	4.060	-9999.990	-9999.990	-9999.990
11.649	35.616	8.295	0.030	0.000	0.120	219.0.170	3.740	75.390	-9999.990	-9999.990
11.709	35.616	9.406	0.030	0.000	0.120	219.0.170	3.740	75.390	-9999.990	-9999.990
11.769	62.611	8.497	0.030	0.000	0.120	219.0.170	3.650	-9999.990	-9999.990	-9999.990
11.829	72.735	8.497	0.030	0.000	0.120	219.0.170	3.750	64.350	-9999.990	-9999.990
11.889	72.735	10.315	0.030	0.000	0.120	219.0.170	3.750	64.350	-9999.990	-9999.990
11.949	52.487	10.315	0.030	0.000	0.120	219.0.170	3.750	64.350	-9999.990	-9999.990
12.009	52.487	8.043	0.030	0.000	0.120	219.20.170	3.750	64.350	-9999.990	-9999.990
12.069	52.487	8.295	0.030	0.010	0.120	219.20.170	3.850	16.170	-9999.990	-9999.990
12.129	42.364	8.295	0.030	0.010	0.120	219.20.170	4.230	15.820	-9999.990	-9999.990
12.189	42.364	9.406	0.030	0.010	0.120	219.20.170	4.330	15.730	-9999.990	-9999.990
12.249	62.611	9.406	0.030	0.010	0.120	219.20.170	4.330	15.730	-9999.990	-9999.990
12.309	62.611	7.285	0.030	0.010	0.120	219.20.170	4.330	15.730	-9999.990	-9999.990
12.369	65.985	8.952	0.030	0.010	0.120	219.20.170	4.440	15.640	-9999.990	-9999.990
12.429	49.112	8.952	0.030	0.010	0.120	219.20.170	4.440	15.640	-9999.990	-9999.990
12.489	49.112	6.780	0.030	0.010	0.120	219.20.170	4.440	15.640	-9999.990	-9999.990
12.549	65.985	6.780	0.030	0.010	0.120	219.20.170	4.480	9.090	-9999.990	-9999.990
12.609	65.985	5.770	0.030	0.010	0.120	219.20.170	4.330	15.480	-9999.990	-9999.990
12.669	59.236	6.679	0.030	0.010	0.120	219.20.170	4.330	15.490	-9999.990	-9999.990
12.729	59.236	6.679	0.030	0.010	0.120	219.20.170	4.230	15.570	-9999.990	-9999.990
12.789	59.236	4.407	0.030	0.010	0.120	219.20.170	4.330	15.480	-9999.990	-9999.990
12.849	45.738	4.407	0.030	0.010	0.120	219.0.170	4.330	15.480	-9999.990	-9999.990
12.909	45.738	5.265	0.030	0.000	0.120	219.0.184	4.090	56.520	-9999.990	-9999.990
12.969	79.485	7.134	0.030	0.000	0.130	219.0.184	4.190	55.440	-9999.990	-9999.990
13.029	79.485	7.134	0.030	0.000	0.130	219.0.170	4.290	54.410	-9999.990	-9999.990
13.089	79.485	5.770	0.030	0.000	0.120	219.20.170	4.090	56.590	-9999.990	-9999.990
13.149	49.112	5.770	0.030	0.010	0.120	219.20.170	4.370	8.780	-9999.990	-9999.990
13.209	49.112	6.679	0.030	0.010	0.120	219.20.170	4.370	8.780	-9999.990	-9999.990
13.269	42.364	4.861	0.030	0.010	0.120	146.81.113	4.260	8.810	-9999.990	-9999.990
13.329	72.735	4.861	0.020	0.040	0.080	146.81.113	3.580	1.910	-9999.990	-9999.990
13.389	72.735	4.760	0.020	0.040	0.080	146.81.113	3.580	1.910	-9999.990	-9999.990
13.449	28.868	4.760	0.020	0.040	0.080	146.81.113	3.580	1.910	-9999.990	-9999.990
13.509	28.868	6.679	0.020	0.040	0.080	146.81.113	3.480	1.920	-9999.990	-9999.990
13.569	62.611	4.760	0.020	0.040	0.080	146.81.113	3.550	2.180	-9999.990	-9999.990
13.629	38.990	4.760	0.020	0.040	0.080	146.81.113	3.650	2.170	-9999.990	-9999.990
13.689	38.990	6.225	0.020	0.040	0.080	146.61.128	3.650	2.170	-9999.990	-9999.990
13.749	52.487	6.225	0.020	0.030	0.090	146.81.113	3.520	2.510	-9999.990	-9999.990
13.809	52.487	3.498	0.020	0.040	0.080	146.81.113	3.760	2.150	-9999.990	-9999.990
13.869	62.611	3.245	0.020	0.040	0.080	146.81.113	3.650	2.150	-9999.990	-9999.990
13.929	60.586	3.245	0.020	0.040	0.080	146.81.113	3.650	2.150	-9999.990	-9999.990
13.989	60.586	3.952	0.020	0.040	0.080	146.81.113	3.650	2.150	-9999.990	-9999.990
14.049	55.861	3.952	0.020	0.040	0.080	146.81.113	3.760	2.150	-9999.990	-9999.990
14.109	55.861	2.235	0.020	0.040	0.080	146.81.113	3.760	2.150	-9999.990	-9999.990
14.169	52.487	3.952	0.020	0.040	0.080	146.81.113	3.760	2.150	-9999.990	-9999.990
14.229	65.985	3.952	0.020	0.040	0.080	146.81.113	3.760	2.150	-9999.990	-9999.990
14.289	65.985	2.740	0.020	0.040	0.080	146.81.113	3.760	2.150	-9999.990	-9999.990
14.349	69.360	2.589	0.020	0.040	0.080	146.81.113	3.760	2.150	-9999.990	-9999.990
14.409	69.360	2.589	0.020	0.040	0.080	146.81.113	3.760	2.150	-9999.990	-9999.990
14.469	45.738	5.770	0.020	0.040	0.080	146.81.113	3.760	2.150	-9999.990	-9999.990
14.529	38.990	5.770	0.020	0.040	0.080	146.81.113	3.750	2.150	-9999.990	-9999.990
14.589	38.990	4.407	0.020	0.040	0.080	146.81.113	3.870	2.150	-9999.990	-9999.990
14.649	65.985	5.770	0.020	0.040	0.080	146.81.113	3.760	2.150	-9999.990	-9999.990
14.709	65.985	5.770	0.020	0.040	0.080	146.81.113	3.760	2.150	-9999.990	-9999.990

Well BK2c
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
14.769	35.616	9.406	0.020	0.040	0.080	146.81.113	3.760	2.150	-9999.990	-9999.990
14.829	42.364	9.406	0.020	0.040	0.080	146.143.71	3.870	2.150	-9999.990	-9999.990
14.889	42.364	10.315	0.020	0.070	0.050	146.143.71	3.190	0.710	-9999.990	-9999.990
14.949	60.586	13.042	0.020	0.070	0.050	146.81.128	3.190	0.710	-9999.990	-9999.990
15.009	60.586	13.042	0.020	0.040	0.090	146.61.128	4.000	2.210	-9999.990	-9999.990
15.069	38.990	13.345	0.020	0.030	0.090	146.81.128	3.850	2.570	-9999.990	-9999.990
15.129	38.990	13.345	0.020	0.040	0.090	146.81.128	4.130	2.200	-9999.990	-9999.990
15.189	38.990	13.951	0.020	0.040	0.090	146.81.128	4.010	2.200	-9999.990	-9999.990
15.249	65.985	15.315	0.020	0.040	0.090	146.81.128	4.140	2.200	-9999.990	-9999.990
15.309	32.242	15.315	0.020	0.040	0.090	146.81.128	4.140	2.200	-9999.990	-9999.990
15.369	32.242	13.850	0.020	0.040	0.090	146.143.71	4.010	2.200	-9999.990	-9999.990
15.429	65.985	13.850	0.020	0.070	0.050	146.143.71	2.950	0.780	-9999.990	-9999.990
15.489	65.985	13.042	0.020	0.070	0.050	146.122.71	2.950	0.780	-9999.990	-9999.990
15.549	69.360	9.810	0.020	0.060	0.050	146.122.71	2.840	0.780	-9999.990	-9999.990
15.609	39.327	9.810	0.020	0.060	0.050	146.122.71	2.840	0.780	-9999.990	-9999.990
15.669	39.327	6.679	0.020	0.060	0.050	146.122.71	2.730	0.850	-9999.990	-9999.990
15.729	55.861	6.679	0.020	0.060	0.050	146.122.71	2.730	0.850	-9999.990	-9999.990
15.789	55.861	6.225	0.020	0.060	0.050	146.122.71	2.820	0.850	-9999.990	-9999.990
15.849	69.360	3.245	0.020	0.060	0.050	146.122.71	2.820	0.850	-9999.990	-9999.990
15.909	59.236	3.245	0.020	0.060	0.050	146.122.71	2.820	0.850	-9999.990	-9999.990
15.969	59.236	3.952	0.020	0.060	0.050	146.122.71	2.820	0.850	-9999.990	-9999.990
16.029	42.364	3.952	0.020	0.060	0.050	146.122.71	2.820	0.850	-9999.990	-9999.990
16.089	42.364	1.730	0.020	0.060	0.050	146.122.71	2.640	0.850	-9999.990	-9999.990
16.149	55.861	1.680	0.020	0.060	0.050	146.122.71	2.640	0.850	-9999.990	-9999.990
16.209	35.616	1.680	0.020	0.060	0.050	146.122.71	2.640	0.850	-9999.990	-9999.990
16.269	35.616	3.952	0.020	0.060	0.050	146.122.71	2.640	0.850	-9999.990	-9999.990
16.329	57.549	3.952	0.020	0.060	0.050	146.122.71	2.540	0.940	-9999.990	-9999.990
16.389	57.549	0.720	0.020	0.060	0.050	146.122.71	2.700	0.940	-9999.990	-9999.990
16.449	49.112	1.680	0.020	0.060	0.050	146.122.71	2.610	0.940	-9999.990	-9999.990
16.509	65.985	1.680	0.020	0.060	0.050	146.122.71	2.530	0.940	-9999.990	-9999.990
16.569	65.985	4.760	0.020	0.060	0.050	146.122.71	2.390	0.940	-9999.990	-9999.990
16.629	55.861	4.760	0.020	0.060	0.050	146.122.71	2.390	0.940	-9999.990	-9999.990
16.689	55.861	5.770	0.020	0.060	0.050	146.122.71	2.390	0.940	-9999.990	-9999.990
16.749	55.861	7.285	0.020	0.060	0.050	146.122.71	2.460	0.940	-9999.990	-9999.990
16.809	65.985	7.285	0.020	0.060	0.050	146.122.71	2.530	0.940	-9999.990	-9999.990
16.869	65.985	3.498	0.020	0.060	0.050	146.122.71	2.530	0.940	-9999.990	-9999.990
16.929	45.738	3.498	0.020	0.060	0.050	146.122.71	2.530	0.940	-9999.990	-9999.990
16.989	45.738	2.740	0.020	0.060	0.050	146.122.71	2.530	0.940	-9999.990	-9999.990
17.049	49.112	3.498	0.020	0.060	0.050	146.122.71	2.610	0.940	-9999.990	-9999.990
17.109	49.112	3.498	0.020	0.060	0.050	146.122.71	2.700	0.940	-9999.990	-9999.990
17.169	49.112	3.750	0.020	0.060	0.050	146.143.71	2.790	0.930	-9999.990	-9999.990
17.229	45.738	3.750	0.020	0.070	0.050	146.143.71	3.040	0.780	-9999.990	-9999.990
17.289	45.738	6.679	0.020	0.070	0.050	146.143.71	3.040	0.780	-9999.990	-9999.990
17.349	45.738	0.215	0.020	0.070	0.050	146.143.71	3.040	0.780	-9999.990	-9999.990
17.409	78.810	0.215	0.020	0.070	0.050	146.143.71	3.160	0.780	-9999.990	-9999.990
17.469	78.810	-2.866	0.020	0.070	0.050	146.122.71	3.040	0.780	-9999.990	-9999.990
17.529	42.364	-2.866	0.020	0.060	0.050	146.143.71	2.930	0.780	-9999.990	-9999.990
17.589	42.364	-1.805	0.020	0.070	0.050	146.122.71	3.040	0.780	-9999.990	-9999.990
17.649	49.112	-1.957	0.020	0.060	0.050	146.122.71	2.900	0.850	-9999.990	-9999.990
17.709	38.990	-1.957	0.020	0.060	0.050	146.122.71	2.780	0.930	-9999.990	-9999.990
17.769	38.990	0.771	0.020	0.060	0.050	146.122.71	2.780	0.930	-9999.990	-9999.990
17.829	35.616	0.771	0.020	0.060	0.050	146.122.71	2.780	0.930	-9999.990	-9999.990
17.889	35.616	-1.805	0.020	0.060	0.050	146.122.71	2.790	0.930	-9999.990	-9999.990
17.949	62.611	-2.411	0.020	0.060	0.050	146.122.71	2.880	0.930	-9999.990	-9999.990
18.009	52.487	-2.411	0.020	0.060	0.050	146.122.71	2.880	0.930	-9999.990	-9999.990
18.069	52.487	-0.795	0.020	0.060	0.050	146.122.71	2.780	0.930	-9999.990	-9999.990
18.129	38.990	-0.795	0.020	0.060	0.050	146.122.71	2.780	0.930	-9999.990	-9999.990
18.189	38.990	-2.866	0.020	0.060	0.050	146.122.71	2.780	0.930	-9999.990	-9999.990
18.249	39.327	-0.139	0.020	0.060	0.050	146.122.71	2.870	0.930	-9999.990	-9999.990
18.309	35.616	-0.139	0.020	0.060	0.050	146.122.71	2.880	0.920	-9999.990	-9999.990
18.369	35.616	0.215	0.020	0.060	0.050	146.122.85	2.870	0.920	-9999.990	-9999.990
18.429	65.985	0.215	0.020	0.060	0.060	146.122.85	2.760	1.020	-9999.990	-9999.990
18.489	65.985	-1.957	0.020	0.060	0.060	146.122.85	2.760	1.020	-9999.990	-9999.990
18.549	45.738	-1.502	0.020	0.060	0.060	146.102.85	2.850	1.020	-9999.990	-9999.990
18.609	52.487	-1.502	0.020	0.050	0.060	146.102.85	2.650	1.130	-9999.990	-9999.990
18.669	52.487	-2.815	0.020	0.050	0.060	146.102.85	2.650	1.130	-9999.990	-9999.990
18.729	38.990	-2.815	0.020	0.050	0.060	146.102.85	2.730	1.130	-9999.990	-9999.990
18.789	38.990	0.316	0.020	0.050	0.060	146.102.85	2.630	1.280	-9999.990	-9999.990
18.849	45.738	-1.300	0.020	0.050	0.060	146.102.85	2.740	1.130	-9999.990	-9999.990

Well BK2c
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Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
18.909	45.401	-1.300	0.020	0.050	0.060	146.102.85	2.740	1.130	-9999.990	-9999.990
18.969	45.401	-2.411	0.020	0.050	0.060	146.102.85	2.740	1.130	-9999.990	-9999.990
19.029	45.738	-2.411	0.020	0.050	0.060	146.102.85	2.490	1.130	-9999.990	-9999.990
19.089	45.738	0.215	0.020	0.050	0.060	146.102.85	2.420	1.130	-9999.990	-9999.990
19.149	45.738	-2.411	0.020	0.050	0.060	146.102.85	2.420	1.130	-9999.990	-9999.990
19.209	42.364	-2.411	0.020	0.050	0.060	146.102.85	2.420	1.130	-9999.990	-9999.990
19.269	42.364	-1.805	0.020	0.050	0.060	146.102.85	2.420	1.130	-9999.990	-9999.990
19.329	52.487	-1.805	0.020	0.050	0.060	146.102.85	2.420	1.130	-9999.990	-9999.990
19.389	52.487	-0.593	0.020	0.050	0.060	146.102.85	2.420	1.130	-9999.990	-9999.990
19.449	42.364	-2.815	0.020	0.050	0.060	146.102.85	2.420	1.130	-9999.990	-9999.990
19.509	69.360	-2.815	0.020	0.050	0.060	146.102.85	2.350	1.130	-9999.990	-9999.990
19.569	69.360	-1.048	0.020	0.050	0.060	146.102.85	2.350	1.130	-9999.990	-9999.990
19.629	35.616	-1.048	0.020	0.050	0.060	146.102.71	2.350	1.130	-9999.990	-9999.990
19.689	35.616	-3.320	0.020	0.050	0.050	146.102.71	2.230	1.140	-9999.990	-9999.990
19.749	45.738	-2.815	0.020	0.050	0.050	146.102.71	2.230	1.140	-9999.990	-9999.990
19.809	42.364	-2.815	0.020	0.050	0.050	146.102.71	2.300	1.020	-9999.990	-9999.990
19.869	42.364	-0.593	0.020	0.050	0.050	146.122.71	2.300	1.020	-9999.990	-9999.990
19.929	55.861	-0.593	0.020	0.060	0.050	146.122.71	2.450	0.920	-9999.990	-9999.990
19.989	55.861	-1.300	0.020	0.060	0.050	146.102.71	2.450	0.920	0.125	2.527
20.049	54.511	-0.139	0.020	0.050	0.050	146.102.71	2.300	1.020	-9999.990	-9999.990
20.109	28.868	-0.139	0.020	0.050	0.050	146.102.71	2.300	1.020	-9999.990	-9999.990
20.169	28.868	-2.310	0.020	0.050	0.050	219.102.71	2.240	1.020	-9999.990	-9999.990
20.229	42.364	-2.310	0.030	0.050	0.050	146.102.71	2.170	1.130	-9999.990	-9999.990
20.289	42.364	-1.502	0.020	0.050	0.050	146.102.71	2.230	1.130	-9999.990	-9999.990
20.349	52.487	1.225	0.020	0.050	0.050	219.61.113	2.240	1.020	-9999.990	-9999.990
20.409	49.112	1.225	0.030	0.030	0.080	219.61.113	3.080	3.000	-9999.990	-9999.990
20.469	49.112	-0.290	0.030	0.030	0.080	219.61.113	3.180	2.520	-9999.990	-9999.990
20.529	42.364	-0.290	0.030	0.030	0.080	219.0.170	3.180	2.520	-9999.990	-9999.990
20.589	42.364	1.225	0.030	0.000	0.120	219.0.184	3.740	32.770	-9999.990	-9999.990
20.649	49.112	-1.957	0.030	0.000	0.130	219.0.184	4.170	-9999.990	-9999.990	-9999.990
20.709	39.327	-1.957	0.030	0.000	0.130	219.0.184	4.250	-9999.990	-9999.990	-9999.990
20.769	39.327	-1.805	0.030	0.000	0.130	219.0.170	4.250	-9999.990	-9999.990	-9999.990
20.829	52.487	-1.805	0.030	0.000	0.120	219.0.170	3.590	34.470	-9999.990	-9999.990
20.889	52.487	0.316	0.030	0.000	0.120	219.0.170	3.590	34.470	-9999.990	-9999.990
20.949	62.611	0.215	0.030	0.000	0.120	219.0.170	3.590	34.470	-9999.990	-9999.990
21.009	52.487	0.215	0.030	0.000	0.120	219.0.170	3.660	34.060	-9999.990	-9999.990
21.069	52.487	2.134	0.030	0.000	0.120	219.0.170	3.660	34.060	-9999.990	-9999.990
21.129	55.861	1.225	0.030	0.000	0.120	219.0.170	3.590	34.460	-9999.990	-9999.990
21.189	55.861	1.225	0.030	0.000	0.120	219.20.156	3.590	34.460	-9999.990	-9999.990
21.249	52.487	0.316	0.030	0.010	0.110	219.20.156	3.690	13.360	-9999.990	-9999.990
21.309	65.985	0.316	0.030	0.010	0.110	219.20.156	3.610	13.430	-9999.990	-9999.990
21.369	65.985	2.740	0.030	0.010	0.110	219.20.156	3.790	8.270	-9999.990	-9999.990
21.429	49.112	2.134	0.030	0.010	0.110	219.20.156	3.710	8.290	-9999.990	-9999.990
21.489	49.112	2.134	0.030	0.010	0.110	219.20.156	3.710	8.290	-9999.990	-9999.990
21.549	59.236	3.245	0.030	0.010	0.110	219.0.184	3.870	8.240	-9999.990	-9999.990
21.609	52.487	3.245	0.030	0.000	0.130	219.0.184	4.390	-9999.990	-9999.990	-9999.990
21.669	52.487	4.861	0.030	0.000	0.130	219.0.184	4.510	-9999.990	-9999.990	-9999.990
21.729	45.738	3.245	0.030	0.000	0.130	219.0.184	4.250	-9999.990	-9999.990	-9999.990
21.789	45.738	3.245	0.030	0.000	0.130	219.0.184	4.140	-9999.990	-9999.990	-9999.990
21.849	76.110	4.407	0.030	0.000	0.130	219.0.184	4.140	-9999.990	-9999.990	-9999.990
21.909	78.810	4.407	0.030	0.000	0.130	219.0.184	4.040	-9999.990	-9999.990	-9999.990
21.969	78.810	4.255	0.030	0.000	0.130	219.0.170	4.040	-9999.990	-9999.990	-9999.990
22.029	52.487	4.861	0.030	0.000	0.120	219.0.170	3.900	-9999.990	-9999.990	-9999.990
22.089	52.487	4.861	0.030	0.000	0.120	219.0.170	3.900	-9999.990	-9999.990	-9999.990
22.149	52.487	7.134	0.030	0.000	0.120	219.0.170	3.810	-9999.990	-9999.990	-9999.990
22.209	65.985	7.134	0.030	0.000	0.120	219.0.170	3.880	-9999.990	-9999.990	-9999.990
22.269	65.985	6.275	0.030	0.000	0.120	219.0.170	3.880	-9999.990	-9999.990	-9999.990
22.329	52.487	8.043	0.030	0.000	0.120	219.0.170	3.880	-9999.990	-9999.990	-9999.990
22.389	52.487	8.043	0.030	0.000	0.120	219.0.170	3.680	-9999.990	-9999.990	-9999.990
22.449	52.487	5.316	0.030	0.000	0.120	219.0.170	3.680	-9999.990	-9999.990	-9999.990
22.509	62.611	5.316	0.030	0.000	0.120	219.0.170	3.680	-9999.990	-9999.990	-9999.990
22.569	62.611	6.275	0.030	0.000	0.120	219.0.184	3.680	-9999.990	-9999.990	-9999.990
22.629	66.660	7.134	0.030	0.000	0.130	219.0.184	4.140	-9999.990	-9999.990	-9999.990
22.689	69.360	7.134	0.030	0.000	0.130	219.0.184	4.490	-9999.990	-9999.990	-9999.990
22.749	69.360	3.750	0.030	0.000	0.130	219.0.184	4.490	-9999.990	-9999.990	-9999.990
22.809	65.985	3.750	0.030	0.000	0.130	219.0.184	4.550	-9999.990	-9999.990	-9999.990
22.869	65.985	6.679	0.030	0.000	0.130	219.0.184	4.550	-9999.990	-9999.990	-9999.990
22.929	69.360	6.225	0.030	0.000	0.130	219.0.199	4.640	-9999.990	-9999.990	-9999.990
22.989	79.485	6.225	0.030	0.000	0.140	219.0.199	4.710	-9999.990	-9999.990	-9999.990

Well BK2c
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
23.049	79.485	6.275	0.030	0.000	0.140	219.0.184	4.710	-9999.990	-9999.990	-9999.990
23.109	62.611	6.275	0.030	0.000	0.130	219.0.184	4.570	-9999.990	-9999.990	-9999.990
23.169	62.611	6.679	0.030	0.000	0.130	219.0.184	4.570	-9999.990	-9999.990	-9999.990
23.229	97.038	5.265	0.030	0.000	0.130	219.0.184	4.640	-9999.990	-9999.990	-9999.990
23.289	79.485	5.265	0.030	0.000	0.130	219.0.184	4.490	-9999.990	-9999.990	-9999.990
23.349	79.485	5.770	0.030	0.000	0.130	219.0.184	4.490	-9999.990	-9999.990	-9999.990
23.409	79.485	5.770	0.030	0.000	0.130	219.0.184	4.550	-9999.990	-9999.990	-9999.990
23.469	79.485	3.245	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
23.529	55.861	5.770	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
23.589	69.360	5.770	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
23.649	69.360	7.285	0.030	0.000	0.130	219.0.184	4.510	-9999.990	-9999.990	-9999.990
23.709	65.985	7.285	0.030	0.000	0.130	219.0.184	4.250	-9999.990	-9999.990	-9999.990
23.769	65.985	2.134	0.030	0.000	0.130	219.0.184	4.250	-9999.990	-9999.990	-9999.990
23.829	89.612	2.235	0.030	0.000	0.130	219.0.184	4.250	-9999.990	-9999.990	-9999.990
23.889	76.110	2.235	0.030	0.000	0.130	219.0.184	4.190	-9999.990	-9999.990	-9999.990
23.949	76.110	3.043	0.030	0.000	0.130	219.0.184	4.120	-9999.990	-9999.990	-9999.990
24.009	65.985	3.043	0.030	0.000	0.130	219.0.184	4.120	-9999.990	-9999.990	-9999.990
24.069	65.985	2.235	0.030	0.000	0.130	219.0.184	4.070	-9999.990	-9999.990	-9999.990
24.129	82.861	2.589	0.030	0.000	0.130	219.0.170	4.020	-9999.990	-9999.990	-9999.990
24.189	103.114	2.589	0.030	0.000	0.120	219.0.170	3.970	-9999.990	-9999.990	-9999.990
24.249	103.114	-9999.990	0.030	0.000	0.120	219.0.184	3.970	-9999.990	-9999.990	-9999.990
24.309	78.810	-9999.990	0.030	0.000	0.130	219.0.184	4.070	-9999.990	-9999.990	-9999.990
24.369	78.810	2.235	0.030	0.000	0.130	219.0.170	4.020	-9999.990	-9999.990	-9999.990
24.429	52.487	3.498	0.030	0.000	0.120	219.0.170	3.970	-9999.990	-9999.990	-9999.990
24.489	79.485	3.498	0.030	0.000	0.120	219.0.170	3.900	-9999.990	-9999.990	-9999.990
24.549	79.485	1.730	0.030	0.000	0.120	219.0.170	3.900	-9999.990	-9999.990	-9999.990
24.609	59.236	1.730	0.030	0.000	0.120	219.0.170	3.920	-9999.990	-9999.990	-9999.990
24.669	59.236	3.043	0.030	0.000	0.120	219.0.170	3.820	-9999.990	-9999.990	-9999.990
24.729	62.611	0.771	0.030	0.000	0.120	219.0.184	3.820	-9999.990	-9999.990	-9999.990
24.789	82.861	0.771	0.030	0.000	0.130	219.0.184	4.130	-9999.990	-9999.990	-9999.990
24.849	82.861	0.720	0.030	0.000	0.130	219.0.184	4.130	-9999.990	-9999.990	-9999.990
24.909	82.861	0.720	0.030	0.000	0.130	219.0.184	4.130	-9999.990	-9999.990	-9999.990
24.969	82.861	2.134	0.030	0.000	0.130	219.0.184	4.070	-9999.990	-9999.990	-9999.990
25.029	66.660	2.589	0.030	0.000	0.130	219.0.170	4.020	-9999.990	-9999.990	-9999.990
25.089	65.985	2.589	0.030	0.000	0.120	219.0.184	3.720	-9999.990	-9999.990	-9999.990
25.149	65.985	2.740	0.030	0.000	0.130	219.0.170	4.020	-9999.990	-9999.990	-9999.990
25.209	42.364	2.740	0.030	0.000	0.120	219.0.170	3.960	-9999.990	-9999.990	-9999.990
25.269	42.364	-1.502	0.030	0.000	0.120	219.0.170	3.960	-9999.990	-9999.990	-9999.990
25.329	55.861	-0.290	0.030	0.000	0.120	219.0.170	3.960	-9999.990	-9999.990	-9999.990
25.389	92.987	-0.290	0.030	0.000	0.120	219.0.170	3.950	-9999.990	-9999.990	-9999.990
25.449	92.987	1.680	0.030	0.000	0.120	219.0.170	3.900	-9999.990	-9999.990	-9999.990
25.509	59.236	1.680	0.030	0.000	0.120	219.0.170	3.950	-9999.990	-9999.990	-9999.990
25.569	59.236	0.720	0.030	0.000	0.120	219.0.184	3.990	-9999.990	-9999.990	-9999.990
25.629	72.735	2.134	0.030	0.000	0.130	219.0.170	4.030	-9999.990	-9999.990	-9999.990
25.689	92.987	2.134	0.030	0.000	0.120	219.0.170	3.990	-9999.990	-9999.990	-9999.990
25.749	92.987	0.720	0.030	0.000	0.120	219.0.170	3.950	-9999.990	-9999.990	-9999.990
25.809	72.735	0.720	0.030	0.000	0.120	219.0.170	3.950	-9999.990	-9999.990	-9999.990
25.869	72.735	0.316	0.030	0.000	0.120	219.0.184	3.950	-9999.990	-9999.990	-9999.990
25.929	59.236	2.235	0.030	0.000	0.130	219.0.184	4.170	-9999.990	-9999.990	-9999.990
25.989	79.485	2.235	0.030	0.000	0.130	219.0.184	4.110	-9999.990	-9999.990	-9999.990
26.049	79.485	-0.139	0.030	0.000	0.130	219.0.184	4.110	-9999.990	-9999.990	-9999.990
26.109	65.985	-0.139	0.030	0.000	0.130	219.0.184	4.070	-9999.990	-9999.990	-9999.990
26.169	65.985	0.720	0.030	0.000	0.130	219.0.184	4.070	-9999.990	-9999.990	-9999.990
26.229	79.485	1.680	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
26.289	79.485	1.680	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
26.349	79.485	0.215	0.030	0.000	0.130	219.0.184	4.040	-9999.990	-9999.990	-9999.990
26.409	82.861	0.215	0.030	0.000	0.130	219.0.170	4.080	-9999.990	-9999.990	-9999.990
26.469	82.861	1.225	0.030	0.000	0.120	219.0.184	4.000	-9999.990	-9999.990	-9999.990
26.529	65.985	-1.048	0.030	0.000	0.130	219.0.184	4.040	-9999.990	-9999.990	-9999.990
26.589	92.987	-1.048	0.030	0.000	0.130	219.0.184	4.130	-9999.990	-9999.990	-9999.990
26.649	92.987	0.215	0.030	0.000	0.130	219.0.184	4.210	-9999.990	-9999.990	-9999.990
26.709	79.485	0.215	0.030	0.000	0.130	219.0.184	4.270	-9999.990	-9999.990	-9999.990
26.769	79.485	1.225	0.030	0.000	0.130	219.0.184	4.270	-9999.990	-9999.990	-9999.990
26.829	75.773	0.215	0.030	0.000	0.130	219.0.184	4.230	-9999.990	-9999.990	-9999.990
26.889	103.114	0.215	0.030	0.000	0.130	219.0.184	4.240	-9999.990	-9999.990	-9999.990
26.949	103.114	1.680	0.030	0.000	0.130	219.0.184	4.300	-9999.990	-9999.990	-9999.990
27.009	99.738	1.680	0.030	0.000	0.130	219.0.184	4.320	-9999.990	-9999.990	-9999.990
27.069	99.738	-0.139	0.030	0.000	0.130	219.0.184	4.380	-9999.990	-9999.990	-9999.990
27.129	72.735	0.720	0.030	0.000	0.130	219.0.184	4.390	-9999.990	-9999.990	-9999.990

Well BK2c
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Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
27.189	59.236	0.720	0.030	0.000	0.130	219.0.184	4.350	-9999.990	-9999.990	-9999.990
27.249	59.236	2.589	0.030	0.000	0.130	219.0.184	4.350	-9999.990	-9999.990	-9999.990
27.309	59.236	2.589	0.030	0.000	0.130	219.0.184	4.230	-9999.990	-9999.990	-9999.990
27.369	59.236	0.720	0.030	0.000	0.130	219.0.184	4.190	-9999.990	-9999.990	-9999.990
27.429	72.735	3.043	0.030	0.000	0.130	219.0.184	4.240	-9999.990	-9999.990	-9999.990
27.489	59.236	3.043	0.030	0.000	0.130	219.0.184	4.200	-9999.990	-9999.990	-9999.990
27.549	59.236	0.771	0.030	0.000	0.130	219.0.184	4.200	-9999.990	-9999.990	-9999.990
27.609	55.861	0.771	0.030	0.000	0.130	219.0.184	4.240	-9999.990	-9999.990	-9999.990
27.669	55.861	1.730	0.030	0.000	0.130	219.0.184	4.290	-9999.990	-9999.990	-9999.990
27.729	59.236	3.043	0.030	0.000	0.130	219.0.184	4.350	-9999.990	-9999.990	-9999.990
27.789	65.985	3.043	0.030	0.000	0.130	219.0.184	4.400	-9999.990	-9999.990	-9999.990
27.849	65.985	2.235	0.030	0.000	0.130	219.0.184	4.400	-9999.990	-9999.990	-9999.990
27.909	103.114	3.498	0.030	0.000	0.130	219.0.184	4.350	-9999.990	-9999.990	-9999.990
27.969	103.114	3.498	0.030	0.000	0.130	219.0.184	4.340	-9999.990	-9999.990	-9999.990
28.029	86.236	2.740	0.030	0.000	0.130	219.0.184	4.340	-9999.990	-9999.990	-9999.990
28.089	76.110	2.740	0.030	0.000	0.130	219.0.184	4.340	-9999.990	-9999.990	-9999.990
28.149	76.110	2.589	0.030	0.000	0.130	219.0.184	4.510	-9999.990	-9999.990	-9999.990
28.209	86.236	4.760	0.030	0.000	0.130	219.0.184	4.560	-9999.990	-9999.990	-9999.990
28.269	86.236	4.760	0.030	0.000	0.130	219.0.184	4.560	-9999.990	-9999.990	-9999.990
28.329	69.360	3.043	0.030	0.000	0.130	219.0.184	4.560	-9999.990	-9999.990	-9999.990
28.389	52.487	3.043	0.030	0.000	0.130	219.0.184	4.580	-9999.990	-9999.990	-9999.990
28.449	52.487	3.750	0.030	0.000	0.130	219.0.184	4.510	-9999.990	-9999.990	-9999.990
28.509	81.848	4.861	0.030	0.000	0.130	219.0.184	4.510	-9999.990	-9999.990	-9999.990
28.569	81.848	4.861	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
28.629	79.485	4.255	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
28.689	113.242	4.255	0.030	0.000	0.130	219.0.184	4.510	-9999.990	-9999.990	-9999.990
28.749	113.242	5.770	0.030	0.000	0.130	219.0.184	4.510	-9999.990	-9999.990	-9999.990
28.809	113.242	4.861	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
28.869	113.242	4.861	0.030	0.000	0.130	219.0.184	4.410	-9999.990	-9999.990	-9999.990
28.929	52.487	4.760	0.030	0.000	0.130	219.0.184	4.410	-9999.990	-9999.990	-9999.990
28.989	92.987	4.760	0.030	0.000	0.130	219.0.184	4.320	-9999.990	-9999.990	-9999.990
29.049	92.987	6.679	0.030	0.000	0.130	219.0.184	4.320	-9999.990	-9999.990	-9999.990
29.109	69.360	5.770	0.030	0.000	0.130	219.0.184	4.270	-9999.990	-9999.990	-9999.990
29.169	81.848	5.770	0.030	0.000	0.130	219.0.184	4.360	-9999.990	-9999.990	-9999.990
29.229	81.848	7.588	0.030	0.000	0.130	219.0.184	4.360	-9999.990	-9999.990	-9999.990
29.289	59.236	7.588	0.030	0.000	0.130	219.0.184	4.360	-9999.990	-9999.990	-9999.990
29.349	59.236	5.770	0.030	0.000	0.130	219.0.184	4.380	-9999.990	-9999.990	-9999.990
29.409	69.360	6.780	0.030	0.000	0.130	219.0.184	4.440	-9999.990	-9999.990	-9999.990
29.469	82.861	6.780	0.030	0.000	0.130	219.0.184	4.440	-9999.990	-9999.990	-9999.990
29.529	82.861	8.043	0.030	0.000	0.130	219.0.184	4.440	-9999.990	-9999.990	-9999.990
29.589	52.487	8.043	0.030	0.000	0.130	219.0.184	4.490	-9999.990	-9999.990	-9999.990
29.649	52.487	7.134	0.030	0.000	0.130	219.0.199	4.540	-9999.990	-9999.990	-9999.990
29.709	76.110	9.810	0.030	0.000	0.140	219.0.199	4.780	-9999.990	-9999.990	-9999.990
29.769	72.735	9.810	0.030	0.000	0.140	219.0.199	4.830	-9999.990	-9999.990	-9999.990
29.829	72.735	9.406	0.030	0.000	0.140	219.0.199	4.830	-9999.990	-9999.990	-9999.990
29.889	86.236	9.406	0.030	0.000	0.140	219.0.199	5.040	-9999.990	-9999.990	-9999.990
29.949	86.236	9.810	0.030	0.000	0.140	219.0.199	4.970	-9999.990	-9999.990	-9999.990
30.009	69.360	12.588	0.030	0.000	0.140	219.0.199	4.970	-9999.990	-9999.990	-9999.990
30.069	55.861	12.588	0.030	0.000	0.140	219.0.199	4.910	-9999.990	-9999.990	-9999.990
30.129	55.861	11.224	0.030	0.000	0.140	219.0.199	5.020	-9999.990	-9999.990	-9999.990
30.189	86.236	11.224	0.030	0.000	0.140	219.0.199	5.020	-9999.990	-9999.990	-9999.990
30.249	86.236	13.345	0.030	0.000	0.140	219.0.199	5.140	-9999.990	-9999.990	-9999.990
30.309	86.236	12.133	0.030	0.000	0.140	219.0.199	5.140	-9999.990	-9999.990	-9999.990
30.369	106.490	12.133	0.030	0.000	0.140	219.0.199	5.140	-9999.990	-9999.990	-9999.990
30.429	106.490	12.840	0.030	0.000	0.140	219.0.199	5.070	-9999.990	-9999.990	-9999.990
30.489	96.363	12.840	0.030	0.000	0.140	219.0.199	4.840	-9999.990	-9999.990	-9999.990
30.549	96.363	14.406	0.030	0.000	0.140	219.0.199	4.840	-9999.990	-9999.990	-9999.990
30.609	96.363	12.335	0.030	0.000	0.140	219.0.199	4.830	-9999.990	-9999.990	-9999.990
30.669	126.748	12.335	0.030	0.000	0.140	219.0.184	4.780	-9999.990	-9999.990	-9999.990
30.729	126.748	13.042	0.030	0.000	0.130	219.0.184	4.590	-9999.990	-9999.990	-9999.990
30.789	86.236	13.042	0.030	0.000	0.130	219.0.184	4.330	-9999.990	-9999.990	-9999.990
30.849	86.236	11.325	0.030	0.000	0.130	219.0.184	4.280	-9999.990	-9999.990	-9999.990
30.909	87.924	9.861	0.030	0.000	0.130	219.0.184	4.310	-9999.990	-9999.990	-9999.990
30.969	119.995	9.861	0.030	0.000	0.130	219.0.184	4.380	-9999.990	-9999.990	-9999.990
31.029	119.995	11.830	0.030	0.000	0.130	219.0.184	4.380	-9999.990	-9999.990	-9999.990
31.089	82.861	11.830	0.030	0.000	0.130	219.0.184	4.380	-9999.990	-9999.990	-9999.990
31.149	82.861	8.497	0.030	0.000	0.130	219.0.184	4.380	-9999.990	-9999.990	-9999.990
31.209	86.236	10.315	0.030	0.000	0.130	219.0.184	4.510	-9999.990	-9999.990	-9999.990
31.269	76.110	10.315	0.030	0.000	0.130	219.0.184	4.450	-9999.990	-9999.990	-9999.990

Well BK2c
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
31.329	76.110	-9999.990	0.030	0.000	0.130	219.0.184	4.450	-9999.990	-9999.990	-9999.990
31.389	113.242	-9999.990	0.030	0.000	0.130	219.0.184	4.450	-9999.990	-9999.990	-9999.990
31.449	113.242	8.497	0.030	0.000	0.130	219.0.184	4.450	-9999.990	-9999.990	-9999.990
31.509	99.738	10.315	0.030	0.000	0.130	219.0.184	4.380	-9999.990	-9999.990	-9999.990
31.569	75.773	10.315	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
31.629	75.773	9.810	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
31.689	99.738	9.810	0.030	0.000	0.130	219.0.184	4.190	-9999.990	-9999.990	-9999.990
31.749	99.738	13.042	0.030	0.000	0.130	219.0.184	4.110	-9999.990	-9999.990	-9999.990
31.809	113.242	11.830	0.030	0.000	0.130	219.0.184	4.340	-9999.990	-9999.990	-9999.990
31.869	92.987	11.830	0.030	0.000	0.130	219.0.184	4.280	-9999.990	-9999.990	-9999.990
31.929	92.987	12.588	0.030	0.000	0.130	219.0.184	4.280	-9999.990	-9999.990	-9999.990
31.989	42.364	12.588	0.030	0.000	0.130	219.0.184	4.280	-9999.990	-9999.990	-9999.990
32.049	42.364	14.860	0.030	0.000	0.130	219.0.184	4.280	-9999.990	-9999.990	-9999.990
32.109	72.735	13.850	0.030	0.000	0.130	219.0.184	4.280	-9999.990	-9999.990	-9999.990
32.169	100.076	13.850	0.030	0.000	0.130	219.0.184	4.400	-9999.990	-9999.990	-9999.990
32.229	100.076	16.224	0.030	0.000	0.130	219.0.184	4.340	-9999.990	-9999.990	-9999.990
32.289	86.236	16.224	0.030	0.000	0.130	219.0.184	4.340	-9999.990	-9999.990	-9999.990
32.349	86.236	14.406	0.030	0.000	0.130	219.0.184	4.280	-9999.990	-9999.990	-9999.990
32.409	89.612	14.860	0.030	0.000	0.130	219.0.199	4.360	-9999.990	-9999.990	-9999.990
32.469	82.861	14.860	0.030	0.000	0.140	219.0.199	4.790	-9999.990	-9999.990	-9999.990
32.529	82.861	15.769	0.030	0.000	0.140	219.0.199	4.790	-9999.990	-9999.990	-9999.990
32.589	72.735	15.769	0.030	0.000	0.140	219.0.199	5.220	-9999.990	-9999.990	-9999.990
32.649	72.735	14.355	0.030	0.000	0.140	219.0.199	5.220	-9999.990	-9999.990	-9999.990
32.709	82.861	16.224	0.030	0.000	0.140	219.0.199	5.220	-9999.990	-9999.990	-9999.990
32.769	65.985	16.224	0.030	0.000	0.140	219.0.199	4.960	-9999.990	-9999.990	-9999.990
32.829	65.985	16.375	0.030	0.000	0.140	219.0.199	4.960	-9999.990	-9999.990	-9999.990
32.889	79.485	16.375	0.030	0.000	0.140	219.0.199	5.290	-9999.990	-9999.990	-9999.990
32.949	79.485	16.678	0.030	0.000	0.140	219.0.199	5.410	-9999.990	-9999.990	-9999.990
33.009	59.236	20.415	0.030	0.000	0.140	219.0.199	5.500	-9999.990	1.236	1.439
33.069	62.611	20.415	0.030	0.000	0.140	219.0.199	5.400	-9999.990	-9999.990	-9999.990
33.129	62.611	20.314	0.030	0.000	0.140	219.0.199	5.330	-9999.990	-9999.990	-9999.990
33.189	90.962	20.314	0.030	0.000	0.140	219.0.199	5.410	-9999.990	-9999.990	-9999.990
33.249	90.962	22.435	0.030	0.000	0.140	219.0.199	5.360	-9999.990	-9999.990	-9999.990
33.309	69.360	26.223	0.030	0.000	0.140	219.0.199	5.290	-9999.990	-9999.990	-9999.990
33.369	69.360	26.223	0.030	0.000	0.140	219.0.199	5.200	-9999.990	-9999.990	-9999.990
33.429	69.360	26.223	0.030	0.000	0.140	219.0.199	5.260	-9999.990	-9999.990	-9999.990
33.489	72.735	26.223	0.030	0.000	0.140	219.0.199	5.260	-9999.990	-9999.990	-9999.990
33.549	72.735	30.010	0.030	0.000	0.140	219.0.199	5.260	-9999.990	-9999.990	-9999.990
33.609	72.735	-9999.990	0.030	0.000	0.140	219.0.199	5.400	-9999.990	-9999.990	-9999.990
33.669	59.236	-9999.990	0.030	0.000	0.140	219.0.213	5.500	-9999.990	-9999.990	-9999.990
33.729	59.236	28.041	0.030	0.000	0.150	219.0.213	5.790	-9999.990	-9999.990	-9999.990
33.789	55.861	28.041	0.030	0.000	0.150	219.0.213	5.680	-9999.990	-9999.990	-9999.990
33.849	55.861	-9999.990	0.030	0.000	0.150	146.0.213	5.930	-9999.990	-9999.990	-9999.990
33.909	54.511	23.496	0.020	0.000	0.150	146.0.213	6.310	-9999.990	-9999.990	-9999.990
33.969	76.110	23.496	0.020	0.000	0.150	146.0.213	6.410	-9999.990	-9999.990	-9999.990
34.029	76.110	24.960	0.020	0.000	0.150	146.0.227	6.410	-9999.990	-9999.990	-9999.990
34.089	45.738	24.960	0.020	0.000	0.160	146.0.227	6.810	-9999.990	-9999.990	-9999.990
34.149	45.738	23.041	0.020	0.000	0.160	146.0.227	7.080	-9999.990	-9999.990	-9999.990
34.209	76.110	24.859	0.020	0.000	0.160	146.0.227	7.200	-9999.990	-9999.990	-9999.990
34.269	65.985	24.859	0.020	0.000	0.160	146.0.227	7.240	-9999.990	-9999.990	-9999.990
34.329	65.985	24.455	0.020	0.000	0.160	146.0.227	7.240	-9999.990	-9999.990	-9999.990
34.389	62.611	24.455	0.020	0.000	0.160	146.0.227	7.130	-9999.990	-9999.990	-9999.990
34.449	62.611	25.768	0.020	0.000	0.160	146.0.227	7.150	-9999.990	-9999.990	-9999.990
34.509	69.698	29.404	0.020	0.000	0.160	146.0.227	7.050	-9999.990	-9999.990	-9999.990
34.569	52.487	29.404	0.020	0.000	0.160	146.0.227	7.160	-9999.990	-9999.990	-9999.990
34.629	52.487	31.020	0.020	0.000	0.160	146.0.227	7.300	-9999.990	-9999.990	-9999.990
34.689	59.236	31.020	0.020	0.000	0.160	146.0.227	7.370	-9999.990	-9999.990	-9999.990
34.749	59.236	34.858	0.020	0.000	0.160	146.0.227	7.720	-9999.990	-9999.990	-9999.990
34.809	82.861	36.070	0.020	0.000	0.160	146.0.227	7.600	-9999.990	-9999.990	-9999.990
34.869	62.611	36.070	0.020	0.000	0.160	146.0.227	7.260	-9999.990	-9999.990	-9999.990
34.929	62.611	39.403	0.020	0.000	0.160	146.0.227	7.140	-9999.990	-9999.990	-9999.990
34.989	55.861	45.160	0.020	0.000	0.160	146.0.227	7.180	-9999.990	-9999.990	-9999.990
35.049	55.861	45.160	0.020	0.000	0.160	146.0.227	7.180	-9999.990	-9999.990	-9999.990
35.109	62.611	46.675	0.020	0.000	0.160	146.0.227	7.200	-9999.990	-9999.990	-9999.990
35.169	72.735	46.675	0.020	0.000	0.160	146.0.227	7.310	-9999.990	-9999.990	-9999.990
35.229	72.735	50.715	0.020	0.000	0.160	146.0.227	7.200	-9999.990	-9999.990	-9999.990
35.289	52.487	55.311	0.020	0.000	0.160	146.0.227	7.070	-9999.990	-9999.990	-9999.990
35.349	52.487	55.311	0.020	0.000	0.160	146.0.227	7.220	-9999.990	-9999.990	-9999.990
35.409	66.660	58.290	0.020	0.000	0.160	146.0.227	7.560	-9999.990	-9999.990	-9999.990

Well BK2c
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
35.469	52.487	58.290	0.020	0.000	0.160	146.0.227	7.340	-9999.990	-9999.990	-9999.990
35.529	52.487	63.492	0.020	0.000	0.160	146.0.227	7.470	-9999.990	-9999.990	-9999.990
35.589	52.487	66.219	0.020	0.000	0.160	146.0.227	7.340	-9999.990	-9999.990	-9999.990
35.649	52.487	66.219	0.020	0.000	0.160	146.0.227	7.220	-9999.990	-9999.990	-9999.990
35.709	52.487	70.915	0.020	0.000	0.160	146.0.227	7.350	-9999.990	0.550	4.884
35.769	62.611	70.915	0.020	0.000	0.160	146.0.227	7.160	-9999.990	-9999.990	-9999.990
35.829	62.611	76.672	0.020	0.000	0.160	146.0.227	7.160	-9999.990	-9999.990	-9999.990
35.889	38.990	78.490	0.020	0.000	0.160	146.0.227	7.260	-9999.990	-9999.990	-9999.990
35.949	82.861	78.490	0.020	0.000	0.160	146.0.227	7.300	-9999.990	-9999.990	-9999.990
36.009	82.861	84.550	0.020	0.000	0.160	146.0.227	7.200	-9999.990	-9999.990	-9999.990
36.069	55.861	84.550	0.020	0.000	0.160	146.0.227	7.060	-9999.990	-9999.990	-9999.990
36.129	55.861	-9999.990	0.020	0.000	0.160	146.0.227	7.220	-9999.990	-9999.990	-9999.990
36.189	81.848	89.600	0.020	0.000	0.160	146.0.227	7.230	-9999.990	-9999.990	-9999.990
36.249	65.985	89.600	0.020	0.000	0.160	146.0.227	7.230	-9999.990	-9999.990	-9999.990
36.309	65.985	93.034	0.020	0.000	0.160	146.0.227	7.620	-9999.990	-9999.990	-9999.990
36.369	59.236	93.034	0.020	0.000	0.160	146.0.241	7.620	-9999.990	-9999.990	-9999.990
36.429	59.236	93.034	0.020	0.000	0.170	146.0.241	7.840	-9999.990	-9999.990	-9999.990
36.489	72.735	96.670	0.020	0.000	0.170	146.0.241	7.840	-9999.990	-9999.990	-9999.990
36.549	113.242	96.670	0.020	0.000	0.170	146.0.241	7.840	-9999.990	-9999.990	-9999.990
36.609	113.242	94.852	0.020	0.000	0.170	146.0.241	8.080	-9999.990	-9999.990	-9999.990
36.669	118.307	94.852	0.020	0.000	0.170	146.0.241	8.080	-9999.990	-9999.990	-9999.990
36.729	118.307	98.488	0.020	0.000	0.170	146.0.241	7.910	-9999.990	-9999.990	-9999.990
36.789	72.735	96.670	0.020	0.000	0.170	146.0.227	7.800	-9999.990	-9999.990	-9999.990
36.849	113.242	96.670	0.020	0.000	0.160	146.0.227	7.640	-9999.990	-9999.990	-9999.990
36.909	113.242	96.670	0.020	0.000	0.160	146.0.241	7.640	-9999.990	-9999.990	-9999.990
36.969	62.611	96.670	0.020	0.000	0.170	146.0.227	7.910	-9999.990	-9999.990	-9999.990
37.029	62.611	99.195	0.020	0.000	0.160	146.0.227	7.640	-9999.990	-9999.990	-9999.990
37.089	116.618	96.670	0.020	0.000	0.160	146.0.227	7.600	-9999.990	-9999.990	-9999.990
37.149	103.114	96.670	0.020	0.000	0.160	146.0.227	7.350	-9999.990	-9999.990	-9999.990
37.209	103.114	96.165	0.020	0.000	0.160	146.0.227	7.220	-9999.990	-9999.990	-9999.990
37.269	99.738	96.165	0.020	0.000	0.160	146.0.227	7.220	-9999.990	-9999.990	-9999.990
37.329	99.738	97.579	0.020	0.000	0.160	146.0.227	7.220	-9999.990	-9999.990	-9999.990
37.389	109.866	93.640	0.020	0.000	0.160	146.0.227	7.220	-9999.990	-9999.990	-9999.990
37.449	82.861	93.640	0.020	0.000	0.160	146.0.227	7.390	-9999.990	-9999.990	-9999.990
37.509	82.861	95.307	0.020	0.000	0.160	146.0.227	7.490	-9999.990	-9999.990	-9999.990
37.569	69.360	95.307	0.020	0.000	0.160	146.0.227	7.350	-9999.990	-9999.990	-9999.990
37.629	69.360	93.640	0.020	0.000	0.160	146.0.227	7.490	-9999.990	-9999.990	-9999.990
37.689	112.229	93.034	0.020	0.000	0.160	146.0.227	7.390	-9999.990	-9999.990	-9999.990
37.749	103.114	93.034	0.020	0.000	0.160	146.0.227	7.390	-9999.990	-9999.990	-9999.990
37.809	103.114	95.307	0.020	0.000	0.160	146.0.227	7.390	-9999.990	-9999.990	-9999.990
37.869	119.995	95.307	0.020	0.000	0.160	146.0.227	7.290	-9999.990	-9999.990	-9999.990
37.929	119.995	94.145	0.020	0.000	0.160	146.0.227	7.190	-9999.990	-9999.990	-9999.990
37.989	157.140	94.398	0.020	0.000	0.160	146.0.227	7.290	-9999.990	1.858	0.136
38.049	103.114	94.398	0.020	0.000	0.160	146.0.227	7.230	-9999.990	-9999.990	-9999.990
38.109	103.114	91.671	0.020	0.000	0.160	146.0.227	7.230	-9999.990	-9999.990	-9999.990
38.169	99.738	91.671	0.020	0.000	0.160	146.0.227	7.230	-9999.990	-9999.990	-9999.990
38.229	99.738	92.125	0.020	0.000	0.160	146.0.227	7.230	-9999.990	-9999.990	-9999.990
38.289	113.242	93.943	0.020	0.000	0.160	146.0.227	6.800	-9999.990	-9999.990	-9999.990
38.349	87.924	93.943	0.020	0.000	0.160	146.0.227	6.750	-9999.990	-9999.990	-9999.990
38.409	87.924	91.620	0.020	0.000	0.160	146.0.227	6.780	-9999.990	-9999.990	-9999.990
38.469	69.360	91.620	0.020	0.000	0.160	146.0.227	6.660	-9999.990	-9999.990	-9999.990
38.529	69.360	93.489	0.020	0.000	0.160	146.0.227	6.660	-9999.990	-9999.990	-9999.990
38.589	113.242	91.671	0.020	0.000	0.160	146.0.227	6.980	-9999.990	-9999.990	-9999.990
38.649	103.114	91.671	0.020	0.000	0.160	146.0.227	6.890	-9999.990	-9999.990	-9999.990
38.709	103.114	93.135	0.020	0.000	0.160	146.0.227	6.810	-9999.990	-9999.990	-9999.990
38.769	109.866	93.135	0.020	0.000	0.160	146.0.227	6.720	-9999.990	-9999.990	-9999.990
38.829	109.866	95.307	0.020	0.000	0.160	146.0.227	6.720	-9999.990	-9999.990	-9999.990
38.889	99.738	94.650	0.020	0.000	0.160	146.0.227	6.640	-9999.990	-9999.990	-9999.990
38.949	106.152	94.650	0.020	0.000	0.160	146.0.227	6.640	-9999.990	-9999.990	-9999.990
39.009	106.152	97.579	0.020	0.000	0.160	146.0.213	6.640	-9999.990	-9999.990	-9999.990
39.069	76.110	97.579	0.020	0.000	0.150	146.0.227	6.450	-9999.990	-9999.990	-9999.990
39.129	76.110	96.216	0.020	0.000	0.160	146.0.227	6.610	-9999.990	-9999.990	-9999.990
39.189	113.242	98.185	0.020	0.000	0.160	146.0.227	6.940	-9999.990	-9999.990	-9999.990
39.249	109.866	98.185	0.020	0.000	0.160	146.0.227	6.940	-9999.990	-9999.990	-9999.990
39.309	109.866	99.852	0.020	0.000	0.160	146.0.227	7.020	-9999.990	-9999.990	-9999.990
39.369	109.866	99.852	0.020	0.000	0.160	146.0.227	7.020	-9999.990	-9999.990	-9999.990
39.429	109.866	99.700	0.020	0.000	0.160	146.0.227	7.020	-9999.990	-9999.990	-9999.990
39.489	82.861	101.215	0.020	0.000	0.160	146.0.227	6.910	-9999.990	-9999.990	-9999.990
39.549	52.487	101.215	0.020	0.000	0.160	146.0.227	6.830	-9999.990	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
39.609	52.487	99.195	0.020	0.000	0.160	146.0.227	6.830	-9999.990	-9999.990	-9999.990
39.669	62.611	99.195	0.020	0.000	0.160	146.0.227	6.830	-9999.990	-9999.990	-9999.990
39.729	62.611	98.488	0.020	0.000	0.160	146.0.227	6.830	-9999.990	-9999.990	-9999.990
39.789	92.987	100.710	0.020	0.000	0.160	146.0.227	6.940	-9999.990	-9999.990	-9999.990
39.849	97.038	100.710	0.020	0.000	0.160	146.0.227	6.930	-9999.990	-9999.990	-9999.990
39.909	97.038	98.034	0.020	0.000	0.160	146.0.227	7.060	-9999.990	-9999.990	-9999.990
39.969	45.738	98.034	0.020	0.000	0.160	146.0.227	6.930	-9999.990	-9999.990	-9999.990
40.029	45.738	99.852	0.020	0.000	0.160	146.0.227	7.030	-9999.990	-9999.990	-9999.990
40.089	72.735	97.579	0.020	0.000	0.160	146.0.227	6.930	-9999.990	-9999.990	-9999.990
40.149	76.110	97.579	0.020	0.000	0.160	146.0.227	7.110	-9999.990	-9999.990	-9999.990
40.209	76.110	99.397	0.020	0.000	0.160	146.0.227	6.870	-9999.990	-9999.990	-9999.990
40.269	69.360	99.397	0.020	0.000	0.160	146.0.227	6.770	-9999.990	-9999.990	-9999.990
40.329	69.360	97.125	0.020	0.000	0.160	146.0.227	6.770	-9999.990	-9999.990	-9999.990
40.389	79.485	97.175	0.020	0.000	0.160	146.0.227	6.650	-9999.990	-9999.990	-9999.990
40.449	89.612	97.175	0.020	0.000	0.160	146.0.227	6.650	-9999.990	-9999.990	-9999.990
40.509	89.612	98.943	0.020	0.000	0.160	146.0.227	6.770	-9999.990	-9999.990	-9999.990
40.569	78.810	98.943	0.020	0.000	0.160	146.0.227	6.870	-9999.990	-9999.990	-9999.990
40.629	78.810	96.670	0.020	0.000	0.160	146.0.227	7.100	-9999.990	-9999.990	-9999.990
40.689	82.861	98.488	0.020	0.000	0.160	146.0.227	7.120	-9999.990	-9999.990	-9999.990
40.749	130.124	98.488	0.020	0.000	0.160	146.0.227	7.220	-9999.990	-9999.990	-9999.990
40.809	130.124	96.670	0.020	0.000	0.160	146.0.227	7.160	-9999.990	-9999.990	-9999.990
40.869	89.612	96.670	0.020	0.000	0.160	146.0.227	7.130	-9999.990	-9999.990	-9999.990
40.929	89.612	97.579	0.020	0.000	0.160	146.0.227	7.130	-9999.990	-9999.990	-9999.990
40.989	99.738	95.761	0.020	0.000	0.160	146.0.227	6.950	-9999.990	-9999.990	-9999.990
41.049	72.735	95.761	0.020	0.000	0.160	146.0.227	6.820	-9999.990	-9999.990	-9999.990
41.109	72.735	97.125	0.020	0.000	0.160	146.0.227	6.820	-9999.990	-9999.990	-9999.990
41.169	66.660	97.125	0.020	0.000	0.160	146.0.227	6.820	-9999.990	-9999.990	-9999.990
41.229	66.660	95.155	0.020	0.000	0.160	146.0.227	6.940	-9999.990	-9999.990	-9999.990
41.289	79.485	94.852	0.020	0.000	0.160	146.0.227	6.790	-9999.990	-9999.990	-9999.990
41.349	106.490	94.852	0.020	0.000	0.160	146.0.227	6.780	-9999.990	-9999.990	-9999.990
41.409	106.490	95.761	0.020	0.000	0.160	146.0.227	6.790	-9999.990	-9999.990	-9999.990
41.469	42.364	95.761	0.020	0.000	0.160	146.0.227	6.530	-9999.990	-9999.990	-9999.990
41.529	42.364	93.034	0.020	0.000	0.160	146.0.227	6.610	-9999.990	-9999.990	-9999.990
41.589	86.236	95.660	0.020	0.000	0.160	146.0.227	6.610	-9999.990	-9999.990	-9999.990
41.649	89.612	95.660	0.020	0.000	0.160	146.0.227	6.610	-9999.990	-9999.990	-9999.990
41.709	89.612	93.034	0.020	0.000	0.160	146.0.213	6.540	-9999.990	-9999.990	-9999.990
41.769	79.485	93.489	0.020	0.000	0.150	146.0.213	6.470	-9999.990	-9999.990	-9999.990
41.829	79.485	93.489	0.020	0.000	0.150	146.0.213	6.470	-9999.990	-9999.990	-9999.990
41.889	89.612	-9999.990	0.020	0.000	0.150	146.0.213	6.400	-9999.990	-9999.990	-9999.990
41.949	55.861	-9999.990	0.020	0.000	0.150	146.0.213	6.400	-9999.990	-9999.990	-9999.990
42.009	55.861	90.307	0.020	0.000	0.150	146.0.213	6.400	-9999.990	-9999.990	-9999.990
42.069	109.191	91.671	0.020	0.000	0.150	146.0.213	6.330	-9999.990	-9999.990	-9999.990
42.129	109.191	91.671	0.020	0.000	0.150	146.0.213	6.210	-9999.990	-9999.990	-9999.990
42.189	82.861	89.398	0.020	0.000	0.150	146.0.213	6.140	-9999.990	-9999.990	-9999.990
42.249	59.236	89.398	0.020	0.000	0.150	146.0.213	6.140	-9999.990	-9999.990	-9999.990
42.309	59.236	91.620	0.020	0.000	0.150	146.0.213	6.210	-9999.990	-9999.990	-9999.990
42.369	87.924	88.489	0.020	0.000	0.150	146.0.213	6.210	-9999.990	-9999.990	-9999.990
42.429	87.924	88.489	0.020	0.000	0.150	146.0.213	6.270	-9999.990	-9999.990	-9999.990
42.489	72.735	90.307	0.020	0.000	0.150	146.0.213	6.180	-9999.990	-9999.990	-9999.990
42.549	109.866	90.307	0.020	0.000	0.150	146.0.213	6.100	-9999.990	-9999.990	-9999.990
42.609	109.866	88.944	0.020	0.000	0.150	146.0.213	6.100	-9999.990	-9999.990	-9999.990
42.669	86.236	90.762	0.020	0.000	0.150	219.0.213	6.030	-9999.990	-9999.990	-9999.990
42.729	69.698	90.762	0.030	0.000	0.150	219.0.213	5.770	-9999.990	-9999.990	-9999.990
42.789	69.698	89.095	0.030	0.000	0.150	219.0.213	5.770	-9999.990	-9999.990	-9999.990
42.849	82.861	89.095	0.030	0.000	0.150	219.0.213	5.570	-9999.990	-9999.990	-9999.990
42.909	82.861	88.035	0.030	0.000	0.150	219.0.199	5.570	-9999.990	-9999.990	-9999.990
42.969	89.612	89.398	0.030	0.000	0.140	219.0.199	5.340	-9999.990	-9999.990	-9999.990
43.029	90.962	89.398	0.030	0.000	0.140	219.0.199	5.220	-9999.990	-9999.990	-9999.990
43.089	90.962	87.580	0.030	0.000	0.140	219.0.199	5.070	-9999.990	-9999.990	-9999.990
43.149	59.236	87.580	0.030	0.000	0.140	219.0.199	5.070	-9999.990	-9999.990	-9999.990
43.209	59.236	88.944	0.030	0.000	0.140	219.0.199	5.150	-9999.990	-9999.990	-9999.990
43.269	94.000	87.126	0.030	0.000	0.140	219.0.199	5.160	-9999.990	-9999.990	-9999.990
43.329	72.735	87.126	0.030	0.000	0.140	219.0.199	5.160	-9999.990	-9999.990	-9999.990
43.389	72.735	88.590	0.030	0.000	0.140	219.0.199	5.290	-9999.990	-9999.990	-9999.990
43.449	72.735	88.590	0.030	0.000	0.140	219.0.199	5.360	-9999.990	-9999.990	-9999.990
43.509	72.735	84.853	0.030	0.000	0.140	219.0.199	5.440	-9999.990	-9999.990	-9999.990
43.569	118.307	85.308	0.030	0.000	0.140	219.0.199	5.440	-9999.990	-9999.990	-9999.990
43.629	89.612	85.308	0.030	0.000	0.140	219.0.199	5.440	-9999.990	-9999.990	-9999.990
43.689	89.612	82.530	0.030	0.000	0.140	219.0.199	5.440	-9999.990	-9999.990	-9999.990

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Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
43.749	96.363	82.530	0.030	0.000	0.140	219.0.199	5.340	-9999.990	-9999.990	-9999.990
43.809	96.363	80.308	0.030	0.000	0.140	219.0.199	5.150	-9999.990	-9999.990	-9999.990
43.869	109.191	80.763	0.030	0.000	0.140	219.0.199	5.150	-9999.990	-9999.990	-9999.990
43.929	99.738	80.763	0.030	0.000	0.140	219.0.199	5.240	-9999.990	-9999.990	-9999.990
43.989	99.738	77.480	0.030	0.000	0.140	219.0.199	4.980	-9999.990	-9999.990	-9999.990
44.049	69.360	77.480	0.030	0.000	0.140	219.0.199	4.980	-9999.990	-9999.990	-9999.990
44.109	69.360	77.127	0.030	0.000	0.140	219.0.199	4.980	-9999.990	-9999.990	-9999.990
44.169	97.038	74.400	0.030	0.000	0.140	219.0.199	4.920	-9999.990	-9999.990	-9999.990
44.229	52.487	74.400	0.030	0.000	0.140	219.0.184	4.840	-9999.990	-9999.990	-9999.990
44.289	52.487	75.309	0.030	0.000	0.130	219.0.184	4.510	-9999.990	-9999.990	-9999.990
44.349	66.660	75.309	0.030	0.000	0.130	219.0.184	4.510	-9999.990	-9999.990	-9999.990
44.409	66.660	72.935	0.030	0.000	0.130	219.0.184	4.550	-9999.990	-9999.990	-9999.990
44.469	65.985	71.673	0.030	0.000	0.130	219.0.184	4.690	-9999.990	-9999.990	-9999.990
44.529	38.990	71.673	0.030	0.000	0.130	219.0.184	4.530	-9999.990	-9999.990	-9999.990
44.589	38.990	72.127	0.030	0.000	0.130	219.0.184	4.590	-9999.990	-9999.990	-9999.990
44.649	72.735	72.127	0.030	0.000	0.130	219.0.184	4.690	-9999.990	-9999.990	-9999.990
44.709	72.735	68.946	0.030	0.000	0.130	219.0.184	4.590	-9999.990	-9999.990	-9999.990
44.769	55.861	69.400	0.030	0.000	0.130	219.0.184	4.590	-9999.990	-9999.990	-9999.990
44.829	82.861	69.400	0.030	0.000	0.130	219.0.184	4.680	-9999.990	-9999.990	-9999.990
44.889	82.861	66.875	0.030	0.000	0.130	219.0.199	4.680	-9999.990	-9999.990	-9999.990
44.949	72.735	66.875	0.030	0.000	0.140	219.0.199	4.750	-9999.990	-9999.990	-9999.990
45.009	72.735	67.128	0.030	0.000	0.140	219.0.199	4.910	-9999.990	-9999.990	-9999.990
45.069	69.698	63.946	0.030	0.000	0.140	219.0.199	4.910	-9999.990	-9999.990	-9999.990
45.129	52.487	63.946	0.030	0.000	0.140	219.20.170	4.880	-9999.990	-9999.990	-9999.990
45.189	52.487	63.946	0.030	0.010	0.120	219.20.170	4.610	12.360	-9999.990	-9999.990
45.249	60.586	63.946	0.030	0.010	0.120	219.20.170	4.530	12.390	-9999.990	-9999.990
45.309	60.586	60.765	0.030	0.010	0.120	219.20.170	4.610	12.360	-9999.990	-9999.990
45.369	55.861	60.310	0.030	0.010	0.120	219.20.170	4.630	9.020	-9999.990	-9999.990
45.429	69.698	60.310	0.030	0.010	0.120	219.0.184	4.530	12.550	-9999.990	-9999.990
45.489	69.698	59.856	0.030	0.000	0.130	219.0.184	4.330	57.340	-9999.990	-9999.990
45.549	59.236	59.856	0.030	0.000	0.130	219.0.184	4.480	55.860	-9999.990	-9999.990
45.609	59.236	56.674	0.030	0.000	0.130	219.0.184	4.480	55.860	-9999.990	-9999.990
45.669	55.861	57.583	0.030	0.000	0.130	219.0.184	4.410	56.580	-9999.990	-9999.990
45.729	60.586	57.583	0.030	0.000	0.130	219.0.184	4.480	55.840	-9999.990	-9999.990
45.789	60.586	55.765	0.030	0.000	0.130	219.40.142	4.560	55.130	-9999.990	-9999.990
45.849	69.360	55.765	0.030	0.020	0.100	146.61.142	4.050	4.190	-9999.990	-9999.990
45.909	69.360	55.765	0.020	0.030	0.100	146.61.142	4.390	3.610	-9999.990	-9999.990
45.969	62.611	53.038	0.020	0.030	0.100	146.40.142	4.300	3.610	-9999.990	-9999.990
46.029	45.401	53.038	0.020	0.020	0.100	146.40.142	4.280	4.200	-9999.990	-9999.990
46.089	45.401	52.735	0.020	0.020	0.100	146.40.142	4.280	4.200	-9999.990	-9999.990
46.149	65.985	52.735	0.020	0.020	0.100	146.40.142	4.200	4.200	-9999.990	-9999.990
46.209	65.985	53.947	0.020	0.020	0.100	146.102.113	4.200	4.220	-9999.990	-9999.990
46.269	28.868	51.220	0.020	0.050	0.080	146.61.142	3.830	1.710	-9999.990	-9999.990
46.329	57.549	51.220	0.020	0.030	0.100	146.61.142	4.350	4.060	-9999.990	-9999.990
46.389	57.549	53.240	0.020	0.030	0.100	146.81.113	4.350	4.060	-9999.990	-9999.990
46.449	65.985	53.240	0.020	0.040	0.080	146.81.113	3.550	2.050	-9999.990	-9999.990
46.509	65.985	50.311	0.020	0.040	0.080	146.81.113	3.550	2.050	-9999.990	-9999.990
46.569	59.236	51.675	0.020	0.040	0.080	146.81.113	3.550	2.050	-9999.990	-9999.990
46.629	63.623	51.675	0.020	0.040	0.080	146.81.113	3.480	2.050	-9999.990	-9999.990
46.689	63.623	48.948	0.020	0.040	0.080	146.81.113	3.480	2.050	-9999.990	-9999.990
46.749	52.487	48.948	0.020	0.040	0.080	146.81.113	3.480	2.050	-9999.990	-9999.990
46.809	52.487	50.311	0.020	0.040	0.080	146.81.113	3.480	2.050	-9999.990	-9999.990
46.869	78.810	48.190	0.020	0.040	0.080	146.81.113	3.480	2.050	-9999.990	-9999.990
46.929	49.112	48.190	0.020	0.040	0.080	146.81.113	3.480	2.050	-9999.990	-9999.990
46.989	49.112	48.039	0.020	0.040	0.080	219.61.113	3.480	2.050	-9999.990	-9999.990
47.049	69.360	48.039	0.030	0.030	0.080	219.61.113	3.310	2.570	-9999.990	-9999.990
47.109	69.360	49.857	0.030	0.030	0.080	219.61.113	3.310	2.570	-9999.990	-9999.990
47.169	72.735	47.584	0.030	0.030	0.080	219.61.113	3.370	2.570	-9999.990	-9999.990
47.229	63.623	47.584	0.030	0.030	0.080	146.61.113	3.370	2.570	-9999.990	-9999.990
47.289	63.623	49.402	0.020	0.030	0.080	146.81.113	3.370	2.570	-9999.990	-9999.990
47.349	42.364	49.402	0.020	0.040	0.080	146.81.113	3.530	2.290	-9999.990	-9999.990
47.409	42.364	48.190	0.020	0.040	0.080	146.81.113	3.600	2.290	-9999.990	-9999.990
47.469	84.886	49.402	0.020	0.040	0.080	146.81.113	3.700	2.060	-9999.990	-9999.990
47.529	59.236	49.402	0.020	0.040	0.080	146.81.113	3.670	2.300	-9999.990	-9999.990
47.589	59.236	47.584	0.020	0.040	0.080	146.81.113	3.780	2.070	-9999.990	-9999.990
47.649	55.861	47.584	0.020	0.040	0.080	146.81.128	3.860	2.070	-9999.990	-9999.990
47.709	55.861	49.857	0.020	0.040	0.090	146.81.113	3.840	2.300	-9999.990	-9999.990
47.769	54.511	48.493	0.020	0.040	0.080	146.81.113	4.040	2.070	-9999.990	-9999.990
47.829	76.110	48.493	0.020	0.040	0.080	146.81.113	4.040	2.070	-9999.990	-9999.990

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Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
47.889	76.110	49.200	0.020	0.040	0.080	146.81.128	4.040	2.070	-9999.990	-9999.990
47.949	39.327	49.200	0.020	0.040	0.090	146.81.128	3.920	2.310	-9999.990	-9999.990
48.009	39.327	50.766	0.020	0.040	0.090	146.81.128	3.920	2.310	-9999.990	-9999.990
48.069	65.985	49.857	0.020	0.040	0.090	146.81.128	3.920	2.310	-9999.990	-9999.990
48.129	69.360	49.857	0.020	0.040	0.090	146.61.128	3.840	2.310	-9999.990	-9999.990
48.189	69.360	52.735	0.020	0.030	0.090	146.61.128	3.900	2.600	-9999.990	-9999.990
48.249	62.611	52.735	0.020	0.030	0.090	146.61.128	3.900	2.600	-9999.990	-9999.990
48.309	62.611	50.766	0.020	0.030	0.090	146.81.128	3.900	2.600	-9999.990	-9999.990
48.369	45.401	53.493	0.020	0.040	0.090	146.61.128	4.080	2.590	-9999.990	-9999.990
48.429	55.861	53.493	0.020	0.030	0.090	146.61.142	4.150	2.960	-9999.990	-9999.990
48.489	55.861	52.735	0.020	0.030	0.100	146.61.142	4.120	3.440	-9999.990	-9999.990
48.549	69.360	52.584	0.020	0.030	0.100	146.61.142	4.220	3.440	-9999.990	-9999.990
48.609	69.360	52.584	0.020	0.030	0.100	146.61.142	4.220	3.440	-9999.990	-9999.990
48.669	57.549	55.765	0.020	0.030	0.100	146.40.142	4.220	3.440	-9999.990	-9999.990
48.729	79.485	55.765	0.020	0.020	0.100	146.61.142	4.090	4.130	-9999.990	-9999.990
48.789	79.485	54.402	0.020	0.030	0.100	146.61.142	4.290	4.110	-9999.990	-9999.990
48.849	75.773	58.290	0.020	0.030	0.100	146.61.142	4.400	4.110	-9999.990	-9999.990
48.909	75.773	58.290	0.020	0.030	0.100	146.61.156	4.400	4.110	-9999.990	-9999.990
48.969	69.360	56.674	0.020	0.030	0.110	146.61.156	4.520	4.100	-9999.990	-9999.990
49.029	62.611	56.674	0.020	0.030	0.110	146.61.156	4.640	4.100	-9999.990	-9999.990
49.089	62.611	59.856	0.020	0.030	0.110	146.61.156	4.770	4.090	-9999.990	-9999.990
49.149	66.660	58.492	0.020	0.030	0.110	146.61.156	4.770	4.090	-9999.990	-9999.990
49.209	66.660	58.492	0.020	0.030	0.110	146.102.99	4.770	4.090	-9999.990	-9999.990
49.269	69.360	61.674	0.020	0.050	0.070	146.102.99	3.790	1.560	-9999.990	-9999.990
49.329	59.236	61.674	0.020	0.050	0.070	146.102.99	3.790	1.560	-9999.990	-9999.990
49.389	59.236	61.219	0.020	0.050	0.070	146.102.99	3.790	1.560	-9999.990	-9999.990
49.449	51.474	62.330	0.020	0.050	0.070	146.102.99	3.790	1.560	-9999.990	-9999.990
49.509	51.474	62.330	0.020	0.050	0.070	146.81.113	3.790	1.560	-9999.990	-9999.990
49.569	65.985	63.946	0.020	0.040	0.080	146.81.113	3.760	1.740	-9999.990	-9999.990
49.629	42.364	63.946	0.020	0.040	0.080	146.81.113	3.760	1.740	-9999.990	-9999.990
49.689	42.364	63.037	0.020	0.040	0.080	146.81.113	3.650	1.740	-9999.990	-9999.990
49.749	48.438	65.310	0.020	0.040	0.080	146.81.113	3.650	1.740	-9999.990	-9999.990
49.809	38.990	65.310	0.020	0.040	0.080	146.81.113	3.650	1.740	-9999.990	-9999.990
49.869	38.990	63.037	0.020	0.040	0.080	146.81.113	3.520	1.970	-9999.990	-9999.990
49.929	60.586	63.037	0.020	0.040	0.080	219.61.113	3.320	2.260	-9999.990	-9999.990
49.989	60.586	66.370	0.030	0.030	0.080	219.61.113	3.290	2.650	-9999.990	-9999.990
50.049	42.364	-9999.990	0.030	0.030	0.080	219.61.113	3.290	2.650	-9999.990	-9999.990
50.109	62.611	-9999.990	0.030	0.030	0.080	219.61.113	3.290	2.650	-9999.990	-9999.990
50.169	62.611	64.855	0.030	0.030	0.080	219.61.113	3.210	2.650	-9999.990	-9999.990
50.229	57.549	64.855	0.030	0.030	0.080	219.40.128	3.290	2.650	-9999.990	-9999.990
50.289	57.549	63.845	0.030	0.020	0.090	219.40.128	3.160	4.030	-9999.990	-9999.990
50.349	59.236	63.037	0.030	0.020	0.090	219.40.128	3.250	4.020	-9999.990	-9999.990
50.409	72.735	63.037	0.030	0.020	0.090	219.61.128	3.330	4.010	-9999.990	-9999.990
50.469	72.735	65.764	0.030	0.030	0.090	219.61.128	3.440	3.200	-9999.990	-9999.990
50.529	60.586	65.764	0.030	0.030	0.090	219.40.128	3.350	3.210	-9999.990	-9999.990
50.589	60.586	64.855	0.030	0.020	0.090	219.40.128	3.250	4.020	-9999.990	-9999.990
50.649	59.236	67.582	0.030	0.020	0.090	219.40.128	3.250	4.020	-9999.990	-9999.990
50.709	52.487	67.582	0.030	0.020	0.090	146.102.85	3.070	5.430	-9999.990	-9999.990
50.769	52.487	65.764	0.020	0.050	0.060	146.102.85	2.230	1.150	-9999.990	-9999.990
50.829	78.810	65.764	0.020	0.050	0.060	146.102.85	2.230	1.150	-9999.990	-9999.990
50.889	78.810	66.875	0.020	0.050	0.060	219.81.85	2.230	1.150	-9999.990	-9999.990
50.949	59.236	67.582	0.030	0.040	0.060	219.81.85	2.280	1.310	-9999.990	-9999.990
51.009	92.987	67.582	0.030	0.040	0.060	219.81.85	2.220	1.310	-9999.990	-9999.990
51.069	92.987	65.865	0.030	0.040	0.060	146.102.85	2.280	1.310	-9999.990	-9999.990
51.129	63.623	65.865	0.020	0.050	0.060	146.102.85	2.420	1.300	-9999.990	-9999.990
51.189	63.623	66.219	0.020	0.050	0.060	146.102.85	2.510	1.150	-9999.990	-9999.990
51.249	35.616	63.340	0.020	0.050	0.060	146.163.28	2.510	1.150	-9999.990	-9999.990
51.309	76.110	63.340	0.020	0.080	0.020	146.163.28	1.300	0.280	-9999.990	-9999.990
51.369	76.110	61.674	0.020	0.080	0.020	146.163.28	1.410	0.280	-9999.990	-9999.990
51.429	60.586	61.674	0.020	0.080	0.020	146.163.28	1.350	0.300	-9999.990	-9999.990
51.489	60.586	61.825	0.020	0.080	0.020	146.163.28	1.400	0.300	-9999.990	-9999.990
51.549	49.112	58.492	0.020	0.080	0.020	146.163.28	1.520	0.300	-9999.990	-9999.990
51.609	60.586	58.492	0.020	0.080	0.020	146.163.28	1.520	0.300	-9999.990	-9999.990
51.669	60.586	57.280	0.020	0.080	0.020	146.163.28	1.520	0.300	-9999.990	-9999.990
51.729	65.985	57.280	0.020	0.080	0.020	146.163.28	1.520	0.300	-9999.990	-9999.990
51.789	65.985	58.038	0.020	0.080	0.020	146.163.28	1.520	0.300	-9999.990	-9999.990
51.849	52.487	55.765	0.020	0.080	0.020	146.163.28	1.580	0.300	-9999.990	-9999.990
51.909	39.327	55.765	0.020	0.080	0.020	146.163.28	1.650	0.300	-9999.990	-9999.990
51.969	39.327	58.795	0.020	0.080	0.020	146.163.28	1.580	0.300	-9999.990	-9999.990

Well BK2c
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
52.029	62.611	58.795	0.020	0.080	0.020	146.163.28	1.580	0.300	1.016	0.367
52.089	62.611	56.674	0.020	0.080	0.020	146.163.28	1.650	0.300	-9999.990	-9999.990
52.149	51.474	57.785	0.020	0.080	0.020	73.163.42	1.650	0.300	-9999.990	-9999.990
52.209	49.112	57.785	0.010	0.080	0.030	73.163.42	1.730	0.300	-9999.990	-9999.990
52.269	49.112	58.947	0.010	0.080	0.030	73.163.42	1.810	0.300	-9999.990	-9999.990
52.329	59.236	58.947	0.010	0.080	0.030	73.163.42	1.810	0.300	-9999.990	-9999.990
52.389	59.236	58.290	0.010	0.080	0.030	146.102.85	1.810	0.300	-9999.990	-9999.990
52.449	52.487	60.310	0.020	0.050	0.060	146.102.85	3.300	1.160	-9999.990	-9999.990
52.509	45.401	60.310	0.020	0.050	0.060	146.102.85	3.180	1.160	-9999.990	-9999.990
52.569	45.401	-9999.990	0.020	0.050	0.060	146.102.85	3.180	1.160	-9999.990	-9999.990
52.629	38.990	-9999.990	0.020	0.050	0.060	146.102.85	3.180	1.160	-9999.990	-9999.990
52.689	38.990	58.795	0.020	0.050	0.060	146.102.85	3.060	1.160	-9999.990	-9999.990
52.749	69.360	60.310	0.020	0.050	0.060	146.102.85	3.060	1.160	-9999.990	-9999.990
52.809	30.217	60.310	0.020	0.050	0.060	146.102.85	2.930	1.310	-9999.990	-9999.990
52.869	30.217	59.300	0.020	0.050	0.060	146.102.85	2.930	1.310	-9999.990	-9999.990
52.929	52.487	59.300	0.020	0.050	0.060	146.102.85	2.930	1.310	-9999.990	-9999.990
52.989	52.487	58.795	0.020	0.050	0.060	146.102.85	2.930	1.310	-9999.990	-9999.990
53.049	62.611	59.856	0.020	0.050	0.060	146.122.85	3.060	1.160	-9999.990	-9999.990
53.109	69.698	59.856	0.020	0.060	0.060	146.122.85	3.210	1.040	-9999.990	-9999.990
53.169	69.698	58.038	0.020	0.060	0.060	146.122.85	3.210	1.040	-9999.990	-9999.990
53.229	55.861	58.038	0.020	0.060	0.060	146.122.85	3.340	1.040	-9999.990	-9999.990
53.289	55.861	57.785	0.020	0.060	0.060	146.102.85	3.340	1.040	-9999.990	-9999.990
53.349	60.586	58.947	0.020	0.050	0.060	146.122.85	3.300	1.160	-9999.990	-9999.990
53.409	62.611	58.947	0.020	0.060	0.060	146.102.85	3.430	1.160	-9999.990	-9999.990
53.469	62.611	57.785	0.020	0.050	0.060	146.102.85	3.300	1.150	-9999.990	-9999.990
53.529	45.738	57.785	0.020	0.050	0.060	146.102.85	3.300	1.150	-9999.990	-9999.990
53.589	45.738	58.492	0.020	0.050	0.060	146.102.85	3.300	1.150	-9999.990	-9999.990
53.649	45.401	56.775	0.020	0.050	0.060	146.102.85	3.300	1.150	-9999.990	-9999.990
53.709	49.112	56.775	0.020	0.050	0.060	146.102.85	3.300	1.150	-9999.990	-9999.990
53.769	49.112	55.765	0.020	0.050	0.060	146.122.85	3.170	1.150	-9999.990	-9999.990
53.829	42.364	55.765	0.020	0.060	0.060	146.122.85	3.330	1.030	-9999.990	-9999.990
53.889	42.364	58.038	0.020	0.060	0.060	146.122.85	3.330	1.030	-9999.990	-9999.990
53.949	54.511	55.765	0.020	0.060	0.060	146.122.85	3.330	1.030	-9999.990	-9999.990
54.009	45.738	55.765	0.020	0.060	0.060	146.102.85	3.330	1.030	-9999.990	-9999.990
54.069	45.738	55.765	0.020	0.050	0.060	146.102.85	3.170	1.150	-9999.990	-9999.990
54.129	69.360	55.765	0.020	0.050	0.060	146.122.85	2.960	1.150	-9999.990	-9999.990
54.189	69.360	56.674	0.020	0.060	0.060	146.122.85	3.090	1.030	-9999.990	-9999.990
54.249	42.364	54.856	0.020	0.060	0.060	146.102.85	3.210	1.030	-9999.990	-9999.990
54.309	52.487	54.856	0.020	0.050	0.060	146.102.85	3.060	1.150	-9999.990	-9999.990
54.369	52.487	57.280	0.020	0.050	0.060	146.102.85	3.060	1.150	-9999.990	-9999.990
54.429	33.254	57.280	0.020	0.050	0.060	146.102.85	3.060	1.150	-9999.990	-9999.990
54.489	33.254	53.947	0.020	0.050	0.060	146.102.85	3.060	1.150	-9999.990	-9999.990
54.549	45.738	54.755	0.020	0.050	0.060	146.102.85	2.830	1.300	-9999.990	-9999.990
54.609	42.364	54.755	0.020	0.050	0.060	146.102.85	2.950	1.150	-9999.990	-9999.990
54.669	42.364	55.765	0.020	0.050	0.060	146.102.85	2.950	1.150	-9999.990	-9999.990
54.729	42.364	55.765	0.020	0.050	0.060	146.102.85	3.060	1.150	-9999.990	-9999.990
54.789	42.364	53.493	0.020	0.050	0.060	146.102.85	2.930	1.310	-9999.990	-9999.990
54.849	79.485	53.745	0.020	0.050	0.060	146.102.85	2.950	1.160	-9999.990	-9999.990
54.909	35.616	53.745	0.020	0.050	0.060	146.102.85	2.850	1.160	-9999.990	-9999.990
54.969	35.616	54.856	0.020	0.050	0.060	146.102.85	2.650	1.310	-9999.990	-9999.990
55.029	72.735	54.856	0.020	0.050	0.060	146.102.85	2.490	1.310	-9999.990	-9999.990
55.089	72.735	52.735	0.020	0.050	0.060	146.102.85	2.570	1.310	-9999.990	-9999.990
55.149	45.401	54.856	0.020	0.050	0.060	146.102.85	2.650	1.310	-9999.990	-9999.990
55.209	42.364	54.856	0.020	0.050	0.060	146.102.85	2.650	1.310	-9999.990	-9999.990
55.269	42.364	52.735	0.020	0.050	0.060	146.102.85	2.570	1.310	-9999.990	-9999.990
55.329	59.236	52.129	0.020	0.050	0.060	146.102.85	2.760	1.160	-9999.990	-9999.990
55.389	59.236	52.129	0.020	0.050	0.060	146.122.85	2.760	1.160	-9999.990	-9999.990
55.449	87.924	55.260	0.020	0.060	0.060	146.102.85	2.870	1.040	-9999.990	-9999.990
55.509	62.611	55.260	0.020	0.050	0.060	146.102.85	2.750	1.160	-9999.990	-9999.990
55.569	62.611	52.584	0.020	0.050	0.060	146.102.85	2.750	1.160	-9999.990	-9999.990
55.629	39.327	53.240	0.020	0.050	0.060	146.102.85	2.750	1.160	-9999.990	-9999.990
55.689	39.327	53.240	0.020	0.050	0.060	146.102.85	2.750	1.160	-9999.990	-9999.990
55.749	62.611	54.402	0.020	0.050	0.060	146.122.85	2.750	1.160	-9999.990	-9999.990
55.809	45.738	54.402	0.020	0.060	0.060	146.122.85	2.870	1.030	-9999.990	-9999.990
55.869	45.738	53.240	0.020	0.060	0.060	146.122.85	2.870	1.030	-9999.990	-9999.990
55.929	54.511	54.856	0.020	0.060	0.060	146.122.85	2.970	1.030	-9999.990	-9999.990
55.989	54.511	54.856	0.020	0.060	0.060	146.122.85	2.970	1.030	-9999.990	-9999.990
56.049	59.236	52.735	0.020	0.060	0.060	146.122.85	3.080	1.030	-9999.990	-9999.990
56.109	65.985	52.735	0.020	0.060	0.060	146.122.85	3.240	0.930	-9999.990	-9999.990

Well BK2c
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Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
56.169	65.985	53.493	0.020	0.060	0.060	146.122.85	3.240	0.930	-9999.990	-9999.990
56.229	60.586	55.765	0.020	0.060	0.060	146.122.85	3.370	0.930	-9999.990	-9999.990
56.289	60.586	55.765	0.020	0.060	0.060	146.122.85	3.660	0.930	-9999.990	-9999.990
56.349	59.236	53.493	0.020	0.060	0.060	146.122.85	3.460	1.030	-9999.990	-9999.990
56.409	49.112	53.493	0.020	0.060	0.060	73.184.28	3.660	0.930	-9999.990	-9999.990
56.469	49.112	55.311	0.010	0.090	0.020	73.184.28	2.090	0.270	-9999.990	-9999.990
56.529	33.254	-9999.990	0.010	0.090	0.020	73.204.28	2.250	0.250	-9999.990	-9999.990
56.589	62.611	-9999.990	0.010	0.100	0.020	73.204.28	2.430	0.230	-9999.990	-9999.990
56.649	62.611	53.493	0.010	0.100	0.020	73.204.28	2.610	0.230	-9999.990	-9999.990
56.709	48.438	53.493	0.010	0.100	0.020	73.204.28	2.610	0.230	-9999.990	-9999.990
56.769	48.438	56.270	0.010	0.100	0.020	73.204.28	2.430	0.230	-9999.990	-9999.990
56.829	72.735	53.745	0.010	0.100	0.020	73.204.28	2.430	0.230	-9999.990	-9999.990
56.889	52.487	53.745	0.010	0.100	0.020	73.204.28	2.430	0.230	-9999.990	-9999.990
56.949	52.487	53.947	0.010	0.100	0.020	73.204.28	2.430	0.230	-9999.990	-9999.990
57.009	72.735	53.947	0.010	0.100	0.020	73.204.28	2.880	0.220	-9999.990	-9999.990
57.069	72.735	56.270	0.010	0.100	0.020	73.204.28	2.880	0.220	-9999.990	-9999.990
57.129	60.586	54.856	0.010	0.100	0.020	73.204.28	3.150	0.220	-9999.990	-9999.990
57.189	45.738	54.856	0.010	0.100	0.020	73.204.28	3.150	0.220	-9999.990	-9999.990
57.249	45.738	54.755	0.010	0.100	0.020	73.204.28	3.150	0.220	-9999.990	-9999.990
57.309	55.861	54.755	0.010	0.100	0.020	73.204.28	3.150	0.220	-9999.990	-9999.990
57.369	55.861	56.270	0.010	0.100	0.020	73.204.28	3.460	0.220	-9999.990	-9999.990
57.429	42.364	53.493	0.010	0.100	0.020	0.225.28	3.990	0.200	-9999.990	-9999.990
57.489	62.611	53.493	0.000	0.110	0.020	73.204.28	4.730	0.190	-9999.990	-9999.990
57.549	62.611	56.220	0.010	0.100	0.020	73.204.28	4.010	0.200	-9999.990	-9999.990
57.609	32.242	56.220	0.010	0.100	0.020	73.204.28	4.020	0.200	-9999.990	-9999.990
57.669	32.242	54.250	0.010	0.100	0.020	73.204.28	4.020	0.200	-9999.990	-9999.990
57.729	33.254	53.493	0.010	0.100	0.020	73.204.28	3.490	0.210	-9999.990	-9999.990
57.789	42.364	53.493	0.010	0.100	0.020	73.204.28	3.600	0.200	-9999.990	-9999.990
57.849	42.364	56.775	0.010	0.100	0.020	73.204.28	3.350	0.190	-9999.990	-9999.990
57.909	45.401	56.775	0.010	0.100	0.020	73.204.28	2.980	0.200	-9999.990	-9999.990
57.969	45.401	53.947	0.010	0.100	0.020	73.204.28	2.740	0.200	-9999.990	-9999.990
58.029	76.110	53.745	0.010	0.100	0.020	73.204.28	2.740	0.200	-9999.990	-9999.990
58.089	89.612	53.745	0.010	0.100	0.020	73.204.28	2.980	0.200	-9999.990	-9999.990
58.149	89.612	55.311	0.010	0.100	0.020	73.204.28	3.260	0.200	-9999.990	-9999.990
58.209	45.401	55.311	0.010	0.100	0.020	73.204.28	3.600	0.200	-9999.990	-9999.990
58.269	45.401	53.493	0.010	0.100	0.020	73.204.28	3.600	0.200	-9999.990	-9999.990
58.329	76.110	55.260	0.010	0.100	0.020	73.204.28	3.600	0.200	-9999.990	-9999.990
58.389	52.487	55.260	0.010	0.100	0.020	0.225.28	3.600	0.200	-9999.990	-9999.990
58.449	52.487	53.038	0.000	0.110	0.020	73.204.28	4.180	0.190	-9999.990	-9999.990
58.509	51.474	53.038	0.010	0.100	0.020	73.204.28	3.720	0.190	-9999.990	-9999.990
58.569	51.474	56.775	0.010	0.100	0.020	73.204.28	3.720	0.190	-9999.990	-9999.990
58.629	65.985	54.402	0.010	0.100	0.020	73.204.28	3.060	0.190	-9999.990	-9999.990
58.689	39.327	54.402	0.010	0.100	0.020	73.204.28	2.800	0.190	-9999.990	-9999.990
58.749	39.327	52.230	0.010	0.100	0.020	73.204.28	2.800	0.190	-9999.990	-9999.990
58.809	72.735	52.230	0.010	0.100	0.020	73.204.28	2.540	0.200	-9999.990	-9999.990
58.869	72.735	55.765	0.010	0.100	0.020	73.204.28	2.540	0.200	-9999.990	-9999.990
58.929	28.868	52.230	0.010	0.100	0.020	73.204.28	2.540	0.200	-9999.990	-9999.990
58.989	48.438	52.230	0.010	0.100	0.020	73.204.28	2.540	0.200	-9999.990	-9999.990
59.049	48.438	51.675	0.010	0.100	0.020	73.204.28	2.540	0.200	-9999.990	-9999.990
59.109	52.487	51.675	0.010	0.100	0.020	73.204.28	2.540	0.200	-9999.990	-9999.990
59.169	52.487	54.250	0.010	0.100	0.020	73.204.28	2.540	0.200	-9999.990	-9999.990
59.229	45.738	51.725	0.010	0.100	0.020	73.204.28	2.580	0.190	-9999.990	-9999.990
59.289	38.990	51.725	0.010	0.100	0.020	73.204.28	2.590	0.190	-9999.990	-9999.990
59.349	38.990	50.766	0.010	0.100	0.020	73.204.28	2.240	0.190	-9999.990	-9999.990
59.409	39.327	50.766	0.010	0.100	0.020	73.204.28	2.110	0.190	-9999.990	-9999.990
59.469	39.327	53.240	0.010	0.100	0.020	73.204.28	2.250	0.190	-9999.990	-9999.990
59.529	45.738	50.311	0.010	0.100	0.020	73.204.28	2.280	0.180	-9999.990	-9999.990
59.589	25.494	50.311	0.010	0.100	0.020	73.204.28	2.280	0.180	-9999.990	-9999.990
59.649	25.494	50.715	0.010	0.100	0.020	73.204.28	2.320	0.170	-9999.990	-9999.990
59.709	66.660	50.715	0.010	0.100	0.020	73.204.28	2.320	0.170	0.695	1.436
59.769	66.660	51.675	0.010	0.100	0.020	73.204.28	2.490	0.170	-9999.990	-9999.990
59.829	32.242	49.705	0.010	0.100	0.020	73.204.28	2.490	0.170	-9999.990	-9999.990
59.889	45.738	49.705	0.010	0.100	0.020	73.204.28	2.490	0.170	-9999.990	-9999.990
59.949	45.738	51.220	0.010	0.100	0.020	73.204.28	2.490	0.170	-9999.990	-9999.990
60.009	27.181	51.220	0.010	0.100	0.020	73.204.28	2.490	0.170	-9999.990	-9999.990
60.069	27.181	49.705	0.010	0.100	0.020	73.204.28	2.480	0.170	-9999.990	-9999.990
60.129	22.120	48.948	0.010	0.100	0.020	73.204.28	2.750	0.160	-9999.990	-9999.990
60.189	62.611	48.948	0.010	0.100	0.020	73.204.28	2.750	0.160	-9999.990	-9999.990
60.249	62.611	51.725	0.010	0.100	0.020	73.204.28	2.740	0.160	-9999.990	-9999.990

Well BK2c
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
60.309	54.511	51.725	0.010	0.100	0.020	73.225.28	2.740	0.160	-9999.990	-9999.990
60.369	54.511	-9999.990	0.010	0.110	0.020	73.204.28	3.090	0.150	-9999.990	-9999.990
60.429	65.985	51.220	0.010	0.100	0.020	73.225.28	2.380	0.150	-9999.990	-9999.990
60.489	42.364	51.220	0.010	0.110	0.020	73.204.28	2.630	0.140	-9999.990	-9999.990
60.549	42.364	49.200	0.010	0.100	0.020	73.204.28	2.380	0.150	-9999.990	-9999.990
60.609	49.112	49.200	0.010	0.100	0.020	73.204.28	2.580	0.150	-9999.990	-9999.990
60.669	49.112	49.402	0.010	0.100	0.020	73.204.28	2.580	0.150	-9999.990	-9999.990
60.729	55.861	51.220	0.010	0.100	0.020	73.225.28	2.380	0.150	-9999.990	-9999.990
60.789	60.586	51.220	0.010	0.110	0.020	0.225.14	2.630	0.140	-9999.990	-9999.990
60.849	60.586	48.948	0.000	0.110	0.010	0.225.14	3.250	0.140	-9999.990	-9999.990
60.909	35.616	48.948	0.000	0.110	0.010	0.225.14	3.640	0.140	-9999.990	-9999.990
60.969	35.616	49.200	0.000	0.110	0.010	0.225.14	3.640	0.140	-9999.990	-9999.990
61.029	38.990	50.766	0.000	0.110	0.010	0.225.14	3.780	0.130	-9999.990	-9999.990
61.089	48.438	50.766	0.000	0.110	0.010	0.225.14	3.780	0.130	-9999.990	-9999.990
61.149	48.438	48.695	0.000	0.110	0.010	0.225.14	3.780	0.130	-9999.990	-9999.990
61.209	49.112	48.695	0.000	0.110	0.010	0.225.14	3.780	0.130	-9999.990	-9999.990
61.269	49.112	50.766	0.000	0.110	0.010	0.225.14	4.490	0.120	-9999.990	-9999.990
61.329	52.487	48.695	0.000	0.110	0.010	0.225.14	4.490	0.120	-9999.990	-9999.990
61.389	45.401	48.695	0.000	0.110	0.010	0.225.14	4.280	0.130	-9999.990	-9999.990
61.449	45.401	49.200	0.000	0.110	0.010	0.225.14	4.280	0.130	-9999.990	-9999.990
61.509	62.611	49.200	0.000	0.110	0.010	0.225.14	4.280	0.130	-9999.990	-9999.990
61.569	62.611	50.311	0.000	0.110	0.010	0.225.14	3.750	0.130	-9999.990	-9999.990
61.629	52.487	49.200	0.000	0.110	0.010	0.225.14	3.750	0.130	-9999.990	-9999.990
61.689	45.738	49.200	0.000	0.110	0.010	0.225.14	3.330	0.130	-9999.990	-9999.990
61.749	45.738	48.948	0.000	0.110	0.010	0.225.14	3.330	0.130	-9999.990	-9999.990
61.809	69.698	48.948	0.000	0.110	0.010	0.225.14	3.330	0.130	-9999.990	-9999.990
61.869	69.698	51.725	0.000	0.110	0.010	73.184.56	3.330	0.130	-9999.990	-9999.990
61.929	52.487	48.948	0.010	0.090	0.040	73.184.56	5.000	0.410	-9999.990	-9999.990
61.989	69.360	48.948	0.010	0.090	0.040	73.184.56	5.000	0.410	-9999.990	-9999.990
62.049	69.360	49.705	0.010	0.090	0.040	73.184.56	5.740	0.410	-9999.990	-9999.990
62.109	54.511	49.705	0.010	0.090	0.040	73.184.56	6.380	0.390	-9999.990	-9999.990
62.169	54.511	51.675	0.010	0.090	0.040	73.184.56	6.380	0.390	-9999.990	-9999.990
62.229	65.985	50.210	0.010	0.090	0.040	73.204.56	6.380	0.390	-9999.990	-9999.990
62.289	54.511	50.210	0.010	0.100	0.040	73.204.56	6.960	0.390	-9999.990	-9999.990
62.349	54.511	52.129	0.010	0.100	0.040	73.204.56	7.200	0.370	-9999.990	-9999.990
62.409	62.611	-9999.990	0.010	0.100	0.040	73.204.56	7.200	0.370	-9999.990	-9999.990
62.469	62.611	-9999.990	0.010	0.100	0.040	0.225.14	7.200	0.370	-9999.990	-9999.990
62.529	65.985	51.220	0.000	0.110	0.010	0.225.14	4.620	0.110	-9999.990	-9999.990
62.589	45.401	51.220	0.000	0.110	0.010	0.225.14	5.530	0.110	-9999.990	-9999.990
62.649	45.401	53.745	0.000	0.110	0.010	0.225.14	5.530	0.110	-9999.990	-9999.990
62.709	72.735	52.129	0.000	0.110	0.010	0.225.14	5.530	0.110	-9999.990	-9999.990
62.769	72.735	52.129	0.000	0.110	0.010	0.245.14	6.880	0.110	-9999.990	-9999.990
62.829	69.360	54.402	0.000	0.120	0.010	0.245.14	10.450	0.110	-9999.990	-9999.990
62.889	78.810	54.402	0.000	0.120	0.010	0.245.14	10.450	0.110	-9999.990	-9999.990
62.949	78.810	53.240	0.000	0.120	0.010	0.245.14	10.450	0.110	-9999.990	-9999.990
63.009	59.236	53.038	0.000	0.120	0.010	0.245.14	10.450	0.110	-9999.990	-9999.990
63.069	59.236	53.038	0.000	0.120	0.010	0.204.42	7.580	0.110	-9999.990	-9999.990
63.129	69.698	55.765	0.000	0.100	0.030	0.204.42	9.780	0.330	-9999.990	-9999.990
63.189	86.236	55.765	0.000	0.100	0.030	0.204.56	8.260	0.350	-9999.990	-9999.990
63.249	86.236	53.240	0.000	0.100	0.040	0.204.56	7.170	0.370	-9999.990	-9999.990
63.309	89.612	53.493	0.000	0.100	0.040	0.204.42	7.170	0.370	-9999.990	-9999.990
63.369	78.810	53.493	0.000	0.100	0.030	0.204.42	7.440	0.350	-9999.990	-9999.990
63.429	78.810	55.765	0.000	0.100	0.030	0.204.42	7.440	0.350	-9999.990	-9999.990
63.489	92.987	55.765	0.000	0.100	0.030	73.204.56	7.440	0.350	1.059	3.100
63.549	92.987	53.038	0.010	0.100	0.040	0.204.42	6.530	0.370	-9999.990	-9999.990
63.609	72.735	53.240	0.000	0.100	0.030	0.204.42	8.260	0.350	-9999.990	-9999.990
63.669	49.112	53.240	0.000	0.100	0.030	0.204.42	8.260	0.350	-9999.990	-9999.990
63.729	49.112	54.856	0.000	0.100	0.030	0.204.42	7.430	0.350	-9999.990	-9999.990
63.789	69.698	54.856	0.000	0.100	0.030	0.204.42	7.430	0.350	-9999.990	-9999.990
63.849	69.698	53.240	0.000	0.100	0.030	0.204.42	7.430	0.350	-9999.990	-9999.990
63.909	65.985	53.240	0.000	0.100	0.030	0.204.56	8.280	0.350	-9999.990	-9999.990
63.969	82.861	53.240	0.000	0.100	0.040	0.204.42	7.180	0.370	-9999.990	-9999.990
64.029	82.861	55.311	0.000	0.100	0.030	0.204.42	7.450	0.350	-9999.990	-9999.990
64.089	69.698	55.311	0.000	0.100	0.030	0.204.42	7.450	0.350	-9999.990	-9999.990
64.149	69.698	53.947	0.000	0.100	0.030	0.204.42	7.450	0.350	-9999.990	-9999.990
64.209	42.364	56.775	0.000	0.100	0.030	0.204.56	9.270	0.350	-9999.990	-9999.990
64.269	55.861	56.775	0.000	0.100	0.040	0.204.42	7.920	0.370	-9999.990	-9999.990
64.329	55.861	-9999.990	0.000	0.100	0.030	0.204.42	8.260	0.350	-9999.990	-9999.990
64.389	48.438	-9999.990	0.000	0.100	0.030	0.204.42	8.260	0.350	-9999.990	-9999.990

Well BK2c
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
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Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
64.449	48.438	53.745	0.000	0.100	0.030	0.204.42	8.260	0.350	-9999.990	-9999.990
64.509	32.242	54.856	0.000	0.100	0.030	0.204.42	9.770	0.330	-9999.990	-9999.990
64.569	59.236	54.856	0.000	0.100	0.030	0.204.42	8.610	0.330	-9999.990	-9999.990
64.629	59.236	52.230	0.000	0.100	0.030	0.204.42	8.610	0.330	-9999.990	-9999.990
64.689	48.438	52.230	0.000	0.100	0.030	0.204.56	9.750	0.330	-9999.990	-9999.990
64.749	48.438	52.584	0.000	0.100	0.040	0.204.42	7.170	0.370	-9999.990	-9999.990
64.809	38.990	49.705	0.000	0.100	0.030	0.204.42	8.310	0.350	-9999.990	-9999.990
64.869	45.401	49.705	0.000	0.100	0.030	0.204.56	7.450	0.350	-9999.990	-9999.990
64.929	45.401	47.584	0.000	0.100	0.040	0.204.56	7.180	0.360	-9999.990	-9999.990
64.989	45.738	47.584	0.000	0.100	0.040	0.204.56	7.940	0.360	-9999.990	-9999.990
65.049	45.738	48.695	0.000	0.100	0.040	0.204.56	8.890	0.360	-9999.990	-9999.990
65.109	62.611	46.675	0.000	0.100	0.040	0.204.56	8.900	0.360	-9999.990	-9999.990
65.169	33.254	46.675	0.000	0.100	0.040	0.204.56	8.900	0.360	-9999.990	-9999.990
65.229	33.254	46.675	0.000	0.100	0.040	0.204.56	7.940	0.360	-9999.990	-9999.990
65.289	55.861	46.675	0.000	0.100	0.040	0.204.56	7.180	0.360	-9999.990	-9999.990
65.349	55.861	48.039	0.000	0.100	0.040	0.204.56	7.180	0.360	-9999.990	-9999.990
65.409	62.611	46.221	0.000	0.100	0.040	73.204.56	7.150	0.360	-9999.990	-9999.990
65.469	54.511	46.221	0.010	0.100	0.040	73.184.56	6.330	0.380	-9999.990	-9999.990
65.529	54.511	49.200	0.010	0.090	0.040	73.184.56	5.280	0.400	-9999.990	-9999.990
65.589	52.487	49.200	0.010	0.090	0.040	73.184.56	5.680	0.400	-9999.990	-9999.990
65.649	52.487	47.685	0.010	0.090	0.040	73.184.56	5.270	0.400	-9999.990	-9999.990
65.709	59.236	47.584	0.010	0.090	0.040	73.184.56	5.670	0.400	-9999.990	-9999.990
65.769	66.660	47.584	0.010	0.090	0.040	73.184.56	5.670	0.400	-9999.990	-9999.990
65.829	66.660	50.715	0.010	0.090	0.040	73.184.56	6.130	0.400	-9999.990	-9999.990
65.889	59.236	50.715	0.010	0.090	0.040	73.184.56	6.140	0.400	-9999.990	-9999.990
65.949	59.236	48.190	0.010	0.090	0.040	73.184.56	6.140	0.400	-9999.990	-9999.990
66.009	38.990	47.130	0.010	0.090	0.040	73.184.56	6.140	0.400	-9999.990	-9999.990
66.069	69.360	47.130	0.010	0.090	0.040	73.184.56	6.140	0.400	-9999.990	-9999.990
66.129	69.360	50.210	0.010	0.090	0.040	73.184.56	5.540	0.420	-9999.990	-9999.990
66.189	63.623	50.210	0.010	0.090	0.040	73.184.56	5.150	0.420	-9999.990	-9999.990
66.249	63.623	47.130	0.010	0.090	0.040	73.184.56	5.160	0.420	-9999.990	-9999.990
66.309	86.236	47.180	0.010	0.090	0.040	73.184.56	5.160	0.420	-9999.990	-9999.990
66.369	76.110	47.180	0.010	0.090	0.040	73.184.56	5.160	0.420	-9999.990	-9999.990
66.429	76.110	48.493	0.010	0.090	0.040	73.184.56	5.700	0.400	-9999.990	-9999.990
66.489	75.773	48.493	0.010	0.090	0.040	73.184.56	5.170	0.420	-9999.990	-9999.990
66.549	75.773	46.675	0.010	0.090	0.040	73.184.56	5.170	0.420	-9999.990	-9999.990
66.609	79.485	48.039	0.010	0.090	0.040	73.184.56	4.730	0.440	-9999.990	-9999.990
66.669	42.364	48.039	0.010	0.090	0.040	73.184.56	4.730	0.440	-9999.990	-9999.990
66.729	42.364	45.766	0.010	0.090	0.040	73.184.56	4.370	0.470	-9999.990	-9999.990
66.789	45.738	45.766	0.010	0.090	0.040	73.184.56	4.370	0.470	-9999.990	-9999.990
66.849	45.738	49.200	0.010	0.090	0.040	73.184.56	4.640	0.470	-9999.990	-9999.990
66.909	45.738	50.311	0.010	0.090	0.040	73.184.56	4.930	0.470	-9999.990	-9999.990
66.969	81.848	50.311	0.010	0.090	0.040	73.184.56	5.420	0.440	-9999.990	-9999.990
67.029	81.848	43.645	0.010	0.090	0.040	73.184.56	6.030	0.420	-9999.990	-9999.990
67.089	62.611	43.645	0.010	0.090	0.040	73.204.56	6.050	0.420	-9999.990	-9999.990
67.149	62.611	45.766	0.010	0.100	0.040	73.204.56	6.820	0.400	-9999.990	-9999.990
67.209	72.735	47.685	0.010	0.100	0.040	73.204.56	6.820	0.400	-9999.990	-9999.990
67.269	66.660	47.685	0.010	0.100	0.040	73.204.56	6.820	0.400	-9999.990	-9999.990
67.329	66.660	48.039	0.010	0.100	0.040	73.184.56	6.820	0.400	-9999.990	-9999.990
67.389	55.861	48.039	0.010	0.090	0.040	73.184.56	6.240	0.400	-9999.990	-9999.990
67.449	55.861	50.210	0.010	0.090	0.040	73.204.56	6.240	0.400	-9999.990	-9999.990
67.509	57.549	47.130	0.010	0.100	0.040	73.184.56	7.070	0.380	0.951	1.559
67.569	59.236	47.130	0.010	0.090	0.040	73.184.56	6.290	0.400	-9999.990	-9999.990
67.629	59.236	48.190	0.010	0.090	0.040	73.184.56	5.810	0.390	-9999.990	-9999.990
67.689	79.485	48.190	0.010	0.090	0.040	73.184.56	5.810	0.390	-9999.990	-9999.990
67.749	79.485	50.311	0.010	0.090	0.040	73.184.56	5.260	0.420	-9999.990	-9999.990
67.809	48.438	51.725	0.010	0.090	0.040	73.184.56	4.600	0.420	-9999.990	-9999.990
67.869	49.112	51.725	0.010	0.090	0.040	73.184.56	4.890	0.420	-9999.990	-9999.990
67.929	49.112	54.402	0.010	0.090	0.040	73.184.56	5.110	0.440	-9999.990	-9999.990
67.989	59.236	54.402	0.010	0.090	0.040	73.184.56	5.110	0.440	-9999.990	-9999.990
68.049	59.236	49.200	0.010	0.090	0.040	73.184.56	5.620	0.410	-9999.990	-9999.990
68.109	33.254	46.675	0.010	0.090	0.040	73.184.56	5.220	0.410	-9999.990	-9999.990
68.169	62.611	46.675	0.010	0.090	0.040	73.184.56	5.360	0.390	-9999.990	-9999.990
68.229	62.611	49.705	0.010	0.090	0.040	73.184.56	5.360	0.390	-9999.990	-9999.990
68.289	82.861	49.705	0.010	0.090	0.040	73.184.56	4.980	0.390	-9999.990	-9999.990
68.349	82.861	-9999.990	0.010	0.090	0.040	73.184.56	4.980	0.390	-9999.990	-9999.990
68.409	52.487	47.685	0.010	0.090	0.040	73.184.42	4.140	0.390	-9999.990	-9999.990
68.469	63.623	47.685	0.010	0.090	0.030	73.184.42	4.580	0.360	-9999.990	-9999.990
68.529	63.623	50.311	0.010	0.090	0.030	73.184.42	4.230	0.370	-9999.990	-9999.990

Well BK2c
Summary of Geophysical Logging Data
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ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
68.589	62.611	50.311	0.010	0.090	0.030	73.184.42	4.480	0.370	-9999.990	-9999.990
68.649	62.611	48.695	0.010	0.090	0.030	73.204.42	4.480	0.370	-9999.990	-9999.990
68.709	55.861	50.311	0.010	0.100	0.030	73.204.42	5.620	0.360	-9999.990	-9999.990
68.769	66.660	50.311	0.010	0.100	0.030	73.204.42	6.080	0.360	-9999.990	-9999.990
68.829	66.660	50.210	0.010	0.100	0.030	73.204.42	6.080	0.360	-9999.990	-9999.990
68.889	79.485	50.210	0.010	0.100	0.030	73.204.42	6.080	0.360	-9999.990	-9999.990
68.949	79.485	50.766	0.010	0.100	0.030	73.204.42	6.080	0.360	-9999.990	-9999.990
69.009	45.401	53.240	0.010	0.100	0.030	73.204.42	6.080	0.360	-9999.990	-9999.990
69.069	59.236	53.240	0.010	0.100	0.030	73.204.42	6.080	0.360	-9999.990	-9999.990
69.129	59.236	50.766	0.010	0.100	0.030	73.204.42	6.630	0.360	-9999.990	-9999.990
69.189	52.487	52.230	0.010	0.100	0.030	73.204.42	6.060	0.360	-9999.990	-9999.990
69.249	52.487	52.230	0.010	0.100	0.030	73.204.56	6.060	0.360	-9999.990	-9999.990
69.309	54.511	54.402	0.010	0.100	0.040	73.184.56	5.890	0.370	-9999.990	-9999.990
69.369	38.990	54.402	0.010	0.090	0.040	73.204.56	5.410	0.370	-9999.990	-9999.990
69.429	38.990	52.735	0.010	0.100	0.040	0.204.56	5.810	0.370	-9999.990	-9999.990
69.489	69.360	54.402	0.000	0.100	0.040	0.204.42	7.900	0.360	-9999.990	-9999.990
69.549	69.360	54.402	0.000	0.100	0.030	73.204.56	7.120	0.360	-9999.990	-9999.990
69.609	63.623	53.038	0.010	0.100	0.040	73.204.56	6.880	0.370	-9999.990	-9999.990
69.669	38.990	53.038	0.010	0.100	0.040	73.204.56	6.300	0.370	-9999.990	-9999.990
69.729	38.990	53.240	0.010	0.100	0.040	73.184.56	6.300	0.370	-9999.990	-9999.990
69.789	60.586	54.402	0.010	0.090	0.040	73.184.56	6.120	0.390	-9999.990	-9999.990
69.849	60.586	54.402	0.010	0.090	0.040	73.204.56	6.120	0.390	-9999.990	-9999.990
69.909	59.236	53.240	0.010	0.100	0.040	73.204.56	6.900	0.370	-9999.990	-9999.990
69.969	76.110	53.240	0.010	0.100	0.040	73.204.56	6.900	0.370	-9999.990	-9999.990
70.029	76.110	55.765	0.010	0.100	0.040	73.204.56	6.900	0.370	-9999.990	-9999.990
70.089	84.886	54.755	0.010	0.100	0.040	73.204.56	6.900	0.370	-9999.990	-9999.990
70.149	49.112	54.755	0.010	0.100	0.040	73.184.56	6.880	0.370	-9999.990	-9999.990
70.209	49.112	53.493	0.010	0.090	0.040	73.184.56	6.110	0.390	-9999.990	-9999.990
70.269	76.110	53.493	0.010	0.090	0.040	73.184.56	5.640	0.390	-9999.990	-9999.990
70.329	76.110	57.280	0.010	0.090	0.040	73.184.56	6.100	0.390	-9999.990	-9999.990
70.389	49.112	-9999.990	0.010	0.090	0.040	73.184.56	6.100	0.390	-9999.990	-9999.990
70.449	57.549	-9999.990	0.010	0.090	0.040	73.184.56	6.100	0.390	-9999.990	-9999.990
70.509	57.549	54.856	0.010	0.090	0.040	73.204.56	5.110	0.410	-9999.990	-9999.990
70.569	79.485	54.856	0.010	0.100	0.040	73.184.56	7.300	0.390	-9999.990	-9999.990
70.629	79.485	58.290	0.010	0.090	0.040	73.204.56	6.450	0.410	-9999.990	-9999.990
70.689	76.110	56.220	0.010	0.100	0.040	73.184.56	7.340	0.390	-9999.990	-9999.990
70.749	54.511	56.220	0.010	0.090	0.040	0.204.56	6.110	0.390	-9999.990	-9999.990
70.809	54.511	56.775	0.000	0.100	0.040	0.204.56	8.900	0.350	-9999.990	-9999.990
70.869	55.861	56.775	0.000	0.100	0.040	73.184.56	7.650	0.370	-9999.990	-9999.990
70.929	55.861	59.401	0.010	0.090	0.040	73.184.56	6.150	0.390	-9999.990	-9999.990
70.989	97.038	59.300	0.010	0.090	0.040	73.184.56	5.670	0.390	-9999.990	-9999.990
71.049	69.360	59.300	0.010	0.090	0.040	73.184.56	5.260	0.390	-9999.990	-9999.990
71.109	69.360	61.219	0.010	0.090	0.040	73.184.56	5.270	0.390	-9999.990	-9999.990
71.169	62.611	61.219	0.010	0.090	0.040	73.184.56	5.660	0.390	-9999.990	-9999.990
71.229	62.611	61.219	0.010	0.090	0.040	73.184.56	5.660	0.390	-9999.990	-9999.990
71.289	60.586	63.340	0.010	0.090	0.040	73.184.56	5.660	0.390	-9999.990	-9999.990
71.349	52.487	63.340	0.010	0.090	0.040	73.184.56	5.660	0.390	-9999.990	-9999.990
71.409	52.487	66.673	0.010	0.090	0.040	73.184.56	4.430	0.430	-9999.990	-9999.990
71.469	62.611	66.673	0.010	0.090	0.040	73.184.56	4.430	0.430	-9999.990	-9999.990
71.529	62.611	69.400	0.010	0.090	0.040	73.184.56	4.180	0.430	-9999.990	-9999.990
71.589	60.586	68.946	0.010	0.090	0.040	73.184.56	4.180	0.430	-9999.990	-9999.990
71.649	55.861	68.946	0.010	0.090	0.040	73.184.56	4.420	0.430	-9999.990	-9999.990
71.709	55.861	70.915	0.010	0.090	0.040	73.184.56	4.180	0.430	-9999.990	-9999.990
71.769	48.438	70.915	0.010	0.090	0.040	73.184.56	4.420	0.430	-9999.990	-9999.990
71.829	48.438	69.400	0.010	0.090	0.040	73.184.56	4.420	0.430	-9999.990	-9999.990
71.889	65.985	72.430	0.010	0.090	0.040	73.184.56	4.510	0.400	-9999.990	-9999.990
71.949	55.861	72.430	0.010	0.090	0.040	73.184.56	4.510	0.400	-9999.990	-9999.990
72.009	55.861	70.309	0.010	0.090	0.040	0.225.14	4.250	0.400	-9999.990	-9999.990
72.069	78.810	70.309	0.000	0.110	0.010	0.225.14	2.850	0.120	-9999.990	-9999.990
72.129	78.810	70.410	0.000	0.110	0.010	0.225.14	2.850	0.120	-9999.990	-9999.990
72.189	92.987	72.582	0.000	0.110	0.010	73.225.14	2.850	0.120	-9999.990	-9999.990
72.249	62.611	72.582	0.010	0.110	0.010	73.225.14	2.540	0.120	-9999.990	-9999.990
72.309	62.611	69.905	0.010	0.110	0.010	73.225.14	2.540	0.120	-9999.990	-9999.990
72.369	106.152	69.905	0.010	0.110	0.010	73.225.14	2.540	0.120	-9999.990	-9999.990
72.429	106.152	70.764	0.010	0.110	0.010	73.225.14	2.720	0.130	-9999.990	-9999.990
72.489	96.363	-9999.990	0.010	0.110	0.010	73.225.14	2.720	0.130	-9999.990	-9999.990
72.549	62.611	-9999.990	0.010	0.110	0.010	0.225.14	2.720	0.130	-9999.990	-9999.990
72.609	62.611	67.380	0.000	0.110	0.010	0.225.14	3.000	0.130	-9999.990	-9999.990
72.669	106.490	67.380	0.000	0.110	0.010	0.225.14	3.000	0.130	-9999.990	-9999.990

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
72.729	106.490	68.491	0.000	0.110	0.010	0.225.14	3.000	0.130	0.895	4.749
72.789	82.861	65.360	0.000	0.110	0.010	0.225.14	3.000	0.130	-9999.990	-9999.990
72.849	69.698	65.360	0.000	0.110	0.010	0.225.14	3.000	0.130	-9999.990	-9999.990
72.909	69.698	63.037	0.000	0.110	0.010	73.225.14	3.000	0.130	-9999.990	-9999.990
72.969	65.985	63.037	0.010	0.110	0.010	73.225.14	2.430	0.140	-9999.990	-9999.990
73.029	65.985	65.360	0.010	0.110	0.010	73.225.14	2.430	0.140	-9999.990	-9999.990
73.089	54.511	61.674	0.010	0.110	0.010	73.225.14	2.720	0.130	-9999.990	-9999.990
73.149	55.861	61.674	0.010	0.110	0.010	0.245.0	2.710	0.130	-9999.990	-9999.990
73.209	55.861	63.492	0.000	0.120	0.000	0.245.0	0.000	0.000	-9999.990	-9999.990
73.269	72.735	63.492	0.000	0.120	0.000	0.245.0	0.000	0.000	-9999.990	-9999.990
73.329	72.735	61.320	0.000	0.120	0.000	0.245.0	0.000	0.000	-9999.990	-9999.990
73.389	87.924	60.765	0.000	0.120	0.000	0.245.0	0.000	0.000	-9999.990	-9999.990
73.449	69.360	60.765	0.000	0.120	0.000	0.245.0	0.000	0.000	-9999.990	-9999.990
73.509	69.360	62.835	0.000	0.120	0.000	0.245.0	0.000	0.000	-9999.990	-9999.990
73.569	66.660	62.835	0.000	0.120	0.000	0.245.0	0.000	0.000	-9999.990	-9999.990
73.629	66.660	60.310	0.000	0.120	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
73.689	79.485	61.320	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
73.749	45.738	61.320	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
73.809	45.738	62.128	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
73.869	81.848	62.128	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
73.929	81.848	60.310	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
73.989	76.110	60.765	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.049	59.236	60.765	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.109	59.236	58.947	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.169	51.474	58.947	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.229	51.474	59.300	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.289	42.364	60.310	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.349	57.549	60.310	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.409	57.549	58.290	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.469	55.861	58.290	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.529	55.861	58.290	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.589	65.985	60.310	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.649	45.738	60.310	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.709	45.738	59.300	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.769	48.438	59.300	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.829	48.438	61.219	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.889	42.364	61.320	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
74.949	45.738	61.320	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
75.009	45.738	61.674	0.010	0.110	0.000	73.225.0	0.000	0.000	-9999.990	-9999.990
75.069	38.990	61.674	0.010	0.110	0.000	73.204.14	0.000	0.000	-9999.990	-9999.990
75.129	38.990	65.360	0.010	0.100	0.010	73.204.14	1.550	0.130	-9999.990	-9999.990
75.189	30.217	64.855	0.010	0.100	0.010	73.204.14	1.550	0.130	-9999.990	-9999.990
75.249	49.112	64.855	0.010	0.100	0.010	73.204.14	1.720	0.130	-9999.990	-9999.990
75.309	49.112	65.865	0.010	0.100	0.010	73.204.14	1.820	0.130	-9999.990	-9999.990
75.369	48.438	65.865	0.010	0.100	0.010	73.204.14	1.940	0.130	-9999.990	-9999.990
75.429	48.438	68.037	0.010	0.100	0.010	73.204.14	1.940	0.130	-9999.990	-9999.990
75.489	49.112	67.380	0.010	0.100	0.010	73.204.14	2.070	0.130	-9999.990	-9999.990
75.549	42.364	67.380	0.010	0.100	0.010	73.225.14	2.070	0.130	-9999.990	-9999.990
75.609	42.364	69.855	0.010	0.110	0.010	73.204.14	2.220	0.130	-9999.990	-9999.990
75.669	42.364	69.855	0.010	0.100	0.010	73.204.14	2.070	0.130	-9999.990	-9999.990
75.729	42.364	69.400	0.010	0.100	0.010	73.204.14	2.070	0.130	-9999.990	-9999.990
75.789	79.485	70.309	0.010	0.100	0.010	73.204.14	2.070	0.130	-9999.990	-9999.990
75.849	52.487	70.309	0.010	0.100	0.010	73.204.14	2.070	0.130	-9999.990	-9999.990
75.909	52.487	73.491	0.010	0.100	0.010	73.204.14	2.070	0.130	-9999.990	-9999.990
75.969	63.623	73.945	0.010	0.100	0.010	73.204.14	2.070	0.130	-9999.990	-9999.990
76.029	63.623	73.945	0.010	0.100	0.010	73.204.14	1.910	0.140	-9999.990	-9999.990
76.089	72.735	76.672	0.010	0.100	0.010	73.204.14	1.910	0.140	-9999.990	-9999.990
76.149	42.364	76.672	0.010	0.100	0.010	73.204.14	1.910	0.140	-9999.990	-9999.990
76.209	42.364	76.470	0.010	0.100	0.010	73.204.14	1.800	0.140	-9999.990	-9999.990
76.269	69.360	77.581	0.010	0.100	0.010	73.204.14	1.800	0.140	-9999.990	-9999.990
76.329	69.360	77.581	0.010	0.100	0.010	73.204.14	1.690	0.150	-9999.990	-9999.990
76.389	69.360	81.520	0.010	0.100	0.010	73.204.14	1.690	0.150	-9999.990	-9999.990
76.449	72.735	81.520	0.010	0.100	0.010	73.204.14	1.690	0.150	-9999.990	-9999.990
76.509	72.735	78.945	0.010	0.100	0.010	73.204.28	1.690	0.150	-9999.990	-9999.990
76.569	69.360	80.005	0.010	0.100	0.020	73.204.14	1.590	0.150	-9999.990	-9999.990
76.629	69.360	80.005	0.010	0.100	0.010	73.204.14	1.690	0.150	-9999.990	-9999.990
76.689	109.866	81.217	0.010	0.100	0.010	73.204.14	1.690	0.150	-9999.990	-9999.990
76.749	94.000	81.217	0.010	0.100	0.010	73.204.14	1.790	0.150	-9999.990	-9999.990
76.809	94.000	79.500	0.010	0.100	0.010	73.204.14	1.790	0.150	-9999.990	-9999.990

Well BK2c
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ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
76.869	126.748	78.995	0.010	0.100	0.010	73.204.14	1.790	0.150	-9999.990	-9999.990
76.929	126.748	78.995	0.010	0.100	0.010	73.204.14	1.810	0.140	-9999.990	-9999.990
76.989	103.114	79.399	0.010	0.100	0.010	73.204.14	1.810	0.140	-9999.990	-9999.990
77.049	99.738	79.399	0.010	0.100	0.010	73.204.28	1.600	0.150	-9999.990	-9999.990
77.109	99.738	77.985	0.010	0.100	0.020	73.204.28	1.520	0.160	-9999.990	-9999.990
77.169	84.886	78.945	0.010	0.100	0.020	73.204.28	1.520	0.160	-9999.990	-9999.990
77.229	96.363	78.945	0.010	0.100	0.020	73.204.28	1.520	0.160	-9999.990	-9999.990
77.289	96.363	77.480	0.010	0.100	0.020	73.204.28	1.440	0.160	-9999.990	-9999.990
77.349	76.110	77.480	0.010	0.100	0.020	73.204.28	1.440	0.160	-9999.990	-9999.990
77.409	76.110	77.127	0.010	0.100	0.020	73.204.28	1.440	0.160	-9999.990	-9999.990
77.469	69.698	80.005	0.010	0.100	0.020	73.204.28	1.440	0.160	-9999.990	-9999.990
77.529	82.861	80.005	0.010	0.100	0.020	73.184.28	1.510	0.160	1.083	1.370
77.589	82.861	77.581	0.010	0.090	0.020	73.184.28	1.430	0.170	-9999.990	-9999.990
77.649	66.660	77.581	0.010	0.090	0.020	73.184.28	1.370	0.180	-9999.990	-9999.990
77.709	66.660	79.399	0.010	0.090	0.020	73.184.28	1.370	0.190	-9999.990	-9999.990
77.769	59.236	76.975	0.010	0.090	0.020	73.184.28	1.370	0.190	-9999.990	-9999.990
77.829	51.474	76.975	0.010	0.090	0.020	73.184.28	1.370	0.190	-9999.990	-9999.990
77.889	51.474	75.309	0.010	0.090	0.020	73.184.28	1.490	0.190	-9999.990	-9999.990
77.949	69.360	75.309	0.010	0.090	0.020	73.184.28	1.430	0.200	-9999.990	-9999.990
78.009	69.360	75.309	0.010	0.090	0.020	73.184.28	1.430	0.200	-9999.990	-9999.990
78.069	100.076	71.218	0.010	0.090	0.020	73.184.28	1.430	0.200	-9999.990	-9999.990
78.129	45.738	71.218	0.010	0.090	0.020	73.184.28	1.430	0.200	-9999.990	-9999.990
78.189	45.738	72.935	0.010	0.090	0.020	73.184.28	1.420	0.210	-9999.990	-9999.990
78.249	69.698	72.935	0.010	0.090	0.020	73.184.28	1.480	0.210	-9999.990	-9999.990
78.309	69.698	68.037	0.010	0.090	0.020	73.184.28	1.480	0.230	-9999.990	-9999.990
78.369	52.487	67.128	0.010	0.090	0.020	73.184.28	1.480	0.230	-9999.990	-9999.990
78.429	48.438	67.128	0.010	0.090	0.020	73.184.28	1.480	0.230	-9999.990	-9999.990
78.489	48.438	63.340	0.010	0.090	0.020	73.184.28	1.740	0.230	-9999.990	-9999.990
78.549	59.236	63.340	0.010	0.090	0.020	73.184.28	1.640	0.270	-9999.990	-9999.990
78.609	59.236	61.674	0.010	0.090	0.020	73.184.28	1.640	0.270	-9999.990	-9999.990
78.669	39.327	63.037	0.010	0.090	0.020	73.184.28	1.640	0.270	-9999.990	-9999.990
78.729	62.611	63.037	0.010	0.090	0.020	73.184.28	1.640	0.270	-9999.990	-9999.990
78.789	62.611	60.815	0.010	0.090	0.020	146.163.28	1.640	0.270	-9999.990	-9999.990
78.849	38.990	60.815	0.020	0.080	0.020	146.163.28	1.560	0.290	-9999.990	-9999.990
78.909	38.990	62.128	0.020	0.080	0.020	146.163.28	1.560	0.290	-9999.990	-9999.990
78.969	57.549	59.805	0.020	0.080	0.020	146.163.28	1.560	0.290	-9999.990	-9999.990
79.029	45.738	59.805	0.020	0.080	0.020	146.163.28	1.560	0.290	-9999.990	-9999.990
79.089	45.738	59.401	0.020	0.080	0.020	146.163.28	1.560	0.290	-9999.990	-9999.990
79.149	38.990	59.401	0.020	0.080	0.020	146.163.28	1.560	0.290	-9999.990	-9999.990
79.209	38.990	62.330	0.020	0.080	0.020	73.163.28	1.560	0.290	-9999.990	-9999.990
79.269	45.401	61.219	0.010	0.080	0.020	73.163.28	1.630	0.290	-9999.990	-9999.990
79.329	45.738	61.219	0.010	0.080	0.020	73.163.28	1.630	0.290	-9999.990	-9999.990
79.389	45.738	63.492	0.010	0.080	0.020	73.184.28	1.630	0.290	-9999.990	-9999.990
79.449	32.242	63.492	0.010	0.090	0.020	73.184.28	1.790	0.290	-9999.990	-9999.990
79.509	32.242	63.037	0.010	0.090	0.020	73.184.28	1.790	0.290	-9999.990	-9999.990
79.569	24.145	64.350	0.010	0.090	0.020	73.163.42	1.880	0.290	-9999.990	-9999.990
79.629	55.861	64.350	0.010	0.080	0.030	73.163.42	1.780	0.310	-9999.990	-9999.990
79.689	55.861	65.681	0.010	0.080	0.030	73.163.42	1.860	0.310	-9999.990	-9999.990
79.749	49.372	65.681	0.010	0.080	0.030	73.163.42	1.860	0.310	-9999.990	-9999.990
79.809	49.372	67.747	0.010	0.080	0.030	73.163.42	1.960	0.310	-9999.990	-9999.990
79.869	52.487	68.574	0.010	0.080	0.030	73.163.42	1.960	0.310	-9999.990	-9999.990
79.929	38.568	68.574	0.010	0.080	0.030	73.163.42	1.960	0.310	-9999.990	-9999.990
79.989	38.568	68.574	0.010	0.080	0.030	73.163.42	1.940	0.340	-9999.990	-9999.990
80.049	44.262	68.574	0.010	0.080	0.030	73.163.42	1.940	0.340	-9999.990	-9999.990
80.109	44.262	72.547	0.010	0.080	0.030	73.163.42	1.940	0.340	-9999.990	-9999.990
80.169	40.339	73.566	0.010	0.080	0.030	73.163.42	1.940	0.340	-9999.990	-9999.990
80.229	36.290	73.566	0.010	0.080	0.030	73.163.42	1.940	0.340	-9999.990	-9999.990
80.289	36.290	74.994	0.010	0.080	0.030	73.163.42	2.040	0.340	-9999.990	-9999.990
80.349	54.511	74.994	0.010	0.080	0.030	73.163.42	2.040	0.340	-9999.990	-9999.990
80.409	54.511	77.791	0.010	0.080	0.030	73.163.42	2.160	0.340	-9999.990	-9999.990
80.469	56.536	81.520	0.010	0.080	0.030	73.163.42	2.160	0.340	-9999.990	-9999.990
80.529	46.413	81.520	0.010	0.080	0.030	73.184.42	2.160	0.340	-9999.990	-9999.990
80.589	46.413	84.949	0.010	0.090	0.030	73.163.42	2.280	0.340	-9999.990	-9999.990
80.649	42.364	84.949	0.010	0.080	0.030	73.163.42	2.130	0.370	-9999.990	-9999.990
80.709	42.364	88.716	0.010	0.080	0.030	146.163.42	2.130	0.370	-9999.990	-9999.990
80.769	50.462	94.398	0.020	0.080	0.030	73.163.42	2.000	0.410	-9999.990	-9999.990
80.829	46.413	94.398	0.010	0.080	0.030	146.143.56	2.230	0.410	-9999.990	-9999.990
80.889	46.413	100.533	0.020	0.070	0.040	146.143.56	1.960	0.500	-9999.990	-9999.990
80.949	48.438	100.533	0.020	0.070	0.040	146.143.56	1.960	0.500	-9999.990	-9999.990

Well BK2c
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (Corrected)[1] (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
81.009	48.438	106.896	0.020	0.070	0.040	146.143.56	1.960	0.500	-9999.990	-9999.990
81.069	52.487	-9999.990	0.020	0.070	0.040	146.143.56	2.060	0.500	-9999.990	-9999.990
81.129	56.536	-9999.990	0.020	0.070	0.040	146.143.56	2.170	0.500	-9999.990	-9999.990
81.189	56.536	-9999.990	0.020	0.070	0.040	146.143.56	2.300	0.500	-9999.990	-9999.990
81.249	53.210	-9999.990	0.020	0.070	0.040	146.143.56	2.270	0.570	-9999.990	-9999.990
81.309	53.210	-9999.990	0.020	0.070	0.040	146.143.56	2.270	0.570	-9999.990	-9999.990
81.369	56.536	-9999.990	0.020	0.070	0.040	146.143.56	2.270	0.570	-9999.990	-9999.990
81.429	64.635	-9999.990	0.020	0.070	0.040	146.143.56	2.270	0.570	-9999.990	-9999.990
81.489	64.635	-9999.990	0.020	0.070	0.040	146.143.56	2.400	0.570	-9999.990	-9999.990
81.549	52.487	-9999.990	0.020	0.070	0.040	146.143.56	2.400	0.570	-9999.990	-9999.990
81.609	52.487	-9999.990	0.020	0.070	0.040	146.143.56	2.550	0.560	-9999.990	-9999.990
81.669	62.611	-9999.990	0.020	0.070	0.040	146.143.56	2.550	0.560	-9999.990	-9999.990
81.729	54.511	-9999.990	0.020	0.070	0.040	146.143.56	2.550	0.560	-9999.990	-9999.990
81.789	54.511	-9999.990	0.020	0.070	0.040	146.143.56	2.550	0.560	-9999.990	-9999.990
81.849	68.685	-9999.990	0.020	0.070	0.040	146.143.56	2.720	0.560	-9999.990	-9999.990
81.909	68.685	-9999.990	0.020	0.070	0.040	146.143.56	2.720	0.560	-9999.990	-9999.990
81.969	97.038	-9999.990	0.020	0.070	0.040	146.143.56	2.720	0.560	-9999.990	-9999.990
82.029	109.191	-9999.990	0.020	0.070	0.040	146.143.71	2.670	0.640	-9999.990	-9999.990
82.089	109.191	-9999.990	0.020	0.070	0.050	146.122.71	2.860	0.640	-9999.990	-9999.990
82.149	90.962	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.209	90.962	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.269	76.785	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.329	87.924	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.389	87.924	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.449	90.962	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.509	90.962	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.569	101.089	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.629	90.962	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.689	90.962	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.749	109.191	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.809	109.191	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.869	92.987	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.929	99.063	-9999.990	0.020	0.060	0.050	146.122.71	2.630	0.740	-9999.990	-9999.990
82.989	99.063	-9999.990	0.020	0.060	0.050	146.143.71	2.630	0.740	-9999.990	-9999.990
83.049	-9999.990	-9999.990	0.020	0.070	0.050	146.143.71	3.010	0.740	-9999.990	-9999.990
83.109	-9999.990	-9999.990	0.020	0.070	0.050	146.122.71	3.010	0.740	-9999.990	-9999.990
83.169	-9999.990	-9999.990	0.020	0.060	0.050	146.122.71	2.760	0.880	-9999.990	-9999.990
83.229	-9999.990	-9999.990	0.020	0.060	0.050	146.122.71	2.950	0.880	-9999.990	-9999.990
83.289	-9999.990	-9999.990	0.020	0.060	0.050	146.122.85	2.950	0.880	-9999.990	-9999.990
83.349	-9999.990	-9999.990	0.020	0.060	0.060	146.122.85	2.890	1.070	-9999.990	-9999.990
83.409	-9999.990	-9999.990	0.020	0.060	0.060	146.122.85	2.890	1.070	-9999.990	-9999.990

Notes:
R.G.B - Red/Green/Blue color values, each between 0 and 255, corresponding to GR_KRAT, GR_URAT and GR_THRAT, respectively
GR_KRAT, GR_URAT, GR_THRAT - Ratios of K, U, and Th to Total Gamma Ray, values used to create color cube values
-9999.99 - no data
1 - natural gamma was logged through steel casing and value was corrected to equate to values in PVC casing

Boring BK3
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
3.391	-9999.990	3.254	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.451	-9999.990	2.235	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.511	-9999.990	2.235	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.571	-9999.990	3.043	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.631	-9999.990	3.043	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.691	-9999.990	2.623	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.751	-9999.990	2.740	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.811	-9999.990	2.740	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.871	-9999.990	3.498	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.931	-9999.990	3.498	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.991	-9999.990	2.235	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.051	-9999.990	4.407	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.111	-9999.990	4.407	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.171	-9999.990	3.750	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.231	-9999.990	3.750	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.291	-9999.990	4.255	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.351	-9999.990	5.770	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.411	-9999.990	5.770	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.471	-9999.990	8.043	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.531	-9999.990	8.043	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.591	-9999.990	7.790	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.651	-9999.990	9.305	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.711	-9999.990	9.305	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.771	-9999.990	11.224	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.831	-9999.990	11.224	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.891	-9999.990	10.820	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.951	-9999.990	12.133	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.011	-9999.990	12.133	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.071	-9999.990	10.820	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.131	-9999.990	10.820	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.191	-9999.990	10.315	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.251	-9999.990	12.840	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.311	-9999.990	12.840	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.371	-9999.990	9.406	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.431	-9999.990	9.406	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.491	-9999.990	8.800	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.551	-9999.990	10.820	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.611	-9999.990	10.820	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.671	-9999.990	7.588	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.731	-9999.990	7.588	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.791	-9999.990	6.780	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.851	-9999.990	8.497	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	2.058	4.239
5.911	-9999.990	8.497	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.971	87.182	8.295	0.019	0.000	0.174	138.0.248	9.230	-9999.990	-9999.990	-9999.990
6.031	89.996	8.295	0.019	0.000	0.172	141.0.245	8.890	-9999.990	-9999.990	-9999.990
6.091	89.996	10.315	0.019	0.000	0.172	141.0.245	8.890	-9999.990	-9999.990	-9999.990
6.151	104.065	8.800	0.019	0.000	0.175	138.0.248	9.248	-9999.990	-9999.990	-9999.990
6.211	86.058	8.800	0.019	0.000	0.173	140.0.246	8.983	-9999.990	-9999.990	-9999.990
6.271	86.057	8.800	0.020	0.000	0.171	143.0.243	8.731	-9999.990	-9999.990	-9999.990
6.331	123.765	8.800	0.020	0.000	0.171	143.0.243	8.731	-9999.990	-9999.990	-9999.990
6.391	123.765	9.861	0.020	0.000	0.171	143.0.243	8.732	-9999.990	-9999.990	-9999.990
6.451	115.321	9.305	0.020	0.000	0.171	143.0.243	8.732	-9999.990	-9999.990	-9999.990
6.511	116.447	9.305	0.020	0.000	0.171	143.0.243	8.732	-9999.990	-9999.990	-9999.990
6.571	116.447	9.305	0.020	0.000	0.172	142.0.244	8.816	-9999.990	-9999.990	-9999.990
6.631	143.468	9.305	0.020	0.000	0.172	142.0.244	8.816	-9999.990	-9999.990	-9999.990
6.691	143.468	12.588	0.020	0.000	0.172	142.0.244	8.816	-9999.990	-9999.990	-9999.990
6.751	129.394	8.800	0.020	0.000	0.172	142.0.244	8.816	-9999.990	-9999.990	-9999.990
6.811	139.246	8.800	0.020	0.000	0.169	147.0.240	8.407	-9999.990	-9999.990	-9999.990
6.871	139.246	9.305	0.020	0.000	0.169	147.0.240	8.407	-9999.990	-9999.990	-9999.990
6.931	163.174	9.861	0.020	0.000	0.169	147.0.240	8.407	-9999.990	-9999.990	-9999.990
6.991	163.176	9.861	0.020	0.000	0.169	147.0.240	8.407	-9999.990	-9999.990	-9999.990
7.051	106.879	8.800	0.020	0.000	0.169	147.0.240	8.407	-9999.990	-9999.990	-9999.990
7.111	108.849	8.800	0.020	0.000	0.169	147.0.240	8.407	-9999.990	-9999.990	-9999.990
7.171	108.849	9.305	0.020	0.000	0.169	147.0.240	8.407	-9999.990	-9999.990	-9999.990
7.231	106.879	9.861	0.020	0.000	0.168	149.0.239	8.216	-9999.990	-9999.990	-9999.990
7.291	106.879	9.861	0.021	0.000	0.166	154.0.235	7.860	-9999.990	-9999.990	-9999.990
7.351	118.980	8.800	0.021	0.000	0.166	154.0.235	7.860	-9999.990	-9999.990	-9999.990
7.411	112.507	8.800	0.021	0.000	0.166	154.0.235	7.860	-9999.990	-9999.990	-9999.990
7.471	112.507	5.770	0.021	0.000	0.164	156.0.233	7.694	-9999.990	-9999.990	-9999.990
7.531	101.252	9.810	0.021	0.000	0.164	156.0.233	7.694	-9999.990	-9999.990	-9999.990

Boring BK3
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
7.591	101.251	9.810	0.021	0.000	0.166	153.0.236	7.926	-9999.990	-9999.990	-9999.990
7.651	106.316	6.679	0.021	0.000	0.166	153.0.236	7.926	-9999.990	-9999.990	-9999.990
7.711	81.555	6.679	0.021	0.000	0.165	155.0.234	7.758	-9999.990	-9999.990	-9999.990
7.771	81.555	7.285	0.021	0.000	0.165	155.0.234	7.758	-9999.990	-9999.990	-9999.990
7.831	116.446	8.497	0.022	0.000	0.164	157.0.232	7.595	-9999.990	-9999.990	-9999.990
7.891	116.447	8.497	0.022	0.000	0.163	159.0.231	7.439	-9999.990	-9999.990	-9999.990
7.951	89.996	5.770	0.022	0.000	0.163	159.0.231	7.439	-9999.990	-9999.990	-9999.990
8.011	84.369	5.770	0.022	0.000	0.163	159.0.231	7.439	-9999.990	-9999.990	-9999.990
8.071	84.369	6.679	0.022	0.000	0.163	159.0.231	7.439	-9999.990	-9999.990	-9999.990
8.131	73.397	5.265	0.022	0.000	0.163	159.0.231	7.439	-9999.990	-9999.990	-9999.990
8.191	73.397	5.265	0.022	0.000	0.163	159.0.231	7.439	-9999.990	-9999.990	-9999.990
8.251	98.435	5.265	0.022	0.000	0.163	159.0.231	7.439	-9999.990	-9999.990	-9999.990
8.311	47.800	5.265	0.021	0.000	0.164	156.0.233	7.660	-9999.990	-9999.990	-9999.990
8.371	47.800	6.225	0.021	0.000	0.164	156.0.233	7.660	-9999.990	-9999.990	-9999.990
8.431	98.717	4.760	0.022	0.000	0.162	161.0.230	7.344	-9999.990	-9999.990	-9999.990
8.491	98.718	4.760	0.022	0.000	0.162	161.0.230	7.344	-9999.990	-9999.990	-9999.990
8.551	64.678	3.952	0.022	0.000	0.162	161.0.230	7.344	-9999.990	-9999.990	-9999.990
8.611	67.489	3.952	0.022	0.000	0.162	161.0.230	7.344	-9999.990	-9999.990	-9999.990
8.671	67.489	6.780	0.022	0.000	0.162	161.0.230	7.344	-9999.990	-9999.990	-9999.990
8.731	39.364	4.760	0.022	0.000	0.162	161.0.230	7.344	-9999.990	-9999.990	-9999.990
8.791	39.363	4.760	0.022	0.000	0.161	163.0.228	7.196	-9999.990	-9999.990	-9999.990
8.851	80.991	3.952	0.023	0.000	0.160	165.0.226	7.054	-9999.990	-9999.990	-9999.990
8.911	81.555	3.952	0.023	0.000	0.160	165.0.226	7.054	-9999.990	-9999.990	-9999.990
8.971	81.555	6.780	0.023	0.000	0.158	167.0.225	6.916	-9999.990	-9999.990	-9999.990
9.031	56.238	4.255	0.023	0.000	0.158	167.0.225	6.916	-9999.990	-9999.990	-9999.990
9.091	56.238	4.255	0.023	0.000	0.158	167.0.225	6.916	-9999.990	-9999.990	-9999.990
9.151	63.270	4.255	0.023	0.000	0.156	171.0.222	6.660	-9999.990	-9999.990	-9999.990
9.211	61.863	4.255	0.023	0.000	0.156	171.0.222	6.660	-9999.990	-9999.990	-9999.990
9.271	61.863	5.316	0.023	0.000	0.159	166.0.226	7.014	-9999.990	-9999.990	-9999.990
9.331	43.019	3.750	0.023	0.000	0.158	168.0.224	6.879	-9999.990	-9999.990	-9999.990
9.391	43.019	3.750	0.023	0.000	0.157	170.0.223	6.750	-9999.990	-9999.990	-9999.990
9.451	81.555	3.498	0.023	0.000	0.157	170.0.223	6.750	-9999.990	-9999.990	-9999.990
9.511	50.614	3.498	0.023	0.000	0.157	170.0.223	6.750	-9999.990	-9999.990	-9999.990
9.571	50.613	5.265	0.024	0.000	0.155	174.0.220	6.507	-9999.990	-9999.990	-9999.990
9.631	68.333	2.589	0.024	0.000	0.155	174.0.220	6.507	-9999.990	-9999.990	-9999.990
9.691	68.333	2.589	0.024	0.000	0.155	174.0.220	6.507	-9999.990	-9999.990	-9999.990
9.751	56.238	2.740	0.024	0.000	0.155	174.0.220	6.507	-9999.990	-9999.990	-9999.990
9.811	65.801	2.740	0.024	0.000	0.155	174.0.220	6.507	-9999.990	-9999.990	-9999.990
9.871	65.801	3.952	0.024	0.000	0.154	175.0.218	6.392	-9999.990	-9999.990	-9999.990
9.931	59.051	3.245	0.024	0.000	0.154	175.0.218	6.392	-9999.990	-9999.990	-9999.990
9.991	59.051	3.245	0.024	0.000	0.154	175.0.218	6.392	-9999.990	-9999.990	-9999.990
10.051	70.302	3.952	0.024	0.000	0.154	175.0.219	6.434	-9999.990	-9999.990	-9999.990
10.111	70.865	3.952	0.024	0.000	0.154	175.0.219	6.434	-9999.990	-9999.990	-9999.990
10.171	70.865	3.245	0.024	0.000	0.153	177.0.217	6.321	-9999.990	-9999.990	-9999.990
10.231	47.801	2.740	0.024	0.000	0.152	179.0.216	6.211	-9999.990	-9999.990	-9999.990
10.291	47.800	2.740	0.024	0.000	0.153	176.0.218	6.361	-9999.990	-9999.990	-9999.990
10.351	65.801	3.498	0.024	0.000	0.152	178.0.216	6.251	-9999.990	-9999.990	-9999.990
10.411	56.238	3.498	0.024	0.000	0.152	178.0.216	6.251	-9999.990	-9999.990	-9999.990
10.471	56.238	2.235	0.024	0.000	0.152	178.0.216	6.251	-9999.990	-9999.990	-9999.990
10.531	47.801	1.680	0.024	0.000	0.152	178.0.216	6.251	-9999.990	-9999.990	-9999.990
10.591	47.800	1.680	0.024	0.000	0.154	175.0.218	6.402	-9999.990	-9999.990	-9999.990
10.651	37.957	3.750	0.024	0.000	0.155	173.0.220	6.563	-9999.990	-9999.990	-9999.990
10.711	42.176	3.750	0.024	0.000	0.154	175.0.219	6.445	-9999.990	-9999.990	-9999.990
10.771	42.176	1.730	0.024	0.000	0.155	174.0.219	6.488	-9999.990	-9999.990	-9999.990
10.831	59.050	1.225	0.024	0.000	0.155	174.0.219	6.488	-9999.990	-9999.990	-9999.990
10.891	59.051	1.225	0.024	0.000	0.155	174.0.219	6.488	-9999.990	-9999.990	-9999.990
10.951	53.426	3.750	0.023	0.000	0.156	171.0.222	6.655	-9999.990	-9999.990	-9999.990
11.011	50.613	3.750	0.024	0.000	0.156	172.0.221	6.621	-9999.990	0.847	0.963
11.071	50.613	2.235	0.023	0.000	0.160	165.0.227	7.073	-9999.990	-9999.990	-9999.990
11.131	36.551	1.225	0.023	0.000	0.158	167.0.225	6.908	-9999.990	-9999.990	-9999.990
11.191	36.551	1.225	0.023	0.000	0.158	167.0.225	6.908	-9999.990	-9999.990	-9999.990
11.251	47.800	4.255	0.023	0.000	0.157	170.0.222	6.724	-9999.990	-9999.990	-9999.990
11.311	63.270	4.255	0.024	0.000	0.156	172.0.221	6.599	-9999.990	-9999.990	-9999.990
11.371	63.270	2.740	0.024	0.000	0.154	175.0.219	6.439	-9999.990	-9999.990	-9999.990
11.431	36.551	2.589	0.024	0.000	0.153	177.0.217	6.284	-9999.990	-9999.990	-9999.990
11.491	36.551	2.589	0.024	0.000	0.155	173.0.220	6.555	-9999.990	-9999.990	-9999.990
11.551	63.269	5.265	0.023	0.000	0.156	171.0.222	6.677	-9999.990	-9999.990	-9999.990
11.611	53.426	5.265	0.023	0.000	0.156	171.0.222	6.677	-9999.990	-9999.990	-9999.990
11.671	53.425	3.952	0.023	0.000	0.156	171.0.222	6.677	-9999.990	-9999.990	-9999.990
11.731	53.425	5.265	0.023	0.000	0.158	168.0.224	6.853	-9999.990	-9999.990	-9999.990

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
11.791	53.425	5.265	0.023	0.000	0.156	171.0.222	6.678	-9999.990	-9999.990	-9999.990
11.851	40.489	7.134	0.023	0.000	0.156	171.0.222	6.678	-9999.990	-9999.990	-9999.990
11.911	67.488	7.134	0.023	0.000	0.158	168.0.224	6.853	-9999.990	-9999.990	-9999.990
11.971	67.489	7.285	0.023	0.000	0.158	168.0.224	6.853	-9999.990	-9999.990	-9999.990
12.031	45.550	8.952	0.023	0.000	0.158	168.0.224	6.853	-9999.990	-9999.990	-9999.990
12.091	47.800	8.952	0.024	0.000	0.155	173.0.220	6.511	-9999.990	-9999.990	-9999.990
12.151	47.800	8.800	0.023	0.000	0.158	168.0.224	6.848	-9999.990	-9999.990	-9999.990
12.211	50.613	8.800	0.022	0.000	0.162	161.0.230	7.328	-9999.990	-9999.990	-9999.990
12.271	50.613	9.406	0.022	0.000	0.163	159.0.231	7.484	-9999.990	-9999.990	-9999.990
12.331	35.426	12.335	0.022	0.000	0.162	160.0.231	7.426	-9999.990	-9999.990	-9999.990
12.391	50.613	12.335	0.022	0.000	0.164	157.0.232	7.583	-9999.990	-9999.990	-9999.990
12.451	50.613	11.325	0.022	0.000	0.164	157.0.232	7.583	-9999.990	-9999.990	-9999.990
12.511	45.550	11.325	0.021	0.000	0.165	155.0.234	7.748	-9999.990	-9999.990	-9999.990
12.571	45.550	11.679	0.021	0.000	0.167	152.0.236	7.986	-9999.990	-9999.990	-9999.990
12.631	42.176	15.365	0.021	0.000	0.167	152.0.236	7.986	-9999.990	-9999.990	-9999.990
12.691	33.739	15.365	0.021	0.000	0.167	152.0.236	7.986	-9999.990	-9999.990	-9999.990
12.751	33.739	13.042	0.021	0.000	0.166	153.0.236	7.918	-9999.990	-9999.990	-9999.990
12.811	55.675	13.042	0.021	0.000	0.168	150.0.238	8.168	-9999.990	-9999.990	-9999.990
12.871	55.675	13.850	0.021	0.000	0.167	151.0.237	8.032	-9999.990	-9999.990	-9999.990
12.931	64.676	15.315	0.022	0.000	0.164	158.0.232	7.566	-9999.990	-9999.990	-9999.990
12.991	39.363	15.315	0.022	0.000	0.162	160.0.230	7.362	-9999.990	-9999.990	-9999.990
13.051	39.363	14.355	0.022	0.000	0.162	160.0.230	7.362	-9999.990	-9999.990	-9999.990
13.111	50.613	14.355	0.022	0.000	0.160	164.0.227	7.114	-9999.990	-9999.990	-9999.990
13.171	50.613	15.315	0.022	0.000	0.161	163.0.228	7.202	-9999.990	-9999.990	-9999.990
13.231	56.238	13.850	0.022	0.000	0.162	160.0.230	7.413	-9999.990	-9999.990	-9999.990
13.291	25.305	13.850	0.023	0.000	0.159	165.0.226	7.017	-9999.990	-9999.990	-9999.990
13.351	25.303	12.840	0.022	0.000	0.162	161.0.230	7.350	-9999.990	-9999.990	-9999.990
13.411	44.988	12.840	0.022	0.000	0.162	161.0.230	7.350	-9999.990	-9999.990	-9999.990
13.471	44.988	14.406	0.022	0.000	0.162	161.0.230	7.350	-9999.990	-9999.990	-9999.990
13.531	40.488	12.335	0.022	0.000	0.163	158.0.232	7.526	-9999.990	-9999.990	-9999.990
13.591	33.739	12.335	0.022	0.000	0.160	164.0.227	7.122	-9999.990	-9999.990	-9999.990
13.651	33.739	12.335	0.023	0.000	0.157	170.0.222	6.711	-9999.990	-9999.990	-9999.990
13.711	27.834	12.335	0.024	0.000	0.155	172.0.221	6.571	-9999.990	-9999.990	-9999.990
13.771	27.834	12.335	0.024	0.000	0.155	172.0.221	6.571	-9999.990	-9999.990	-9999.990
13.831	50.612	13.951	0.024	0.000	0.155	173.0.220	6.522	-9999.990	-9999.990	-9999.990
13.891	56.238	13.951	0.023	0.000	0.156	171.0.222	6.659	-9999.990	-9999.990	-9999.990
13.951	56.238	12.335	0.023	0.000	0.158	168.0.224	6.853	-9999.990	-9999.990	-9999.990
14.011	35.426	14.406	0.023	0.000	0.158	168.0.224	6.856	-9999.990	-9999.990	-9999.990
14.071	35.426	14.406	0.024	0.000	0.156	172.0.221	6.598	-9999.990	-9999.990	-9999.990
14.131	47.800	12.840	0.024	0.000	0.154	175.0.219	6.447	-9999.990	-9999.990	-9999.990
14.191	43.019	12.840	0.024	0.000	0.154	175.0.219	6.447	-9999.990	-9999.990	-9999.990
14.251	43.019	13.042	0.023	0.000	0.157	170.0.222	6.704	-9999.990	-9999.990	-9999.990
14.311	59.049	15.365	0.023	0.000	0.158	168.0.224	6.851	-9999.990	1.267	2.193
14.371	59.051	15.365	0.023	0.000	0.158	168.0.224	6.852	-9999.990	-9999.990	-9999.990
14.431	55.675	13.042	0.023	0.000	0.157	170.0.222	6.705	-9999.990	-9999.990	-9999.990
14.491	53.425	13.042	0.023	0.000	0.158	168.0.224	6.855	-9999.990	-9999.990	-9999.990
14.551	53.425	12.840	0.024	0.000	0.156	172.0.221	6.598	-9999.990	-9999.990	-9999.990
14.611	59.050	14.406	0.024	0.000	0.153	177.0.217	6.326	-9999.990	-9999.990	-9999.990
14.671	59.051	14.406	0.025	0.000	0.148	186.0.210	5.817	-9999.990	-9999.990	-9999.990
14.731	43.019	13.345	0.026	0.004	0.138	190.7.196	5.301	38.700	-9999.990	-9999.990
14.791	50.613	13.345	0.028	0.000	0.139	203.0.197	4.980	-9999.990	-9999.990	-9999.990
14.851	50.613	13.497	0.028	0.000	0.139	203.0.197	4.980	-9999.990	-9999.990	-9999.990
14.911	44.988	11.325	0.028	0.000	0.139	203.0.197	4.980	-9999.990	-9999.990	-9999.990
14.971	44.988	11.325	0.028	0.000	0.139	203.0.197	4.980	-9999.990	-9999.990	-9999.990
15.031	60.738	10.315	0.028	0.000	0.139	203.0.197	4.980	-9999.990	-9999.990	-9999.990
15.091	64.676	10.315	0.028	0.000	0.139	203.0.197	4.980	-9999.990	-9999.990	-9999.990
15.151	64.676	11.830	0.028	0.000	0.139	203.0.197	4.979	-9999.990	-9999.990	-9999.990
15.211	68.333	10.315	0.023	0.023	0.112	168.47.158	4.833	4.858	-9999.990	-9999.990
15.271	68.333	10.315	0.024	0.023	0.111	171.46.157	4.703	4.866	-9999.990	-9999.990
15.331	47.800	9.406	0.023	0.023	0.112	168.47.158	4.835	4.855	-9999.990	-9999.990
15.391	61.863	9.406	0.022	0.024	0.114	162.48.161	5.118	4.838	-9999.990	-9999.990
15.451	61.863	11.830	0.023	0.023	0.113	165.47.160	4.971	4.846	-9999.990	-9999.990
15.511	44.988	9.305	0.023	0.023	0.113	165.47.160	4.971	4.846	-9999.990	-9999.990
15.571	44.988	9.305	0.023	0.023	0.113	165.47.160	4.971	4.846	-9999.990	-9999.990
15.631	53.144	8.952	0.022	0.024	0.114	162.48.161	5.117	4.838	-9999.990	-9999.990
15.691	50.613	8.952	0.022	0.024	0.114	162.48.161	5.117	4.838	-9999.990	-9999.990
15.751	50.613	11.325	0.022	0.024	0.114	162.48.161	5.117	4.838	-9999.990	-9999.990
15.811	56.238	9.305	0.021	0.028	0.110	155.56.155	5.169	3.946	-9999.990	-9999.990
15.871	56.238	9.305	0.021	0.028	0.111	151.57.157	5.328	3.941	-9999.990	-9999.990
15.931	48.082	9.406	0.019	0.032	0.108	141.66.153	5.557	3.321	-9999.990	-9999.990

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
15.991	36.552	9.406	0.019	0.032	0.108	141.66.153	5.557	3.321	-9999.990	-9999.990
16.051	36.551	11.830	0.019	0.032	0.108	141.66.153	5.557	3.321	-9999.990	-9999.990
16.111	60.738	8.952	0.015	0.058	0.073	110.119.104	4.883	1.263	-9999.990	-9999.990
16.171	60.738	8.952	0.015	0.058	0.073	113.118.103	4.700	1.263	-9999.990	-9999.990
16.231	61.863	9.810	0.017	0.054	0.075	122.111.106	4.481	1.379	-9999.990	-9999.990
16.291	70.302	9.810	0.016	0.055	0.075	118.112.107	4.646	1.378	-9999.990	-9999.990
16.351	70.302	10.315	0.015	0.058	0.073	109.119.104	4.888	1.261	-9999.990	-9999.990
16.411	55.675	9.305	0.015	0.058	0.073	109.119.104	4.888	1.261	-9999.990	-9999.990
16.471	55.675	9.305	0.015	0.058	0.073	109.119.104	4.888	1.261	-9999.990	-9999.990
16.531	59.050	9.810	0.012	0.080	0.043	85.164.61	3.688	0.538	-9999.990	-9999.990
16.591	88.587	9.810	0.012	0.080	0.043	85.164.61	3.688	0.538	-9999.990	-9999.990
16.651	88.589	10.315	0.012	0.080	0.043	85.164.61	3.688	0.538	-9999.990	-9999.990
16.711	61.863	8.800	0.012	0.080	0.043	85.163.61	3.687	0.539	-9999.990	-9999.990
16.771	61.863	8.800	0.010	0.085	0.041	70.174.57	4.209	0.478	-9999.990	-9999.990
16.831	56.238	10.770	0.010	0.085	0.041	70.174.57	4.209	0.478	-9999.990	-9999.990
16.891	55.675	10.770	0.009	0.087	0.041	64.177.58	4.716	0.478	-9999.990	-9999.990
16.951	55.675	8.800	0.009	0.087	0.041	64.177.58	4.716	0.478	-9999.990	-9999.990
17.011	44.988	8.952	0.009	0.087	0.041	64.177.58	4.716	0.478	-9999.990	-9999.990
17.071	44.988	8.952	0.009	0.087	0.041	64.177.58	4.716	0.478	-9999.990	-9999.990
17.131	68.333	11.325	0.009	0.087	0.041	64.177.58	4.716	0.478	-9999.990	-9999.990
17.191	47.801	11.325	0.009	0.086	0.041	67.176.58	4.446	0.478	-9999.990	-9999.990
17.251	47.800	8.952	0.009	0.086	0.041	67.176.58	4.446	0.478	-9999.990	-9999.990
17.311	64.675	9.810	0.009	0.086	0.041	67.176.58	4.446	0.478	-9999.990	-9999.990
17.371	64.676	9.810	0.009	0.087	0.041	64.177.58	4.714	0.478	-9999.990	-9999.990
17.431	58.207	11.224	0.008	0.088	0.042	57.180.59	5.358	0.478	-9999.990	-9999.990
17.491	64.676	11.224	0.008	0.088	0.042	57.180.59	5.358	0.478	-9999.990	-9999.990
17.551	64.676	9.810	0.008	0.087	0.042	61.179.59	5.000	0.478	-9999.990	-9999.990
17.611	64.676	9.810	0.008	0.087	0.042	61.179.59	5.000	0.478	-9999.990	-9999.990
17.671	64.676	9.810	0.008	0.087	0.042	60.179.59	5.008	0.477	-9999.990	-9999.990
17.731	63.270	11.679	0.006	0.092	0.039	47.189.56	6.095	0.427	-9999.990	-9999.990
17.791	50.613	11.679	0.006	0.093	0.040	44.190.56	6.610	0.427	-9999.990	-9999.990
17.851	50.613	10.315	0.007	0.092	0.039	50.187.55	5.639	0.428	-9999.990	-9999.990
17.911	61.863	9.810	0.006	0.092	0.039	47.189.56	6.085	0.427	-9999.990	-9999.990
17.971	61.863	9.810	0.006	0.092	0.039	47.189.56	6.085	0.427	-9999.990	-9999.990
18.031	64.676	11.679	0.006	0.093	0.040	44.190.56	6.603	0.427	-9999.990	-9999.990
18.091	68.333	11.679	0.006	0.093	0.040	44.190.56	6.603	0.427	-9999.990	-9999.990
18.151	68.333	10.820	0.006	0.093	0.040	44.190.56	6.603	0.427	-9999.990	-9999.990
18.211	81.554	10.820	0.006	0.092	0.039	47.189.56	6.082	0.427	-9999.990	-9999.990
18.271	81.555	10.820	0.006	0.094	0.038	44.192.54	6.260	0.406	-9999.990	-9999.990
18.331	65.802	13.042	0.007	0.093	0.038	47.190.53	5.784	0.407	-9999.990	-9999.990
18.391	67.489	13.042	0.007	0.091	0.039	54.185.55	5.242	0.428	-9999.990	-9999.990
18.451	67.489	11.830	0.007	0.093	0.038	47.190.53	5.777	0.407	-9999.990	-9999.990
18.511	60.738	13.497	0.006	0.095	0.038	41.193.54	6.820	0.407	-9999.990	-9999.990
18.571	60.738	13.497	0.006	0.094	0.038	44.192.54	6.282	0.407	-9999.990	-9999.990
18.631	53.425	12.335	0.006	0.094	0.038	44.192.54	6.282	0.407	-9999.990	-9999.990
18.691	87.181	12.335	0.006	0.095	0.037	41.194.52	6.475	0.388	-9999.990	-9999.990
18.751	87.182	12.133	0.006	0.095	0.037	41.194.52	6.475	0.388	-9999.990	-9999.990
18.811	70.865	14.355	0.005	0.097	0.036	35.199.51	7.341	0.369	-9999.990	-9999.990
18.871	64.677	14.355	0.005	0.097	0.036	35.199.51	7.341	0.369	-9999.990	-9999.990
18.931	64.676	12.588	0.004	0.100	0.035	26.204.50	9.566	0.353	-9999.990	-9999.990
18.991	60.738	12.588	0.003	0.101	0.036	23.206.50	10.987	0.353	-9999.990	-9999.990
19.051	60.738	13.850	0.003	0.101	0.036	23.206.50	11.007	0.353	-9999.990	-9999.990
19.111	67.489	14.860	0.003	0.101	0.036	23.206.50	11.007	0.353	-9999.990	-9999.990
19.171	70.865	14.860	0.004	0.100	0.035	26.204.50	9.601	0.353	-9999.990	-9999.990
19.231	70.865	14.355	0.003	0.102	0.036	20.207.50	12.907	0.353	-9999.990	-9999.990
19.291	50.613	14.355	0.003	0.102	0.036	20.207.50	12.907	0.353	-9999.990	-9999.990
19.351	50.613	16.678	0.004	0.098	0.038	31.199.53	8.753	0.387	-9999.990	-9999.990
19.411	56.238	16.375	0.004	0.098	0.038	31.199.53	8.756	0.387	-9999.990	-9999.990
19.471	63.270	16.375	0.004	0.098	0.038	31.199.53	8.756	0.387	-9999.990	-9999.990
19.531	63.270	17.890	0.004	0.098	0.038	31.199.53	8.758	0.387	-9999.990	-9999.990
19.591	53.426	17.890	0.004	0.099	0.036	29.202.51	9.171	0.369	-9999.990	-9999.990
19.651	53.425	20.314	0.004	0.098	0.036	32.200.51	8.168	0.369	-9999.990	-9999.990
19.711	50.613	19.910	0.004	0.100	0.037	25.203.52	10.408	0.369	-9999.990	-9999.990
19.771	58.206	19.910	0.004	0.100	0.037	25.203.52	10.408	0.369	-9999.990	-9999.990
19.831	58.207	20.769	0.004	0.099	0.036	29.202.51	9.124	0.369	-9999.990	-9999.990
19.891	53.425	20.769	0.004	0.099	0.036	29.202.51	9.124	0.369	-9999.990	-9999.990
19.951	53.425	23.950	0.003	0.102	0.036	20.207.50	12.828	0.352	-9999.990	-9999.990
20.011	64.676	22.940	0.002	0.103	0.035	15.211.49	16.972	0.337	-9999.990	-9999.990
20.071	70.302	22.940	0.005	0.085	0.060	35.174.85	12.400	0.706	-9999.990	-9999.990
20.131	70.302	23.496	0.009	0.062	0.090	64.127.128	10.161	1.454	-9999.990	-9999.990

Boring BK3
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
20.191	68.333	23.496	0.009	0.062	0.090	64.127.128	10.160	1.454	-9999.990	-9999.990
20.251	68.333	25.970	0.009	0.062	0.090	64.127.128	10.160	1.454	-9999.990	-9999.990
20.311	42.176	23.950	0.009	0.062	0.090	65.127.128	10.153	1.454	-9999.990	-9999.990
20.371	58.206	23.950	0.009	0.062	0.090	65.127.128	10.150	1.454	-9999.990	-9999.990
20.431	58.207	23.496	0.011	0.058	0.091	78.118.129	8.453	1.569	-9999.990	-9999.990
20.491	84.369	23.496	0.010	0.059	0.092	75.119.130	8.888	1.568	-9999.990	-9999.990
20.551	84.369	25.970	0.011	0.058	0.091	78.118.129	8.459	1.569	-9999.990	-9999.990
20.611	67.490	23.496	0.011	0.058	0.091	78.118.129	8.459	1.569	-9999.990	-9999.990
20.671	73.396	23.496	0.013	0.054	0.092	92.110.130	7.257	1.701	-9999.990	-9999.990
20.731	73.397	23.950	0.013	0.054	0.092	92.110.130	7.252	1.702	-9999.990	-9999.990
20.791	61.864	24.859	0.012	0.054	0.092	89.111.131	7.572	1.701	-9999.990	-9999.990
20.851	61.863	24.859	0.013	0.052	0.096	93.105.135	7.448	1.856	-9999.990	-9999.990
20.911	65.801	21.930	0.013	0.052	0.096	93.105.135	7.448	1.856	-9999.990	-9999.990
20.971	70.302	21.930	0.013	0.052	0.096	93.105.135	7.448	1.856	-9999.990	-9999.990
21.031	70.302	23.950	0.013	0.052	0.096	93.105.135	7.448	1.856	-9999.990	-9999.990
21.091	63.270	23.445	0.013	0.051	0.096	94.105.136	7.439	1.860	-9999.990	-9999.990
21.151	63.270	23.445	0.014	0.051	0.094	100.103.133	6.850	1.862	-9999.990	-9999.990
21.211	67.489	23.950	0.011	0.070	0.066	81.142.94	5.914	0.951	-9999.990	-9999.990
21.271	56.238	23.950	0.011	0.070	0.066	81.142.94	5.914	0.951	-9999.990	-9999.990
21.331	56.238	26.980	0.011	0.070	0.066	81.142.94	5.914	0.951	-9999.990	-9999.990
21.391	86.056	25.314	0.010	0.072	0.064	74.148.91	6.322	0.891	-9999.990	-9999.990
21.451	86.057	25.314	0.010	0.072	0.064	74.148.91	6.322	0.891	-9999.990	-9999.990
21.511	64.677	26.475	0.009	0.077	0.061	64.157.86	6.934	0.792	-9999.990	-9999.990
21.571	55.676	26.475	0.010	0.074	0.062	70.152.88	6.446	0.839	-9999.990	-9999.990
21.631	55.675	29.404	0.010	0.074	0.062	73.151.88	6.126	0.839	-9999.990	-9999.990
21.691	61.863	28.495	0.010	0.076	0.060	70.155.85	6.238	0.792	-9999.990	-9999.990
21.751	61.863	28.495	0.010	0.076	0.060	70.155.85	6.238	0.792	-9999.990	-9999.990
21.811	70.302	32.131	0.010	0.076	0.060	70.155.85	6.238	0.792	1.385	1.034
21.871	63.270	32.131	0.010	0.074	0.062	73.151.87	6.129	0.838	-9999.990	-9999.990
21.931	63.270	32.535	0.010	0.074	0.062	70.152.88	6.447	0.837	-9999.990	-9999.990
21.991	70.302	32.586	0.010	0.074	0.062	70.152.88	6.447	0.837	-9999.990	-9999.990
22.051	70.302	32.586	0.011	0.072	0.064	77.147.90	6.020	0.890	-9999.990	-9999.990
22.111	73.115	36.070	0.011	0.072	0.064	77.147.90	6.020	0.890	-9999.990	-9999.990
22.171	86.057	36.070	0.011	0.072	0.064	77.147.90	6.020	0.890	-9999.990	-9999.990
22.231	86.057	34.050	0.012	0.069	0.065	84.141.93	5.661	0.945	-9999.990	-9999.990
22.291	81.555	33.495	0.013	0.066	0.067	91.135.95	5.337	1.011	-9999.990	-9999.990
22.351	81.555	33.495	0.012	0.069	0.065	87.140.92	5.417	0.945	-9999.990	-9999.990
22.411	92.809	35.060	0.012	0.068	0.064	90.139.91	5.191	0.946	-9999.990	-9999.990
22.471	89.996	35.060	0.012	0.068	0.064	90.139.91	5.191	0.946	-9999.990	-9999.990
22.531	89.996	32.535	0.013	0.067	0.064	93.138.90	4.983	0.946	-9999.990	-9999.990
22.591	53.145	30.768	0.012	0.068	0.064	90.139.91	5.190	0.946	-9999.990	-9999.990
22.651	53.144	30.768	0.012	0.068	0.064	90.139.91	5.190	0.946	-9999.990	-9999.990
22.711	75.928	31.020	0.013	0.066	0.067	95.134.94	5.116	1.012	-9999.990	-9999.990
22.771	68.334	31.020	0.013	0.065	0.066	98.133.93	4.918	1.012	-9999.990	-9999.990
22.831	68.333	25.768	0.013	0.065	0.066	98.133.93	4.918	1.012	-9999.990	-9999.990
22.891	78.741	24.455	0.018	0.039	0.098	134.80.139	5.347	2.488	-9999.990	-9999.990
22.951	78.742	24.455	0.018	0.039	0.098	134.80.139	5.347	2.488	-9999.990	-9999.990
23.011	86.056	25.465	0.019	0.039	0.097	136.79.138	5.187	2.490	-9999.990	-9999.990
23.071	70.303	25.465	0.019	0.039	0.097	137.79.138	5.182	2.498	-9999.990	-9999.990
23.131	70.302	21.678	0.020	0.038	0.096	142.78.135	4.894	2.502	-9999.990	-9999.990
23.191	75.928	24.405	0.020	0.037	0.094	148.76.133	4.632	2.507	1.505	0.816
23.251	75.929	24.405	0.020	0.037	0.094	148.76.133	4.632	2.507	-9999.990	-9999.990
23.311	75.929	22.940	0.020	0.037	0.094	148.76.133	4.632	2.507	-9999.990	-9999.990
23.371	70.302	22.940	0.026	0.008	0.129	189.17.184	4.990	15.486	-9999.990	-9999.990
23.431	70.302	22.940	0.026	0.008	0.130	189.17.184	4.992	15.484	-9999.990	-9999.990
23.491	78.460	24.405	0.027	0.004	0.133	200.7.189	4.843	37.003	-9999.990	-9999.990
23.551	78.460	24.405	0.028	0.003	0.131	205.7.185	4.639	37.775	-9999.990	-9999.990
23.611	75.929	24.455	0.028	0.003	0.129	208.6.183	4.543	38.173	-9999.990	-9999.990
23.671	88.589	24.455	0.028	0.003	0.129	208.6.183	4.545	38.165	-9999.990	-9999.990
23.731	88.589	25.314	0.028	0.003	0.131	205.7.185	4.640	37.770	-9999.990	-9999.990
23.791	70.303	28.495	0.028	0.004	0.132	203.7.187	4.739	37.383	-9999.990	-9999.990
23.851	70.302	28.495	0.028	0.003	0.131	205.7.185	4.641	37.768	-9999.990	-9999.990
23.911	101.250	25.768	0.028	0.003	0.131	205.7.185	4.641	37.768	-9999.990	-9999.990
23.971	43.021	25.768	0.028	0.003	0.131	205.7.185	4.641	37.768	-9999.990	-9999.990
24.031	43.019	26.475	0.028	0.003	0.129	208.6.183	4.545	38.163	-9999.990	-9999.990
24.091	92.808	26.677	0.029	0.003	0.128	210.6.182	4.456	37.632	-9999.990	-9999.990
24.151	92.809	26.677	0.028	0.003	0.129	207.7.183	4.548	37.246	-9999.990	-9999.990
24.211	50.614	24.960	0.029	0.003	0.127	212.6.180	4.369	38.022	-9999.990	-9999.990
24.271	64.676	24.960	0.027	0.008	0.126	197.16.179	4.674	15.621	-9999.990	-9999.990
24.331	64.676	25.768	0.025	0.025	0.099	184.51.140	3.912	3.946	-9999.990	-9999.990

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
24.391	44.988	23.445	0.026	0.025	0.098	187.50.139	3.826	3.952	-9999.990	-9999.990
24.451	44.988	23.445	0.024	0.029	0.096	177.58.135	3.939	3.332	-9999.990	-9999.990
24.511	61.863	22.940	0.024	0.029	0.096	174.59.137	4.031	3.328	-9999.990	-9999.990
24.571	50.613	22.940	0.024	0.029	0.096	174.59.137	4.031	3.328	-9999.990	-9999.990
24.631	50.613	23.950	0.023	0.032	0.092	170.65.131	3.967	2.876	-9999.990	-9999.990
24.691	67.489	22.435	0.023	0.032	0.093	167.66.132	4.060	2.873	-9999.990	-9999.990
24.751	67.489	22.435	0.023	0.032	0.093	167.66.132	4.060	2.873	-9999.990	-9999.990
24.811	75.929	21.930	0.023	0.033	0.094	165.67.133	4.156	2.870	-9999.990	-9999.990
24.871	78.460	21.930	0.021	0.037	0.092	153.75.131	4.400	2.518	-9999.990	-9999.990
24.931	78.460	23.950	0.020	0.040	0.090	145.82.128	4.553	2.246	-9999.990	-9999.990
24.991	47.800	21.930	0.020	0.040	0.090	145.82.128	4.553	2.246	-9999.990	-9999.990
25.051	47.800	21.930	0.020	0.040	0.090	147.81.127	4.437	2.248	-9999.990	-9999.990
25.111	80.991	21.223	0.020	0.040	0.090	147.81.127	4.437	2.248	-9999.990	-9999.990
25.171	50.613	21.223	0.020	0.040	0.090	147.81.127	4.437	2.248	-9999.990	-9999.990
25.231	50.613	23.950	0.018	0.046	0.086	131.94.121	4.760	1.851	-9999.990	-9999.990
25.291	53.425	21.223	0.018	0.046	0.086	131.94.121	4.760	1.851	-9999.990	-9999.990
25.351	53.425	21.223	0.018	0.046	0.085	134.93.120	4.632	1.852	-9999.990	-9999.990
25.411	58.207	21.425	0.020	0.042	0.086	144.86.122	4.357	2.040	-9999.990	-9999.990
25.471	89.995	21.425	0.020	0.042	0.086	144.86.122	4.357	2.040	-9999.990	-9999.990
25.531	89.996	21.678	0.020	0.042	0.086	144.86.122	4.357	2.040	-9999.990	-9999.990
25.591	68.334	19.405	0.020	0.042	0.086	144.86.122	4.358	2.040	-9999.990	-9999.990
25.651	56.238	19.405	0.020	0.042	0.086	144.86.122	4.358	2.040	-9999.990	-9999.990
25.711	56.238	20.314	0.018	0.048	0.082	129.99.117	4.672	1.702	-9999.990	-9999.990
25.771	63.269	20.314	0.017	0.051	0.081	121.105.114	4.846	1.572	-9999.990	-9999.990
25.831	63.270	18.395	0.017	0.051	0.081	121.105.114	4.846	1.572	-9999.990	-9999.990
25.891	39.363	17.587	0.017	0.049	0.083	126.99.118	4.800	1.703	-9999.990	-9999.990
25.951	67.488	17.587	0.018	0.048	0.082	129.99.117	4.669	1.704	-9999.990	-9999.990
26.011	67.489	19.405	0.017	0.051	0.080	124.104.113	4.710	1.575	-9999.990	-9999.990
26.071	73.396	19.405	0.017	0.051	0.080	126.103.113	4.584	1.576	-9999.990	-9999.990
26.131	73.397	16.678	0.017	0.051	0.080	126.103.113	4.584	1.576	-9999.990	-9999.990
26.191	44.989	16.880	0.021	0.030	0.107	152.61.151	5.113	3.548	-9999.990	-9999.990
26.251	58.206	16.880	0.021	0.030	0.107	152.61.151	5.113	3.548	-9999.990	-9999.990
26.311	58.207	18.395	0.019	0.034	0.105	142.68.149	5.410	3.125	-9999.990	-9999.990
26.371	59.051	18.395	0.019	0.034	0.105	142.68.149	5.410	3.125	-9999.990	-9999.990
26.431	59.051	15.769	0.018	0.037	0.103	134.75.146	5.598	2.793	-9999.990	-9999.990
26.491	70.302	16.375	0.019	0.034	0.106	139.69.150	5.547	3.125	-9999.990	-9999.990
26.551	43.021	16.375	0.020	0.033	0.104	144.68.148	5.279	3.131	-9999.990	-9999.990
26.611	43.019	17.587	0.020	0.033	0.104	144.68.148	5.278	3.131	-9999.990	-9999.990
26.671	44.988	17.587	0.020	0.033	0.104	144.68.148	5.278	3.131	-9999.990	-9999.990
26.731	44.988	15.870	0.020	0.033	0.104	147.67.147	5.151	3.134	-9999.990	-9999.990
26.791	87.180	17.133	0.021	0.030	0.107	152.61.151	5.110	3.553	1.453	0.747
26.851	67.489	17.133	0.022	0.026	0.108	163.53.153	4.843	4.110	-9999.990	-9999.990
26.911	67.489	15.365	0.022	0.026	0.108	163.53.153	4.843	4.110	-9999.990	-9999.990
26.971	55.676	15.365	0.020	0.033	0.103	149.67.146	5.033	3.127	-9999.990	-9999.990
27.031	55.675	15.870	0.020	0.033	0.103	149.67.146	5.033	3.127	-9999.990	-9999.990
27.091	70.301	17.133	0.020	0.033	0.103	149.67.146	5.033	3.127	-9999.990	-9999.990
27.151	58.207	17.133	0.019	0.039	0.098	136.79.139	5.236	2.530	-9999.990	-9999.990
27.211	58.207	15.365	0.019	0.038	0.097	139.78.138	5.114	2.532	-9999.990	-9999.990
27.271	56.238	15.365	0.019	0.038	0.097	139.78.138	5.114	2.532	-9999.990	-9999.990
27.331	56.238	15.870	0.019	0.038	0.097	138.78.138	5.118	2.532	-9999.990	-9999.990
27.391	53.144	17.587	0.018	0.041	0.095	131.84.135	5.287	2.306	-9999.990	-9999.990
27.451	89.994	17.587	0.018	0.041	0.095	131.84.135	5.287	2.306	-9999.990	-9999.990
27.511	89.996	15.870	0.018	0.041	0.095	134.83.134	5.160	2.308	-9999.990	-9999.990
27.571	60.738	16.224	0.019	0.040	0.093	138.82.132	4.932	2.311	-9999.990	-9999.990
27.631	60.738	16.224	0.018	0.041	0.095	133.84.134	5.173	2.308	-9999.990	-9999.990
27.691	70.302	18.496	0.018	0.041	0.095	133.84.134	5.173	2.308	-9999.990	-9999.990
27.751	59.051	18.496	0.018	0.041	0.095	133.84.134	5.173	2.308	-9999.990	-9999.990
27.811	59.051	17.385	0.018	0.041	0.095	134.83.134	5.168	2.313	-9999.990	-9999.990
27.871	78.460	19.860	0.020	0.035	0.099	148.71.140	4.851	2.826	-9999.990	-9999.990
27.931	78.460	19.860	0.021	0.034	0.097	153.70.138	4.645	2.831	-9999.990	-9999.990
27.991	87.182	19.405	0.020	0.035	0.099	148.71.140	4.853	2.826	-9999.990	-9999.990
28.051	50.615	19.405	0.020	0.038	0.096	143.77.136	4.890	2.554	-9999.990	-9999.990
28.111	50.613	19.860	0.020	0.037	0.095	146.76.135	4.782	2.556	-9999.990	-9999.990
28.171	50.613	23.445	0.019	0.040	0.094	138.82.133	4.928	2.327	-9999.990	-9999.990
28.231	50.613	23.445	0.019	0.040	0.094	138.82.133	4.928	2.327	-9999.990	-9999.990
28.291	73.114	21.223	0.019	0.041	0.094	136.82.134	5.043	2.326	-9999.990	-9999.990
28.351	55.675	21.223	0.019	0.040	0.094	138.82.133	4.930	2.332	-9999.990	-9999.990
28.411	55.675	22.435	0.019	0.040	0.094	136.82.134	5.045	2.330	-9999.990	-9999.990
28.471	75.927	24.405	0.019	0.040	0.094	136.82.134	5.045	2.330	-9999.990	-9999.990
28.531	75.929	24.405	0.019	0.040	0.094	136.82.134	5.045	2.330	-9999.990	-9999.990

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
28.591	65.802	22.940	0.020	0.038	0.096	143.76.136	4.892	2.560	-9999.990	-9999.990
28.651	56.238	22.940	0.020	0.037	0.096	146.76.135	4.785	2.562	-9999.990	-9999.990
28.711	56.238	25.314	0.022	0.021	0.120	160.42.170	5.454	5.726	-9999.990	-9999.990
28.771	64.676	24.455	0.022	0.021	0.120	160.42.170	5.454	5.726	-9999.990	-9999.990
28.831	64.676	24.455	0.023	0.018	0.122	168.36.174	5.306	6.955	-9999.990	-9999.990
28.891	68.333	26.980	0.023	0.018	0.122	168.36.174	5.305	6.965	-9999.990	-9999.990
28.951	47.801	26.980	0.023	0.017	0.122	171.35.172	5.199	6.976	-9999.990	-9999.990
29.011	47.800	29.859	0.024	0.014	0.124	179.28.176	5.066	8.891	-9999.990	-9999.990
29.071	50.613	30.010	0.024	0.014	0.124	179.28.176	5.066	8.891	-9999.990	-9999.990
29.131	50.613	30.010	0.023	0.018	0.122	168.36.174	5.304	6.965	-9999.990	-9999.990
29.191	70.302	31.222	0.024	0.017	0.121	173.35.171	5.097	6.988	-9999.990	-9999.990
29.251	35.426	31.222	0.024	0.017	0.121	173.35.171	5.097	6.988	-9999.990	-9999.990
29.311	35.426	36.070	0.024	0.017	0.121	173.35.171	5.095	6.988	-9999.990	-9999.990
29.371	59.051	35.565	0.024	0.017	0.121	173.35.171	5.095	6.988	-9999.990	-9999.990
29.431	59.051	35.565	0.024	0.017	0.121	173.35.171	5.095	6.988	-9999.990	-9999.990
29.491	86.055	37.585	0.026	0.000	0.144	193.0.204	5.437	-9999.990	-9999.990	-9999.990
29.551	44.990	37.585	0.025	0.000	0.149	183.0.212	5.946	-9999.990	-9999.990	-9999.990
29.611	44.988	41.625	0.025	0.000	0.150	182.0.213	6.047	-9999.990	-9999.990	-9999.990
29.671	98.434	40.312	0.025	0.000	0.149	184.0.212	5.913	-9999.990	-9999.990	-9999.990
29.731	98.437	40.312	0.025	0.000	0.150	182.0.213	6.013	-9999.990	-9999.990	-9999.990
29.791	68.335	41.120	0.025	0.000	0.150	182.0.213	6.013	-9999.990	-9999.990	-9999.990
29.851	47.800	41.120	0.025	0.000	0.149	184.0.212	5.914	-9999.990	-9999.990	-9999.990
29.911	47.800	43.494	0.025	0.000	0.149	184.0.212	5.918	-9999.990	-9999.990	-9999.990
29.971	63.269	43.645	0.025	0.000	0.150	183.0.212	5.953	-9999.990	-9999.990	-9999.990
30.031	63.270	43.645	0.025	0.000	0.150	183.0.212	5.953	-9999.990	-9999.990	-9999.990
30.091	78.741	46.221	0.026	0.000	0.147	187.0.209	5.730	-9999.990	-9999.990	-9999.990
30.151	68.334	46.221	0.026	0.000	0.146	190.0.207	5.607	-9999.990	-9999.990	-9999.990
30.211	68.333	46.675	0.027	0.000	0.142	198.0.201	5.226	-9999.990	-9999.990	-9999.990
30.271	106.877	49.857	0.025	0.015	0.122	180.30.173	4.961	8.323	-9999.990	-9999.990
30.331	106.879	49.857	0.025	0.015	0.122	180.30.173	4.961	8.323	-9999.990	-9999.990
30.391	93.653	55.260	0.023	0.018	0.121	169.37.171	5.191	6.603	-9999.990	-9999.990
30.451	70.303	55.260	0.023	0.018	0.121	169.37.171	5.193	6.603	-9999.990	-9999.990
30.511	70.302	56.674	0.023	0.018	0.121	167.37.172	5.298	6.593	-9999.990	-9999.990
30.571	67.489	60.815	0.022	0.022	0.119	159.44.169	5.446	5.466	-9999.990	-9999.990
30.631	67.489	60.815	0.021	0.025	0.117	152.51.165	5.601	4.669	-9999.990	-9999.990
30.691	78.460	64.855	0.020	0.028	0.114	145.57.162	5.768	4.072	-9999.990	-9999.990
30.751	78.742	64.855	0.020	0.028	0.114	145.57.162	5.768	4.072	-9999.990	-9999.990
30.811	78.742	65.360	0.020	0.028	0.115	142.58.163	5.897	4.068	-9999.990	-9999.990
30.871	111.381	69.400	0.021	0.025	0.117	150.51.167	5.722	4.665	-9999.990	-9999.990
30.931	111.381	69.400	0.021	0.025	0.117	150.51.167	5.722	4.665	-9999.990	-9999.990
30.991	101.252	69.905	0.021	0.025	0.117	150.51.167	5.722	4.665	-9999.990	-9999.990
31.051	92.810	69.905	0.021	0.025	0.117	152.51.165	5.599	4.671	-9999.990	-9999.990
31.111	92.809	71.218	0.020	0.028	0.114	145.57.162	5.769	4.065	-9999.990	-9999.990
31.171	55.677	75.460	0.021	0.025	0.117	152.51.165	5.602	4.659	-9999.990	-9999.990
31.231	55.675	75.460	0.021	0.025	0.117	150.51.167	5.724	4.654	-9999.990	-9999.990
31.291	61.863	73.440	0.021	0.025	0.117	150.51.167	5.724	4.654	-9999.990	-9999.990
31.351	81.554	73.440	0.021	0.025	0.117	152.51.165	5.599	4.659	-9999.990	-9999.990
31.411	81.555	73.945	0.021	0.025	0.117	152.51.165	5.599	4.659	-9999.990	-9999.990
31.471	84.369	76.975	0.022	0.022	0.120	157.44.170	5.557	5.465	-9999.990	-9999.990
31.531	84.369	76.975	0.022	0.022	0.120	157.44.170	5.557	5.465	-9999.990	-9999.990
31.591	108.849	75.965	0.022	0.022	0.119	159.44.169	5.441	5.472	-9999.990	-9999.990
31.651	101.251	75.965	0.023	0.019	0.122	165.37.174	5.401	6.606	-9999.990	-9999.990
31.711	101.251	77.581	0.023	0.019	0.122	165.37.174	5.401	6.606	-9999.990	-9999.990
31.771	103.783	80.005	0.022	0.019	0.123	163.38.175	5.515	6.596	-9999.990	-9999.990
31.831	103.783	80.005	0.023	0.015	0.127	169.31.180	5.474	8.314	-9999.990	-9999.990
31.891	87.182	77.581	0.023	0.015	0.126	171.30.179	5.363	8.330	-9999.990	-9999.990
31.951	73.397	77.581	0.023	0.015	0.126	171.30.179	5.363	8.330	-9999.990	-9999.990
32.011	73.397	76.975	0.023	0.015	0.126	171.30.179	5.363	8.330	-9999.990	-9999.990
32.071	70.302	78.036	0.022	0.019	0.123	163.38.175	5.514	6.620	1.812	-0.367
32.131	70.302	78.036	0.023	0.018	0.122	165.37.174	5.400	6.630	-9999.990	-9999.990
32.191	101.249	74.955	0.023	0.018	0.122	167.37.172	5.292	6.640	-9999.990	-9999.990
32.251	104.065	74.955	0.023	0.018	0.122	167.37.172	5.292	6.640	-9999.990	-9999.990
32.311	104.065	75.763	0.023	0.018	0.122	167.37.172	5.292	6.640	-9999.990	-9999.990
32.371	123.765	72.430	0.024	0.015	0.124	176.30.176	5.153	8.412	-9999.990	-9999.990
32.431	123.765	72.430	0.023	0.018	0.121	170.36.171	5.187	6.688	-9999.990	-9999.990
32.491	126.579	70.764	0.024	0.015	0.124	176.30.176	5.152	8.435	-9999.990	-9999.990
32.551	89.998	70.764	0.024	0.015	0.125	174.30.177	5.256	8.419	-9999.990	-9999.990
32.611	89.996	71.420	0.023	0.015	0.126	171.30.179	5.364	8.402	-9999.990	-9999.990
32.671	75.929	68.037	0.023	0.015	0.126	171.30.179	5.364	8.402	-9999.990	-9999.990
32.731	87.181	68.037	0.023	0.015	0.126	171.30.179	5.364	8.402	-9999.990	-9999.990

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
32.791	87.182	66.875	0.024	0.015	0.124	176.30.176	5.157	8.435	-9999.990	-9999.990
32.851	75.929	66.875	0.024	0.015	0.125	173.30.177	5.260	8.418	-9999.990	-9999.990
32.911	75.929	67.582	0.023	0.018	0.122	168.37.173	5.296	6.693	-9999.990	-9999.990
32.971	93.653	65.360	0.020	0.038	0.096	143.77.135	4.877	2.512	-9999.990	-9999.990
33.031	109.692	65.360	0.020	0.038	0.096	143.77.135	4.877	2.512	-9999.990	-9999.990
33.091	109.693	66.673	0.020	0.038	0.096	143.77.135	4.877	2.512	-9999.990	-9999.990
33.151	80.994	66.673	0.019	0.038	0.096	141.78.136	4.990	2.510	-9999.990	-9999.990
33.211	80.992	65.360	0.020	0.035	0.098	148.72.139	4.841	2.778	-9999.990	-9999.990
33.271	123.765	64.855	0.020	0.035	0.098	148.72.139	4.837	2.778	-9999.990	-9999.990
33.331	123.765	64.855	0.020	0.036	0.100	143.73.141	5.064	2.773	-9999.990	-9999.990
33.391	123.765	68.390	0.020	0.036	0.100	143.73.141	5.064	2.773	-9999.990	-9999.990
33.451	80.992	68.390	0.016	0.055	0.074	120.112.105	4.533	1.357	-9999.990	-9999.990
33.511	80.992	67.380	0.016	0.055	0.074	120.112.105	4.531	1.357	-9999.990	-9999.990
33.571	61.864	68.491	0.020	0.036	0.099	143.73.141	5.060	2.768	-9999.990	-9999.990
33.631	98.437	68.491	0.019	0.037	0.101	139.74.143	5.311	2.764	-9999.990	-9999.990
33.691	98.437	72.430	0.019	0.037	0.102	136.75.144	5.446	2.761	-9999.990	-9999.990
33.751	83.525	72.430	0.018	0.040	0.100	129.81.141	5.637	2.493	-9999.990	-9999.990
33.811	83.525	71.673	0.018	0.040	0.100	129.81.141	5.637	2.493	-9999.990	-9999.990
33.871	56.239	73.440	0.018	0.040	0.100	129.81.141	5.637	2.493	-9999.990	-9999.990
33.931	98.437	73.440	0.018	0.040	0.100	129.81.141	5.637	2.493	-9999.990	-9999.990
33.991	98.437	75.965	0.016	0.043	0.098	119.88.139	6.007	2.272	-9999.990	-9999.990
34.051	78.460	75.965	0.017	0.042	0.096	126.86.136	5.544	2.276	-9999.990	-9999.990
34.111	78.460	74.854	0.017	0.042	0.096	126.86.136	5.547	2.276	-9999.990	-9999.990
34.171	98.436	75.965	0.018	0.040	0.099	131.81.140	5.497	2.496	-9999.990	-9999.990
34.231	86.057	75.965	0.018	0.039	0.098	133.80.139	5.361	2.498	-9999.990	-9999.990
34.291	86.057	78.036	0.021	0.019	0.127	154.39.180	6.020	6.505	-9999.990	-9999.990
34.351	73.116	76.470	0.021	0.019	0.126	156.39.179	5.882	6.556	-9999.990	-9999.990
34.411	73.115	76.470	0.021	0.019	0.126	156.39.179	5.882	6.556	-9999.990	-9999.990
34.471	61.863	77.581	0.020	0.023	0.123	148.46.175	6.069	5.438	-9999.990	-9999.990
34.531	40.489	77.581	0.020	0.023	0.123	148.46.175	6.069	5.438	-9999.990	-9999.990
34.591	40.488	76.975	0.020	0.023	0.124	146.46.176	6.213	5.432	-9999.990	-9999.990
34.651	67.488	76.218	0.019	0.026	0.122	138.53.173	6.418	4.646	-9999.990	-9999.990
34.711	67.489	76.218	0.019	0.026	0.121	141.53.171	6.266	4.651	-9999.990	-9999.990
34.771	60.738	78.995	0.020	0.023	0.125	143.47.178	6.364	5.444	-9999.990	-9999.990
34.831	56.238	78.995	0.020	0.023	0.124	146.46.176	6.214	5.451	-9999.990	-9999.990
34.891	56.238	76.218	0.020	0.023	0.124	146.46.176	6.214	5.451	-9999.990	-9999.990
34.951	60.738	78.036	0.021	0.019	0.127	154.39.180	6.018	6.591	-9999.990	-9999.990
35.011	60.738	78.036	0.022	0.016	0.130	162.32.184	5.836	8.303	-9999.990	-9999.990
35.071	53.426	76.975	0.022	0.016	0.130	162.32.184	5.836	8.303	-9999.990	-9999.990
35.131	78.460	76.975	0.022	0.016	0.131	160.32.186	5.969	8.287	0.930	0.776
35.191	78.460	76.218	0.021	0.019	0.126	156.39.179	5.882	6.597	-9999.990	-9999.990
35.251	47.802	78.995	0.021	0.019	0.126	156.39.179	5.882	6.597	-9999.990	-9999.990
35.311	47.800	78.995	0.021	0.019	0.126	156.39.179	5.882	6.597	-9999.990	-9999.990
35.371	70.301	75.309	0.024	0.012	0.131	173.24.187	5.549	11.096	-9999.990	-9999.990
35.431	53.144	75.309	0.024	0.012	0.131	173.24.187	5.548	11.096	-9999.990	-9999.990
35.491	53.144	74.450	0.023	0.012	0.133	170.24.188	5.670	11.067	-9999.990	-9999.990
35.551	73.114	74.854	0.023	0.012	0.134	168.24.189	5.795	11.039	-9999.990	-9999.990
35.611	73.115	74.854	0.023	0.012	0.134	168.24.189	5.795	11.039	-9999.990	-9999.990
35.671	47.802	72.430	0.022	0.016	0.132	157.32.187	6.115	8.184	-9999.990	-9999.990
35.731	58.206	72.430	0.022	0.016	0.131	159.32.185	5.976	8.199	-9999.990	-9999.990
35.791	58.207	71.925	0.025	0.008	0.135	179.16.192	5.511	16.757	-9999.990	-9999.990
35.851	30.928	72.582	0.026	0.004	0.137	191.8.195	5.254	34.546	-9999.990	-9999.990
35.911	30.927	72.582	0.025	0.008	0.134	181.16.191	5.400	16.651	-9999.990	-9999.990
35.971	33.739	70.410	0.025	0.008	0.133	184.16.189	5.292	16.714	-9999.990	-9999.990
36.031	40.488	70.410	0.025	0.008	0.133	184.16.189	5.292	16.714	-9999.990	-9999.990
36.091	40.488	69.400	0.025	0.008	0.133	184.16.189	5.291	16.715	-9999.990	-9999.990
36.151	39.363	69.855	0.026	0.004	0.137	191.8.195	5.256	33.814	-9999.990	-9999.990
36.211	39.363	69.855	0.025	0.008	0.134	181.16.191	5.400	16.639	-9999.990	-9999.990
36.271	60.738	68.895	0.025	0.008	0.134	181.16.191	5.400	16.638	-9999.990	-9999.990
36.331	36.552	68.895	0.021	0.031	0.105	153.62.149	4.985	3.435	-9999.990	-9999.990
36.391	36.551	69.855	0.026	0.004	0.137	190.8.194	5.253	31.530	-9999.990	-9999.990
36.451	42.176	67.885	0.026	0.004	0.137	190.8.194	5.253	31.531	-9999.990	-9999.990
36.511	42.176	67.885	0.027	0.000	0.140	200.0.199	5.116	1102.410	-9999.990	-9999.990
36.571	37.957	65.764	0.027	0.000	0.140	200.0.199	5.116	1102.460	-9999.990	-9999.990
36.631	39.363	65.764	0.027	0.000	0.143	195.0.202	5.322	731.749	-9999.990	-9999.990
36.691	39.363	66.370	0.026	0.000	0.144	193.0.204	5.434	624.745	-9999.990	-9999.990
36.751	37.957	61.219	0.026	0.000	0.144	193.0.204	5.434	624.740	-9999.990	-9999.990
36.811	37.957	61.219	0.026	0.000	0.144	193.0.204	5.434	624.740	-9999.990	-9999.990
36.871	42.175	58.795	0.025	0.005	0.140	183.9.199	5.591	31.109	-9999.990	-9999.990
36.931	35.426	58.795	0.025	0.005	0.140	183.9.199	5.591	31.078	-9999.990	-9999.990

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
36.991	35.426	57.583	0.026	0.000	0.144	193.0.204	5.438	1170.240	-9999.990	-9999.990
37.051	67.488	54.250	0.027	0.000	0.143	195.0.202	5.328	1597.330	-9999.990	-9999.990
37.111	67.489	54.250	0.027	0.000	0.141	199.0.200	5.150	-9999.990	-9999.990	-9999.990
37.171	50.614	53.947	0.027	0.000	0.142	196.0.202	5.292	-9999.990	-9999.990	-9999.990
37.231	58.206	53.947	0.027	0.000	0.140	200.0.199	5.120	-9999.990	-9999.990	-9999.990
37.291	58.207	50.715	0.027	0.000	0.142	198.0.201	5.220	-9999.990	-9999.990	-9999.990
37.351	39.364	49.857	0.027	0.000	0.142	198.0.201	5.220	-9999.990	-9999.990	-9999.990
37.411	39.363	49.857	0.026	0.000	0.144	193.0.205	5.469	-9999.990	-9999.990	-9999.990
37.471	65.801	52.230	0.027	0.000	0.140	200.0.199	5.120	-9999.990	-9999.990	-9999.990
37.531	42.177	52.230	0.027	0.000	0.140	200.0.199	5.120	-9999.990	-9999.990	-9999.990
37.591	42.176	50.311	0.027	0.000	0.140	200.0.199	5.120	-9999.990	-9999.990	-9999.990
37.651	48.081	52.230	0.027	0.000	0.142	198.0.201	5.220	-9999.990	-9999.990	-9999.990
37.711	48.081	52.230	0.027	0.000	0.144	193.0.204	5.428	-9999.990	-9999.990	-9999.990
37.771	44.988	54.402	0.026	0.000	0.146	190.0.207	5.585	-9999.990	-9999.990	-9999.990
37.831	67.488	54.402	0.026	0.000	0.146	190.0.207	5.585	-9999.990	-9999.990	-9999.990
37.891	67.489	54.250	0.027	0.000	0.144	193.0.204	5.432	-9999.990	-9999.990	-9999.990
37.951	50.613	55.765	0.027	0.000	0.143	196.0.202	5.322	-9999.990	-9999.990	-9999.990
38.011	50.613	55.765	0.027	0.000	0.144	193.0.204	5.429	-9999.990	-9999.990	-9999.990
38.071	47.801	55.260	0.027	0.000	0.144	193.0.204	5.429	-9999.990	-9999.990	-9999.990
38.131	56.238	55.260	0.027	0.000	0.142	196.0.202	5.284	-9999.990	-9999.990	-9999.990
38.191	56.238	54.755	0.027	0.000	0.142	196.0.202	5.284	-9999.990	-9999.990	-9999.990
38.251	45.551	56.674	0.028	0.000	0.138	204.0.196	4.956	-9999.990	-9999.990	-9999.990
38.311	45.550	56.674	0.028	0.000	0.138	204.0.196	4.956	-9999.990	-9999.990	-9999.990
38.371	47.800	54.755	0.028	0.000	0.137	206.0.195	4.868	-9999.990	-9999.990	-9999.990
38.431	55.675	54.755	0.027	0.000	0.142	197.0.201	5.237	-9999.990	-9999.990	-9999.990
38.491	55.675	54.402	0.026	0.000	0.144	193.0.205	5.447	-9999.990	-9999.990	-9999.990
38.551	53.425	56.270	0.027	0.000	0.142	197.0.202	5.269	-9999.990	-9999.990	-9999.990
38.611	53.425	56.270	0.027	0.000	0.143	194.0.204	5.387	-9999.990	-9999.990	-9999.990
38.671	56.238	54.402	0.028	0.000	0.139	202.0.198	5.046	-9999.990	-9999.990	-9999.990
38.731	55.675	54.402	0.027	0.000	0.140	200.0.199	5.129	-9999.990	-9999.990	-9999.990
38.791	55.675	54.250	0.029	0.000	0.135	211.0.191	4.663	-9999.990	-9999.990	-9999.990
38.851	39.364	55.765	0.029	0.000	0.133	214.0.188	4.536	-9999.990	-9999.990	-9999.990
38.911	39.363	55.765	0.028	0.000	0.138	204.0.196	4.960	-9999.990	-9999.990	-9999.990
38.971	48.081	54.755	0.029	0.000	0.135	209.0.192	4.712	-9999.990	-9999.990	-9999.990
39.031	42.176	54.755	0.029	0.000	0.135	209.0.192	4.712	-9999.990	-9999.990	-9999.990
39.091	42.176	55.765	0.028	0.000	0.137	205.0.195	4.883	-9999.990	-9999.990	-9999.990
39.151	55.675	54.250	0.029	0.000	0.136	209.0.192	4.739	-9999.990	-9999.990	-9999.990
39.211	55.675	54.250	0.028	0.000	0.137	206.0.194	4.835	-9999.990	-9999.990	-9999.990
39.271	75.929	53.947	0.029	0.000	0.136	209.0.192	4.736	-9999.990	-9999.990	-9999.990
39.331	63.271	53.947	0.028	0.000	0.137	205.0.195	4.888	-9999.990	-9999.990	-9999.990
39.391	63.270	57.280	0.027	0.000	0.140	200.0.199	5.101	-9999.990	-9999.990	-9999.990
39.451	50.613	54.856	0.027	0.000	0.140	200.0.199	5.101	-9999.990	-9999.990	-9999.990
39.511	55.675	54.856	0.028	0.000	0.139	203.0.196	4.970	-9999.990	-9999.990	-9999.990
39.571	55.675	55.765	0.028	0.004	0.129	207.8.182	4.534	31.741	-9999.990	-9999.990
39.631	73.115	55.765	0.024	0.028	0.096	177.57.137	3.970	3.416	-9999.990	-9999.990
39.691	73.115	57.583	0.025	0.028	0.096	179.57.136	3.900	3.419	-9999.990	-9999.990
39.751	70.303	57.280	0.026	0.015	0.117	189.30.166	4.522	7.943	-9999.990	-9999.990
39.811	75.929	57.280	0.026	0.015	0.117	189.30.166	4.522	7.944	-9999.990	-9999.990
39.871	75.929	59.401	0.024	0.021	0.113	173.43.160	4.738	5.319	-9999.990	-9999.990
39.931	56.238	59.401	0.022	0.027	0.108	159.55.154	4.977	3.995	-9999.990	-9999.990
39.991	56.238	59.300	0.021	0.030	0.107	152.61.151	5.109	3.548	-9999.990	-9999.990
40.051	80.991	59.856	0.020	0.033	0.105	145.67.148	5.248	3.186	-9999.990	-9999.990
40.111	75.929	59.856	0.019	0.035	0.103	139.72.146	5.393	2.899	-9999.990	-9999.990
40.171	75.929	64.350	0.019	0.035	0.103	139.72.146	5.397	2.899	-9999.990	-9999.990
40.231	67.490	64.350	0.019	0.035	0.103	139.72.146	5.397	2.899	-9999.990	-9999.990
40.291	67.489	63.845	0.019	0.035	0.102	141.72.145	5.288	2.901	-9999.990	-9999.990
40.351	48.082	65.764	0.018	0.038	0.100	135.77.142	5.436	2.656	-9999.990	-9999.990
40.411	64.675	65.764	0.019	0.037	0.099	141.75.140	5.117	2.661	-9999.990	-9999.990
40.471	64.676	70.410	0.020	0.034	0.100	147.70.142	4.983	2.913	-9999.990	-9999.990
40.531	75.928	70.410	0.019	0.037	0.099	139.76.141	5.220	2.661	-9999.990	-9999.990
40.591	75.929	71.218	0.019	0.037	0.099	139.76.141	5.220	2.661	-9999.990	-9999.990
40.651	53.425	73.945	0.018	0.040	0.097	134.81.138	5.259	2.452	-9999.990	-9999.990
40.711	58.207	73.945	0.019	0.037	0.099	141.75.140	5.116	2.666	-9999.990	-9999.990
40.771	58.207	78.945	0.020	0.034	0.101	147.70.142	4.985	2.919	-9999.990	-9999.990
40.831	65.801	78.945	0.021	0.032	0.102	155.64.144	4.771	3.226	-9999.990	-9999.990
40.891	65.801	81.015	0.021	0.032	0.102	155.64.144	4.774	3.226	-9999.990	-9999.990
40.951	64.676	86.671	0.020	0.036	0.098	145.74.139	4.923	2.686	-9999.990	-9999.990
41.011	48.082	86.671	0.020	0.036	0.097	147.74.138	4.832	2.688	-9999.990	-9999.990
41.071	48.081	89.398	0.020	0.036	0.097	147.74.138	4.832	2.688	-9999.990	-9999.990
41.131	37.957	93.640	0.019	0.039	0.096	141.79.135	4.958	2.476	-9999.990	-9999.990

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
41.191	37.957	93.640	0.019	0.039	0.096	141.78.136	4.952	2.484	-9999.990	-9999.990
41.251	59.048	99.397	0.020	0.038	0.095	143.78.135	4.860	2.486	-9999.990	-9999.990
41.311	65.801	99.397	0.020	0.038	0.095	143.78.135	4.860	2.486	-9999.990	-9999.990
41.371	65.801	102.124	0.020	0.038	0.095	143.78.135	4.862	2.486	-9999.990	-9999.990
41.431	78.460	108.487	0.019	0.041	0.094	137.83.133	4.986	2.304	-9999.990	-9999.990
41.491	78.460	108.487	0.018	0.043	0.092	133.87.130	5.024	2.149	-9999.990	-9999.990
41.551	80.992	110.305	0.016	0.049	0.087	117.100.124	5.450	1.778	-9999.990	-9999.990
41.611	67.489	110.305	0.017	0.039	0.104	124.80.147	6.101	2.654	-9999.990	-9999.990
41.671	67.489	116.870	0.017	0.039	0.104	124.80.147	6.105	2.654	-9999.990	-9999.990
41.731	75.928	118.032	0.018	0.037	0.105	129.75.149	5.939	2.866	-9999.990	-9999.990
41.791	75.929	118.032	0.017	0.039	0.103	126.79.146	5.981	2.660	-9999.990	-9999.990
41.851	73.397	123.485	0.017	0.039	0.103	126.79.146	5.981	2.660	-9999.990	-9999.990
41.911	73.115	123.485	0.017	0.039	0.103	126.79.146	5.981	2.660	-9999.990	-9999.990
41.971	73.115	124.950	0.017	0.039	0.103	126.79.146	5.985	2.660	-9999.990	-9999.990
42.031	75.928	127.576	0.017	0.039	0.103	126.79.146	5.985	2.660	-9999.990	-9999.990
42.091	75.929	127.576	0.017	0.039	0.103	126.79.146	5.985	2.660	-9999.990	-9999.990
42.151	91.121	132.576	0.018	0.039	0.103	128.79.146	5.871	2.662	-9999.990	-9999.990
42.211	78.742	132.576	0.018	0.036	0.104	133.74.148	5.718	2.876	-9999.990	-9999.990
42.271	78.742	134.545	0.018	0.037	0.105	131.74.149	5.831	2.874	-9999.990	-9999.990
42.331	103.783	138.484	0.018	0.037	0.106	129.75.150	5.947	2.872	-9999.990	-9999.990
42.391	103.783	138.484	0.018	0.037	0.106	129.75.150	5.947	2.872	-9999.990	-9999.990
42.451	87.182	139.393	0.020	0.024	0.124	144.48.175	6.256	5.221	-9999.990	-9999.990
42.511	80.993	139.393	0.020	0.024	0.124	144.48.175	6.255	5.230	-9999.990	-9999.990
42.571	80.992	143.130	0.020	0.024	0.124	144.48.175	6.255	5.230	-9999.990	-9999.990
42.631	84.369	147.120	0.020	0.024	0.124	144.48.175	6.255	5.230	-9999.990	-9999.990
42.691	84.369	147.120	0.020	0.024	0.124	144.48.175	6.255	5.230	-9999.990	-9999.990
42.751	113.911	148.029	0.020	0.024	0.124	144.48.175	6.255	5.230	-9999.990	-9999.990
42.811	75.929	148.029	0.020	0.024	0.124	144.48.175	6.255	5.230	-9999.990	-9999.990
42.871	75.929	153.230	0.023	0.008	0.144	165.15.205	6.368	19.128	-9999.990	-9999.990
42.931	124.043	153.028	0.023	0.008	0.144	165.15.205	6.372	19.126	-9999.990	-9999.990
42.991	124.046	153.028	0.022	0.010	0.142	159.21.202	6.513	13.779	1.619	5.207
43.051	126.579	157.118	0.024	0.000	0.155	173.0.220	6.558	-9999.990	-9999.990	-9999.990
43.111	96.186	157.118	0.024	0.000	0.155	173.0.220	6.558	-9999.990	-9999.990	-9999.990
43.171	96.186	157.775	0.024	0.000	0.155	173.0.220	6.558	-9999.990	-9999.990	-9999.990
43.231	109.692	158.936	0.024	0.000	0.155	173.0.220	6.558	-9999.990	-9999.990	-9999.990
43.291	109.693	158.936	0.024	0.000	0.155	173.0.220	6.558	-9999.990	-9999.990	-9999.990
43.351	129.111	162.572	0.023	0.000	0.156	171.0.222	6.664	-9999.990	-9999.990	-9999.990
43.411	87.186	162.572	0.023	0.000	0.156	171.0.222	6.664	-9999.990	-9999.990	-9999.990
43.471	87.182	162.825	0.024	0.000	0.155	174.0.219	6.472	-9999.990	-9999.990	-9999.990
43.531	134.177	164.845	0.024	0.000	0.155	174.0.219	6.472	-9999.990	-9999.990	-9999.990
43.591	134.179	164.845	0.024	0.000	0.155	174.0.219	6.472	-9999.990	-9999.990	-9999.990
43.651	113.914	164.845	0.024	0.000	0.155	174.0.219	6.477	-9999.990	-9999.990	-9999.990
43.711	95.624	164.845	0.023	0.008	0.142	168.15.202	6.182	18.260	-9999.990	-9999.990
43.771	95.623	168.027	0.023	0.008	0.142	168.15.202	6.182	18.260	-9999.990	-9999.990
43.831	146.846	168.380	0.023	0.008	0.142	170.15.201	6.087	18.311	-9999.990	-9999.990
43.891	146.846	168.380	0.024	0.005	0.144	176.9.204	5.963	30.043	-9999.990	-9999.990
43.951	113.914	168.027	0.024	0.005	0.143	178.9.203	5.875	30.181	-9999.990	-9999.990
44.011	131.645	168.027	0.025	0.005	0.142	179.9.202	5.790	30.320	-9999.990	-9999.990
44.071	131.646	171.663	0.025	0.004	0.141	183.9.200	5.623	31.316	-9999.990	-9999.990
44.131	104.065	170.753	0.024	0.005	0.143	178.9.203	5.879	30.863	-9999.990	-9999.990
44.191	104.065	170.753	0.023	0.010	0.139	165.20.197	6.125	13.646	-9999.990	-9999.990
44.251	96.187	173.935	0.022	0.015	0.133	157.31.189	6.195	8.741	-9999.990	-9999.990
44.311	78.460	173.935	0.022	0.015	0.133	157.31.189	6.195	8.741	-9999.990	-9999.990
44.371	78.460	172.572	0.021	0.015	0.134	155.31.190	6.296	8.729	-9999.990	-9999.990
44.431	104.064	175.753	0.019	0.030	0.114	137.62.162	6.062	3.750	-9999.990	-9999.990
44.491	104.065	175.753	0.019	0.031	0.115	135.62.162	6.171	3.747	-9999.990	-9999.990
44.551	136.710	175.450	0.019	0.030	0.114	137.62.162	6.061	3.750	-9999.990	-9999.990
44.611	84.371	175.450	0.019	0.028	0.116	141.57.165	6.022	4.124	-9999.990	-9999.990
44.671	84.369	175.298	0.020	0.026	0.118	146.52.167	5.881	4.582	-9999.990	-9999.990
44.731	83.525	178.025	0.021	0.023	0.120	152.47.170	5.748	5.147	-9999.990	-9999.990
44.791	83.525	178.025	0.021	0.023	0.121	150.48.171	5.845	5.142	-9999.990	-9999.990
44.851	129.392	176.460	0.021	0.023	0.121	150.48.171	5.845	5.142	-9999.990	-9999.990
44.911	93.655	176.460	0.020	0.024	0.121	149.48.172	5.947	5.138	-9999.990	-9999.990
44.971	93.653	178.025	0.021	0.023	0.121	150.48.171	5.846	5.142	-9999.990	-9999.990
45.031	98.436	176.460	0.021	0.023	0.121	150.48.171	5.846	5.142	-9999.990	-9999.990
45.091	98.437	176.460	0.021	0.023	0.121	150.48.171	5.846	5.142	-9999.990	-9999.990
45.151	93.654	176.208	0.021	0.023	0.121	150.48.171	5.846	5.142	-9999.990	-9999.990
45.211	98.718	176.208	0.021	0.023	0.121	150.48.171	5.846	5.142	-9999.990	-9999.990
45.271	98.718	177.117	0.021	0.023	0.119	154.47.169	5.657	5.152	-9999.990	-9999.990
45.331	124.046	174.945	0.021	0.021	0.123	156.42.174	5.719	5.876	-9999.990	-9999.990

Boring BK3
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
45.391	124.046	174.945	0.021	0.021	0.123	156.42.174	5.719	5.876	-9999.990	-9999.990
45.451	64.679	175.298	0.022	0.021	0.122	158.42.173	5.633	5.881	-9999.990	-9999.990
45.511	116.444	175.298	0.022	0.021	0.122	158.42.173	5.633	5.881	-9999.990	-9999.990
45.571	116.447	172.117	0.024	0.005	0.144	176.9.204	5.971	30.962	-9999.990	-9999.990
45.631	126.579	172.420	0.023	0.008	0.142	170.15.201	6.097	18.886	-9999.990	-9999.990
45.691	126.579	172.420	0.023	0.008	0.142	170.15.201	6.097	18.886	-9999.990	-9999.990
45.751	109.695	172.572	0.024	0.005	0.144	176.9.205	5.968	31.574	-9999.990	-9999.990
45.811	96.186	172.572	0.024	0.005	0.144	176.9.205	5.968	31.576	-9999.990	-9999.990
45.871	96.186	169.844	0.024	0.005	0.145	175.9.206	6.061	31.420	-9999.990	-9999.990
45.931	96.186	170.753	0.024	0.005	0.145	174.9.206	6.065	31.414	-9999.990	-9999.990
45.991	96.186	170.753	0.024	0.005	0.146	173.9.207	6.162	31.258	-9999.990	-9999.990
46.051	78.743	168.380	0.025	0.002	0.148	181.3.209	5.941	94.092	-9999.990	-9999.990
46.111	91.120	168.380	0.025	0.002	0.147	183.3.208	5.857	95.406	-9999.990	-9999.990
46.171	91.121	168.936	0.025	0.002	0.146	184.3.207	5.776	96.749	-9999.990	-9999.990
46.231	86.057	165.754	0.025	0.001	0.146	185.2.207	5.770	106.326	-9999.990	-9999.990
46.291	109.693	165.754	0.025	0.001	0.147	183.2.208	5.855	107.281	-9999.990	-9999.990
46.351	109.693	166.208	0.025	0.001	0.146	185.2.207	5.770	109.072	-9999.990	-9999.990
46.411	78.462	166.208	0.025	0.001	0.147	183.2.208	5.856	107.261	-9999.990	-9999.990
46.471	78.460	163.330	0.021	0.021	0.123	156.42.174	5.726	5.861	-9999.990	-9999.990
46.531	91.120	161.209	0.022	0.021	0.121	161.42.171	5.456	5.874	-9999.990	-9999.990
46.591	101.250	161.209	0.022	0.021	0.121	161.42.171	5.456	5.874	-9999.990	-9999.990
46.651	101.251	161.209	0.021	0.023	0.119	155.47.168	5.575	5.152	-9999.990	-9999.990
46.711	60.740	161.209	0.021	0.023	0.119	155.47.168	5.575	5.152	-9999.990	-9999.990
46.771	60.738	157.775	0.024	0.007	0.139	175.15.198	5.826	18.816	-9999.990	-9999.990
46.831	95.621	157.118	0.024	0.007	0.139	175.15.198	5.826	18.817	-9999.990	-9999.990
46.891	108.848	157.118	0.024	0.007	0.139	175.15.198	5.826	18.817	1.362	1.616
46.951	108.849	152.119	0.025	0.005	0.142	181.9.201	5.710	31.091	-9999.990	-9999.990
47.011	91.122	152.119	0.025	0.005	0.142	181.9.201	5.710	31.091	-9999.990	-9999.990
47.071	91.121	149.190	0.025	0.005	0.142	179.9.202	5.794	30.943	-9999.990	-9999.990
47.131	87.182	148.029	0.024	0.005	0.143	178.9.203	5.882	30.794	-9999.990	-9999.990
47.191	86.057	148.029	0.023	0.008	0.141	171.15.200	6.004	18.756	-9999.990	-9999.990
47.251	86.057	142.625	0.024	0.007	0.141	172.15.200	5.998	19.167	-9999.990	-9999.990
47.311	96.186	142.625	0.024	0.007	0.141	172.15.200	5.998	19.167	-9999.990	-9999.990
47.371	96.186	140.302	0.024	0.007	0.141	172.15.200	5.998	19.167	-9999.990	-9999.990
47.431	106.879	133.939	0.023	0.010	0.139	166.20.197	6.123	13.769	-9999.990	-9999.990
47.491	86.058	133.939	0.021	0.015	0.135	154.31.191	6.394	8.758	-9999.990	-9999.990
47.551	86.057	131.010	0.022	0.013	0.137	160.26.194	6.252	10.758	-9999.990	-9999.990
47.611	106.879	131.010	0.022	0.013	0.138	158.26.195	6.354	10.740	-9999.990	-9999.990
47.671	106.879	128.485	0.021	0.015	0.135	154.31.191	6.391	8.789	-9999.990	-9999.990
47.731	86.058	122.576	0.021	0.018	0.132	150.36.188	6.429	7.443	-9999.990	-9999.990
47.791	86.057	122.576	0.021	0.018	0.132	150.36.188	6.429	7.443	-9999.990	-9999.990
47.851	86.057	121.415	0.021	0.015	0.134	156.30.190	6.282	8.889	-9999.990	-9999.990
47.911	78.461	121.415	0.021	0.015	0.134	156.30.190	6.282	8.890	-9999.990	-9999.990
47.971	78.460	116.214	0.022	0.015	0.134	157.30.189	6.185	8.902	0.841	4.690
48.031	92.808	115.304	0.024	0.000	0.155	174.0.219	6.478	-9999.990	-9999.990	-9999.990
48.091	83.526	115.304	0.024	0.000	0.155	174.0.219	6.478	-9999.990	-9999.990	-9999.990
48.151	83.525	110.759	0.022	0.005	0.151	161.10.215	6.859	29.809	-9999.990	-9999.990
48.211	83.525	109.295	0.023	0.005	0.150	164.10.213	6.651	30.059	-9999.990	-9999.990
48.271	83.525	109.295	0.022	0.005	0.151	163.10.214	6.756	29.930	-9999.990	-9999.990
48.331	92.809	108.941	0.022	0.005	0.152	161.10.215	6.864	29.804	-9999.990	-9999.990
48.391	78.461	108.941	0.021	0.008	0.150	153.16.213	7.134	19.119	-9999.990	-9999.990
48.451	78.460	106.215	0.020	0.011	0.149	146.21.211	7.423	14.033	-9999.990	-9999.990
48.511	83.524	107.578	0.020	0.010	0.148	148.21.210	7.299	14.123	-9999.990	-9999.990
48.571	83.525	107.578	0.022	0.005	0.151	163.10.214	6.764	30.050	-9999.990	-9999.990
48.631	64.676	105.760	0.022	0.005	0.152	159.10.216	6.978	29.804	-9999.990	-9999.990
48.691	73.396	105.760	0.023	0.002	0.155	165.4.220	6.831	65.787	-9999.990	-9999.990
48.751	73.397	107.578	0.022	0.002	0.158	158.5.224	7.284	63.478	-9999.990	-9999.990
48.811	67.490	106.669	0.022	0.002	0.158	158.5.224	7.284	63.478	-9999.990	-9999.990
48.871	67.489	106.669	0.022	0.002	0.158	158.5.224	7.284	63.478	-9999.990	-9999.990
48.931	96.186	107.275	0.022	0.002	0.158	158.5.224	7.284	63.478	-9999.990	-9999.990
48.991	91.121	107.275	0.022	0.000	0.162	161.0.230	7.353	-9999.990	-9999.990	-9999.990
49.051	91.121	110.759	0.019	0.016	0.140	141.33.199	7.217	8.671	-9999.990	-9999.990
49.111	104.064	109.851	0.019	0.016	0.142	138.33.201	7.491	8.648	-9999.990	-9999.990
49.171	104.065	109.851	0.018	0.019	0.139	132.39.198	7.700	7.286	-9999.990	-9999.990
49.231	65.803	113.840	0.018	0.019	0.141	128.39.200	8.011	7.270	-9999.990	-9999.990
49.291	30.927	113.840	0.018	0.017	0.143	134.34.203	7.793	8.558	-9999.990	-9999.990
49.351	30.927	113.487	0.019	0.017	0.142	136.34.202	7.642	8.570	-9999.990	-9999.990
49.411	48.081	115.860	0.019	0.016	0.142	138.33.201	7.496	8.581	-9999.990	-9999.990
49.471	48.081	115.860	0.020	0.011	0.147	148.22.208	7.256	13.241	-9999.990	-9999.990
49.531	43.019	118.940	0.020	0.011	0.147	148.22.208	7.256	13.241	-9999.990	-9999.990

Boring BK3
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
49.591	64.674	118.940	0.020	0.011	0.147	148.22.208	7.256	13.241	-9999.990	-9999.990
49.651	64.676	118.940	0.020	0.008	0.152	148.17.216	7.477	18.009	-9999.990	-9999.990
49.711	55.676	122.930	0.020	0.009	0.153	146.17.217	7.621	17.959	-9999.990	-9999.990
49.771	55.675	122.930	0.021	0.003	0.161	153.5.228	7.656	64.281	-9999.990	-9999.990
49.831	40.489	121.668	0.021	0.003	0.161	153.5.228	7.655	64.289	-9999.990	-9999.990
49.891	59.050	121.668	0.020	0.015	0.142	143.30.201	7.253	9.487	-9999.990	-9999.990
49.951	59.051	124.849	0.021	0.009	0.147	156.17.209	6.862	17.039	-9999.990	-9999.990
50.011	43.019	124.395	0.023	0.002	0.153	171.3.216	6.515	80.335	-9999.990	-9999.990
50.071	43.019	124.395	0.024	0.000	0.155	174.0.219	6.471	-9999.990	-9999.990	-9999.990
50.131	50.612	125.455	0.024	0.000	0.154	175.0.219	6.428	-9999.990	-9999.990	-9999.990
50.191	78.739	125.455	0.024	0.000	0.152	178.0.216	6.231	-9999.990	-9999.990	-9999.990
50.251	78.742	126.667	0.025	0.000	0.150	182.0.213	6.017	-9999.990	-9999.990	-9999.990
50.311	55.675	124.849	0.025	0.000	0.150	182.0.213	6.017	-9999.990	-9999.990	-9999.990
50.371	55.675	124.849	0.025	0.000	0.150	182.0.213	6.017	-9999.990	-9999.990	-9999.990
50.431	48.081	127.475	0.024	0.000	0.152	178.0.216	6.230	-9999.990	-9999.990	-9999.990
50.491	64.675	127.475	0.025	0.000	0.151	181.0.214	6.084	-9999.990	-9999.990	-9999.990
50.551	64.676	124.395	0.024	0.000	0.155	172.0.221	6.580	-9999.990	-9999.990	-9999.990
50.611	70.865	125.303	0.023	0.000	0.157	170.0.223	6.752	-9999.990	-9999.990	-9999.990
50.671	70.865	125.303	0.024	0.000	0.155	172.0.221	6.577	-9999.990	-9999.990	-9999.990
50.731	93.652	121.668	0.023	0.000	0.158	168.0.224	6.833	-9999.990	-9999.990	-9999.990
50.791	89.996	121.668	0.023	0.000	0.157	170.0.222	6.702	-9999.990	-9999.990	-9999.990
50.851	89.996	120.405	0.023	0.000	0.158	168.0.224	6.831	-9999.990	-9999.990	-9999.990
50.911	70.866	120.304	0.022	0.000	0.161	163.0.228	7.215	-9999.990	-9999.990	-9999.990
50.971	70.865	120.304	0.022	0.000	0.162	160.0.230	7.367	-9999.990	-9999.990	-9999.990
51.031	96.184	115.304	0.022	0.000	0.162	161.0.229	7.324	-9999.990	-9999.990	-9999.990
51.091	70.304	115.304	0.022	0.000	0.162	161.0.229	7.324	-9999.990	-9999.990	-9999.990
51.151	70.302	114.850	0.022	0.000	0.163	159.0.231	7.460	-9999.990	-9999.990	-9999.990
51.211	83.524	108.941	0.022	0.000	0.162	161.0.229	7.322	-9999.990	-9999.990	-9999.990
51.271	83.525	108.941	0.022	0.000	0.163	159.0.231	7.462	-9999.990	-9999.990	-9999.990
51.331	75.929	108.033	0.022	0.000	0.163	159.0.231	7.466	-9999.990	-9999.990	-9999.990
51.391	68.334	108.033	0.022	0.000	0.163	159.0.231	7.464	-9999.990	-9999.990	-9999.990
51.451	68.333	103.740	0.022	0.000	0.164	157.0.233	7.607	-9999.990	-9999.990	-9999.990
51.511	73.115	100.760	0.022	0.000	0.163	159.0.231	7.468	-9999.990	0.958	3.669
51.571	73.115	100.760	0.022	0.000	0.163	158.0.232	7.554	-9999.990	-9999.990	-9999.990
51.631	88.589	100.710	0.023	0.000	0.158	167.0.224	6.889	-9999.990	-9999.990	-9999.990
51.691	86.057	100.710	0.024	0.000	0.154	176.0.218	6.373	-9999.990	-9999.990	-9999.990
51.751	86.057	95.761	0.024	0.000	0.154	176.0.218	6.372	-9999.990	-9999.990	-9999.990
51.811	73.116	95.761	0.024	0.000	0.155	173.0.220	6.533	-9999.990	-9999.990	-9999.990
51.871	73.115	95.761	0.024	0.000	0.155	173.0.220	6.533	-9999.990	-9999.990	-9999.990
51.931	73.397	92.125	0.024	0.000	0.155	174.0.219	6.490	-9999.990	-9999.990	-9999.990
51.991	73.397	92.125	0.024	0.000	0.155	174.0.219	6.490	-9999.990	-9999.990	-9999.990
52.051	73.397	91.216	0.023	0.000	0.156	171.0.222	6.693	-9999.990	-9999.990	-9999.990
52.111	95.623	92.125	0.023	0.000	0.157	169.0.223	6.804	-9999.990	-9999.990	-9999.990
52.171	95.623	92.125	0.023	0.000	0.157	169.0.223	6.804	-9999.990	-9999.990	-9999.990
52.231	75.930	88.489	0.023	0.000	0.160	164.0.227	7.087	-9999.990	-9999.990	-9999.990
52.291	78.460	88.489	0.023	0.000	0.160	164.0.227	7.087	-9999.990	-9999.990	-9999.990
52.351	78.460	90.105	0.023	0.000	0.160	164.0.227	7.087	-9999.990	-9999.990	-9999.990
52.411	55.677	87.580	0.022	0.000	0.163	159.0.231	7.451	-9999.990	-9999.990	-9999.990
52.471	55.675	87.580	0.022	0.000	0.163	159.0.231	7.451	-9999.990	-9999.990	-9999.990
52.531	78.739	88.489	0.022	0.000	0.161	162.0.229	7.250	-9999.990	-9999.990	-9999.990
52.591	58.209	88.489	0.022	0.000	0.161	162.0.229	7.250	-9999.990	-9999.990	-9999.990
52.651	58.207	86.671	0.022	0.000	0.162	161.0.230	7.348	-9999.990	-9999.990	-9999.990
52.711	48.081	87.580	0.022	0.000	0.162	161.0.230	7.348	-9999.990	-9999.990	-9999.990
52.771	48.081	87.580	0.022	0.000	0.161	163.0.228	7.217	-9999.990	-9999.990	-9999.990
52.831	67.487	88.944	0.022	0.000	0.161	163.0.228	7.217	-9999.990	-9999.990	-9999.990
52.891	40.488	88.944	0.023	0.000	0.160	164.0.227	7.088	-9999.990	-9999.990	-9999.990
52.951	40.488	88.035	0.022	0.000	0.161	162.0.229	7.252	-9999.990	-9999.990	-9999.990
53.011	53.144	91.115	0.022	0.000	0.163	158.0.232	7.558	-9999.990	-9999.990	-9999.990
53.071	73.113	91.115	0.022	0.000	0.162	161.0.230	7.346	-9999.990	-9999.990	-9999.990
53.131	73.115	88.944	0.022	0.000	0.164	157.0.232	7.596	-9999.990	-9999.990	-9999.990
53.191	45.553	88.944	0.022	0.000	0.164	157.0.232	7.596	-9999.990	-9999.990	-9999.990
53.251	45.550	90.762	0.022	0.000	0.164	157.0.232	7.596	-9999.990	-9999.990	-9999.990
53.311	47.800	88.489	0.022	0.000	0.164	157.0.232	7.596	-9999.990	-9999.990	-9999.990
53.371	37.957	88.489	0.022	0.000	0.164	157.0.232	7.596	-9999.990	-9999.990	-9999.990
53.431	37.957	88.085	0.022	0.000	0.164	157.0.232	7.596	-9999.990	-9999.990	-9999.990
53.491	59.048	88.085	0.020	0.003	0.164	148.5.232	8.072	63.121	-9999.990	-9999.990
53.551	59.051	88.944	0.020	0.007	0.157	144.13.223	7.942	23.672	-9999.990	-9999.990
53.611	32.895	86.065	0.019	0.011	0.154	136.21.218	8.229	14.429	-9999.990	-9999.990
53.671	53.144	86.065	0.019	0.011	0.154	136.21.218	8.229	14.429	-9999.990	-9999.990
53.731	53.144	86.217	0.019	0.011	0.154	136.21.218	8.220	14.431	-9999.990	-9999.990

Boring BK3
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
53.791	47.800	86.217	0.018	0.011	0.155	134.22.220	8.445	14.390	-9999.990	-9999.990
53.851	47.800	83.035	0.018	0.011	0.155	134.22.220	8.445	14.390	-9999.990	-9999.990
53.911	63.268	82.530	0.017	0.015	0.153	123.30.217	9.034	10.401	-9999.990	-9999.990
53.971	39.366	82.530	0.017	0.015	0.154	121.30.219	9.306	10.379	-9999.990	-9999.990
54.031	39.363	83.490	0.016	0.015	0.155	118.30.220	9.596	10.358	-9999.990	-9999.990
54.091	48.081	83.490	0.016	0.015	0.155	118.30.220	9.596	10.358	-9999.990	-9999.990
54.151	48.081	81.672	0.016	0.015	0.157	115.31.222	9.905	10.337	-9999.990	-9999.990
54.211	70.862	84.045	0.016	0.012	0.163	117.23.231	10.101	14.132	-9999.990	-9999.990
54.271	75.929	84.045	0.016	0.011	0.161	120.23.229	9.779	14.172	-9999.990	-9999.990
54.331	75.929	81.672	0.018	0.003	0.170	134.6.242	9.258	55.400	-9999.990	-9999.990
54.391	78.742	81.672	0.019	0.000	0.173	140.0.246	9.047	-9999.990	-9999.990	-9999.990
54.451	78.742	83.490	0.020	0.000	0.172	143.0.244	8.785	-9999.990	-9999.990	-9999.990
54.511	43.023	80.763	0.020	0.000	0.172	143.0.244	8.785	-9999.990	-9999.990	-9999.990
54.571	80.988	80.763	0.020	0.000	0.170	146.0.241	8.451	-9999.990	-9999.990	-9999.990
54.631	80.992	80.510	0.020	0.000	0.171	144.0.243	8.693	-9999.990	-9999.990	-9999.990
54.691	89.996	80.510	0.020	0.000	0.170	146.0.241	8.454	-9999.990	-9999.990	-9999.990
54.751	89.996	81.217	0.020	0.000	0.170	146.0.241	8.454	-9999.990	-9999.990	-9999.990
54.811	70.865	78.036	0.020	0.000	0.170	146.0.241	8.454	-9999.990	-9999.990	-9999.990
54.871	68.333	78.036	0.020	0.000	0.170	146.0.241	8.454	-9999.990	-9999.990	-9999.990
54.931	68.333	80.005	0.020	0.000	0.169	148.0.240	8.312	-9999.990	-9999.990	-9999.990
54.991	78.742	76.672	0.021	0.000	0.167	151.0.237	8.091	-9999.990	-9999.990	-9999.990
55.051	78.742	76.672	0.021	0.000	0.166	153.0.235	7.884	-9999.990	-9999.990	-9999.990
55.111	63.270	77.581	0.020	0.000	0.169	147.0.240	8.394	-9999.990	-9999.990	-9999.990
55.171	89.993	77.581	0.020	0.000	0.169	147.0.240	8.394	-9999.990	-9999.990	-9999.990
55.231	89.996	76.218	0.020	0.000	0.169	147.0.240	8.394	-9999.990	-9999.990	-9999.990
55.291	83.525	75.965	0.020	0.000	0.169	147.0.240	8.394	-9999.990	-9999.990	-9999.990
55.351	83.525	75.965	0.018	0.003	0.170	134.6.242	9.244	56.005	-9999.990	-9999.990
55.411	58.209	78.490	0.018	0.003	0.170	134.6.242	9.244	56.005	-9999.990	-9999.990
55.471	44.988	78.490	0.018	0.003	0.170	134.6.242	9.244	56.005	0.866	1.964
55.531	44.988	76.672	0.018	0.003	0.173	128.6.246	9.821	54.819	-9999.990	-9999.990
55.591	75.929	79.500	0.018	0.003	0.173	128.6.246	9.822	54.819	-9999.990	-9999.990
55.651	75.929	79.500	0.018	0.003	0.173	128.6.246	9.822	54.819	-9999.990	-9999.990
55.711	67.489	78.490	0.013	0.031	0.135	96.64.191	10.204	4.298	-9999.990	-9999.990
55.771	80.992	78.490	0.014	0.028	0.138	104.56.195	9.674	4.977	-9999.990	-9999.990
55.831	80.992	81.217	0.014	0.028	0.138	104.56.195	9.674	4.977	-9999.990	-9999.990
55.891	33.744	81.015	0.014	0.028	0.138	104.56.195	9.674	4.977	-9999.990	-9999.990
55.951	33.739	81.015	0.015	0.027	0.137	107.56.194	9.323	4.983	-9999.990	-9999.990
56.011	43.019	82.126	0.013	0.031	0.135	96.64.191	10.203	4.290	-9999.990	-9999.990
56.071	48.081	82.126	0.013	0.031	0.135	96.64.191	10.203	4.290	-9999.990	-9999.990
56.131	48.081	84.853	0.013	0.032	0.136	93.64.192	10.618	4.286	-9999.990	-9999.990
56.191	61.862	85.055	0.012	0.032	0.138	87.65.196	11.553	4.277	-9999.990	-9999.990
56.251	61.863	85.055	0.011	0.033	0.140	80.67.199	12.670	4.269	-9999.990	-9999.990
56.311	58.207	87.126	0.013	0.029	0.142	91.59.202	11.347	4.928	-9999.990	-9999.990
56.371	60.738	87.126	0.013	0.029	0.142	91.59.202	11.347	4.928	-9999.990	-9999.990
56.431	60.738	86.217	0.014	0.025	0.144	102.50.205	10.272	5.844	-9999.990	-9999.990
56.491	50.613	88.590	0.017	0.000	0.180	127.0.255	10.337	-9999.990	-9999.990	-9999.990
56.551	50.613	88.590	0.019	0.000	0.175	136.0.249	9.395	-9999.990	-9999.990	-9999.990
56.611	50.613	90.762	0.019	0.000	0.173	140.0.246	9.016	-9999.990	-9999.990	-9999.990
56.671	43.019	90.762	0.018	0.000	0.179	130.0.254	10.008	-9999.990	-9999.990	-9999.990
56.731	43.019	90.307	0.018	0.000	0.177	133.0.251	9.692	-9999.990	-9999.990	-9999.990
56.791	58.207	94.398	0.016	0.008	0.169	120.15.240	10.278	22.084	-9999.990	-9999.990
56.851	58.207	94.398	0.013	0.031	0.136	93.64.193	10.612	4.318	-9999.990	-9999.990
56.911	73.114	94.145	0.013	0.031	0.136	93.64.193	10.612	4.317	-9999.990	-9999.990
56.971	60.738	94.145	0.013	0.031	0.135	96.63.191	10.191	4.321	-9999.990	-9999.990
57.031	60.738	98.488	0.017	0.007	0.170	121.14.241	10.267	24.376	-9999.990	-9999.990
57.091	48.083	98.488	0.018	0.000	0.179	130.0.254	10.033	-9999.990	-9999.990	-9999.990
57.151	48.081	98.488	0.018	0.000	0.179	130.0.254	10.033	-9999.990	-9999.990	-9999.990
57.211	64.675	102.225	0.018	0.000	0.179	129.0.255	10.145	-9999.990	-9999.990	-9999.990
57.271	55.676	102.225	0.017	0.000	0.181	125.0.255	10.562	-9999.990	-9999.990	-9999.990
57.331	55.675	106.215	0.018	0.000	0.179	129.0.254	10.139	-9999.990	-9999.990	-9999.990
57.391	65.801	106.669	0.018	0.000	0.178	131.0.252	9.863	-9999.990	-9999.990	-9999.990
57.451	65.801	106.669	0.018	0.000	0.178	131.0.252	9.863	-9999.990	-9999.990	-9999.990
57.511	39.366	111.214	0.019	0.000	0.176	135.0.250	9.501	-9999.990	-9999.990	-9999.990
57.571	50.612	111.214	0.019	0.000	0.174	138.0.247	9.169	-9999.990	-9999.990	-9999.990
57.631	50.613	112.830	0.018	0.000	0.176	135.0.250	9.515	-9999.990	-9999.990	-9999.990
57.691	44.988	117.577	0.019	0.000	0.175	137.0.248	9.261	-9999.990	-9999.990	-9999.990
57.751	44.988	117.577	0.019	0.000	0.174	138.0.247	9.169	-9999.990	-9999.990	-9999.990
57.811	68.333	119.395	0.019	0.000	0.174	138.0.247	9.171	-9999.990	-9999.990	-9999.990
57.871	47.802	119.395	0.019	0.000	0.174	138.0.247	9.171	-9999.990	-9999.990	-9999.990
57.931	47.800	123.435	0.019	0.000	0.174	138.0.247	9.171	-9999.990	-9999.990	-9999.990

Boring BK3
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ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
57.991	55.675	128.939	0.019	0.000	0.174	138.0.247	9.171	-9999.990	-9999.990	-9999.990
58.051	55.675	128.939	0.019	0.000	0.174	138.0.247	9.171	-9999.990	-9999.990	-9999.990
58.111	48.081	132.020	0.019	0.000	0.176	135.0.250	9.510	-9999.990	-9999.990	-9999.990
58.171	70.300	132.020	0.018	0.006	0.166	130.12.236	9.338	26.740	-9999.990	-9999.990
58.231	70.302	139.393	0.020	0.000	0.171	144.0.242	8.623	-9999.990	-9999.990	-9999.990
58.291	63.270	143.029	0.019	0.000	0.174	139.0.247	9.129	-9999.990	-9999.990	-9999.990
58.351	63.270	143.029	0.019	0.000	0.172	142.0.245	8.867	-9999.990	-9999.990	-9999.990
58.411	45.552	149.695	0.019	0.000	0.172	142.0.245	8.867	-9999.990	-9999.990	-9999.990
58.471	59.051	149.695	0.020	0.000	0.172	143.0.244	8.771	-9999.990	-9999.990	-9999.990
58.531	59.051	157.118	0.020	0.000	0.172	143.0.244	8.773	-9999.990	-9999.990	-9999.990
58.591	58.207	161.663	0.017	0.015	0.152	124.30.216	8.961	10.038	-9999.990	-9999.990
58.651	58.207	161.663	0.017	0.015	0.152	124.30.216	8.961	10.038	-9999.990	-9999.990
58.711	63.270	169.844	0.016	0.015	0.155	117.31.219	9.607	9.992	-9999.990	-9999.990
58.771	59.051	169.844	0.017	0.015	0.153	120.31.217	9.271	10.015	-9999.990	-9999.990
58.831	59.051	173.430	0.015	0.020	0.149	112.40.212	9.752	7.623	-9999.990	-9999.990
58.891	65.801	179.389	0.016	0.019	0.148	115.39.210	9.398	7.637	-9999.990	-9999.990
58.951	65.801	179.389	0.016	0.019	0.148	115.39.210	9.398	7.637	-9999.990	-9999.990
59.011	53.144	182.116	0.019	0.000	0.175	137.0.248	9.292	-9999.990	-9999.990	-9999.990
59.071	59.051	182.116	0.019	0.000	0.175	137.0.248	9.294	-9999.990	-9999.990	-9999.990
59.131	59.051	187.065	0.019	0.000	0.175	136.0.249	9.404	-9999.990	-9999.990	-9999.990
59.191	45.552	193.024	0.018	0.002	0.174	129.4.248	9.819	79.045	-9999.990	-9999.990
59.251	45.550	193.024	0.021	0.000	0.167	151.0.237	8.083	-9999.990	-9999.990	-9999.990
59.311	58.205	194.842	0.020	0.000	0.169	147.0.240	8.387	-9999.990	-9999.990	-9999.990
59.371	81.555	194.842	0.020	0.000	0.169	147.0.240	8.387	-9999.990	-9999.990	-9999.990
59.431	81.555	201.660	0.020	0.000	0.169	147.0.240	8.387	-9999.990	-9999.990	-9999.990
59.491	63.270	203.730	0.019	0.002	0.169	141.3.239	8.710	86.557	-9999.990	-9999.990
59.551	63.270	203.730	0.019	0.002	0.170	138.4.241	8.962	85.114	-9999.990	-9999.990
59.611	68.333	208.932	0.019	0.002	0.169	141.3.239	8.709	86.566	-9999.990	-9999.990
59.671	92.809	208.932	0.020	0.002	0.167	144.3.237	8.469	88.070	-9999.990	-9999.990
59.731	92.809	211.204	0.020	0.002	0.166	147.3.235	8.242	89.630	-9999.990	-9999.990
59.791	58.207	216.658	0.018	0.010	0.159	130.20.225	8.896	15.701	-9999.990	-9999.990
59.851	58.207	216.658	0.018	0.010	0.159	130.20.225	8.896	15.701	-9999.990	-9999.990
59.911	50.614	218.880	0.017	0.010	0.160	127.20.227	9.160	15.652	-9999.990	-9999.990
59.971	65.800	218.880	0.018	0.010	0.158	130.20.225	8.890	15.702	-9999.990	-9999.990
60.031	65.801	221.203	0.017	0.014	0.155	122.28.220	9.266	11.039	-9999.990	-9999.990
60.091	78.459	226.455	0.017	0.014	0.154	125.28.218	8.989	11.063	1.089	2.100
60.151	75.929	226.455	0.017	0.014	0.154	125.28.218	8.989	11.063	-9999.990	-9999.990
60.211	75.929	227.566	0.018	0.014	0.151	130.27.215	8.483	11.113	-9999.990	-9999.990
60.271	86.056	227.566	0.018	0.014	0.151	130.27.215	8.483	11.113	-9999.990	-9999.990
60.331	86.057	231.656	0.017	0.017	0.148	122.35.210	8.825	8.548	-9999.990	-9999.990
60.391	64.676	232.515	0.015	0.021	0.148	107.44.210	10.109	6.902	-9999.990	-9999.990
60.451	88.589	232.515	0.014	0.025	0.144	102.50.205	10.243	5.825	-9999.990	-9999.990
60.511	88.589	234.838	0.014	0.028	0.139	101.56.198	10.038	5.045	-9999.990	-9999.990
60.571	78.462	234.838	0.013	0.031	0.137	95.62.194	10.512	4.450	-9999.990	-9999.990
60.631	78.460	238.474	0.015	0.027	0.137	106.55.195	9.410	5.072	-9999.990	-9999.990
60.691	56.238	238.575	0.017	0.023	0.137	121.47.195	8.288	5.888	-9999.990	-9999.990
60.751	96.182	238.575	0.017	0.023	0.136	123.47.193	8.068	5.895	-9999.990	-9999.990
60.811	96.186	241.201	0.018	0.020	0.139	130.40.197	7.787	6.994	-9999.990	-9999.990
60.871	80.994	241.201	0.018	0.020	0.139	130.40.197	7.787	6.994	-9999.990	-9999.990
60.931	80.992	240.747	0.018	0.020	0.138	132.40.196	7.594	7.004	-9999.990	-9999.990
60.991	84.369	242.615	0.017	0.023	0.135	125.46.192	7.863	5.897	-9999.990	-9999.990
61.051	70.865	242.615	0.018	0.020	0.139	130.40.197	7.784	7.012	-9999.990	-9999.990
61.111	70.865	245.292	0.013	0.044	0.108	98.90.153	8.045	2.450	-9999.990	-9999.990
61.171	70.865	245.292	0.014	0.041	0.110	104.84.156	7.710	2.662	-9999.990	-9999.990
61.231	70.865	244.383	0.015	0.041	0.109	106.84.155	7.488	2.664	-9999.990	-9999.990
61.291	95.620	247.109	0.014	0.041	0.110	104.84.156	7.712	2.662	-9999.990	-9999.990
61.351	88.589	247.109	0.013	0.044	0.108	98.90.153	8.033	2.458	-9999.990	-9999.990
61.411	88.589	246.150	0.015	0.041	0.109	107.83.155	7.478	2.672	-9999.990	-9999.990
61.471	86.057	246.150	0.013	0.044	0.108	98.90.153	8.035	2.457	-9999.990	-9999.990
61.531	86.057	248.928	0.013	0.046	0.105	94.94.149	8.132	2.276	-9999.990	-9999.990
61.591	106.877	248.018	0.012	0.049	0.104	89.99.147	8.495	2.126	-9999.990	-9999.990
61.651	93.653	248.018	0.012	0.049	0.104	89.99.147	8.495	2.126	-9999.990	-9999.990
61.711	93.653	251.200	0.012	0.049	0.104	89.99.147	8.495	2.126	-9999.990	-9999.990
61.771	86.057	249.685	0.012	0.049	0.104	86.100.148	8.788	2.124	-9999.990	-9999.990
61.831	86.057	249.685	0.013	0.048	0.103	91.99.146	8.224	2.127	-9999.990	-9999.990
61.891	112.504	250.291	0.013	0.048	0.102	93.98.145	7.971	2.128	-9999.990	-9999.990
61.951	93.655	250.291	0.014	0.046	0.104	99.93.148	7.645	2.285	-9999.990	-9999.990
62.011	93.653	253.018	0.013	0.048	0.102	96.97.144	7.732	2.127	-9999.990	-9999.990
62.071	101.251	251.705	0.013	0.048	0.102	96.97.144	7.733	2.127	-9999.990	-9999.990
62.131	101.251	251.705	0.011	0.065	0.078	77.133.110	7.372	1.196	-9999.990	-9999.990

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Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
62.191	106.878	254.382	0.010	0.068	0.074	71.139.105	7.576	1.089	-9999.990	-9999.990
62.251	75.932	254.382	0.009	0.070	0.073	69.142.103	7.684	1.041	-9999.990	-9999.990
62.311	75.929	252.564	0.011	0.067	0.073	78.137.103	6.831	1.088	-9999.990	-9999.990
62.371	61.863	254.230	0.010	0.069	0.071	75.140.101	6.915	1.042	-9999.990	-9999.990
62.431	61.863	254.230	0.010	0.069	0.071	75.140.101	6.915	1.042	-9999.990	-9999.990
62.491	73.397	255.745	0.011	0.069	0.069	77.141.98	6.556	0.999	-9999.990	-9999.990
62.551	67.490	255.745	0.011	0.068	0.070	81.138.99	6.292	1.041	-9999.990	-9999.990
62.611	67.489	254.382	0.011	0.068	0.070	81.138.99	6.292	1.041	-9999.990	-9999.990
62.671	86.055	258.270	0.011	0.069	0.069	77.141.98	6.562	0.998	-9999.990	-9999.990
62.731	86.057	258.270	0.010	0.072	0.067	70.148.95	6.946	0.924	-9999.990	-9999.990
62.791	65.801	255.290	0.012	0.059	0.085	85.121.120	7.221	1.432	-9999.990	-9999.990
62.851	92.806	255.290	0.010	0.063	0.083	74.129.117	8.085	1.306	-9999.990	-9999.990
62.911	92.809	256.755	0.010	0.063	0.083	74.129.117	8.085	1.306	-9999.990	-9999.990
62.971	96.185	258.472	0.012	0.050	0.102	88.102.144	8.412	2.045	-9999.990	-9999.990
63.031	96.186	258.472	0.013	0.047	0.103	95.97.146	7.886	2.170	-9999.990	-9999.990
63.091	78.462	256.199	0.013	0.047	0.103	95.97.146	7.886	2.170	-9999.990	-9999.990
63.151	75.929	256.199	0.013	0.047	0.103	95.97.146	7.886	2.170	-9999.990	-9999.990
63.211	75.929	258.472	0.013	0.049	0.100	94.100.142	7.762	2.049	-9999.990	-9999.990
63.271	108.846	257.260	0.014	0.047	0.102	99.95.144	7.492	2.175	-9999.990	-9999.990
63.331	108.849	257.260	0.013	0.049	0.100	96.99.141	7.564	2.050	-9999.990	-9999.990
63.391	73.397	259.381	0.012	0.052	0.096	89.107.137	7.912	1.841	-9999.990	-9999.990
63.451	73.397	259.381	0.013	0.052	0.096	92.106.135	7.515	1.843	-9999.990	-9999.990
63.511	73.397	257.563	0.013	0.052	0.096	92.106.135	7.515	1.843	-9999.990	-9999.990
63.571	75.928	257.765	0.012	0.053	0.094	90.109.133	7.584	1.754	-9999.990	-9999.990
63.631	75.929	257.765	0.013	0.052	0.096	92.106.135	7.513	1.844	-9999.990	-9999.990
63.691	111.381	259.381	0.012	0.052	0.097	89.107.137	7.908	1.844	-9999.990	-9999.990
63.751	78.460	259.381	0.012	0.054	0.095	86.110.134	7.987	1.755	-9999.990	-9999.990
63.811	78.460	258.017	0.014	0.041	0.113	102.83.160	8.085	2.785	-9999.990	-9999.990
63.871	73.116	260.795	0.014	0.040	0.112	104.82.159	7.901	2.786	-9999.990	-9999.990
63.931	73.115	260.795	0.014	0.040	0.112	104.82.159	7.901	2.786	-9999.990	-9999.990
63.991	116.442	259.280	0.014	0.040	0.112	105.82.159	7.725	2.787	-9999.990	-9999.990
64.051	50.613	259.280	0.015	0.040	0.111	107.81.158	7.560	2.785	-9999.990	-9999.990
64.111	50.613	255.745	0.015	0.040	0.111	109.81.157	7.397	2.786	-9999.990	-9999.990
64.171	64.675	260.290	0.016	0.039	0.109	114.80.155	6.945	2.790	-9999.990	-9999.990
64.231	64.676	260.290	0.015	0.041	0.108	110.84.152	7.142	2.614	-9999.990	-9999.990
64.291	116.442	259.836	0.015	0.041	0.108	110.84.152	7.142	2.614	-9999.990	-9999.990
64.351	87.182	259.836	0.015	0.041	0.108	108.84.153	7.291	2.613	-9999.990	-9999.990
64.411	87.182	260.745	0.014	0.043	0.106	105.88.151	7.345	2.469	-9999.990	-9999.990
64.471	103.783	259.381	0.014	0.044	0.104	104.90.147	7.254	2.340	-9999.990	-9999.990
64.531	103.783	259.381	0.014	0.046	0.102	100.94.145	7.473	2.212	-9999.990	-9999.990
64.591	87.184	260.290	0.012	0.052	0.098	89.105.139	8.045	1.893	-9999.990	-9999.990
64.651	98.717	260.290	0.012	0.052	0.098	89.105.139	8.045	1.893	-9999.990	-9999.990
64.711	98.718	261.116	0.012	0.052	0.098	89.105.139	8.045	1.893	-9999.990	-9999.990
64.771	103.782	261.654	0.012	0.053	0.097	84.109.137	8.325	1.806	-9999.990	-9999.990
64.831	103.783	261.654	0.012	0.053	0.096	88.108.136	7.922	1.807	-9999.990	-9999.990
64.891	89.996	262.563	0.012	0.054	0.094	87.110.133	7.805	1.729	-9999.990	-9999.990
64.951	96.185	262.563	0.012	0.054	0.093	89.110.132	7.628	1.729	-9999.990	-9999.990
65.011	96.186	265.289	0.011	0.056	0.092	83.114.131	8.059	1.658	-9999.990	-9999.990
65.071	81.555	260.290	0.012	0.056	0.092	85.113.130	7.869	1.658	-9999.990	-9999.990
65.131	81.555	260.290	0.011	0.056	0.092	83.114.131	8.053	1.658	-9999.990	-9999.990
65.191	93.652	263.182	0.012	0.054	0.093	89.110.132	7.626	1.728	-9999.990	-9999.990
65.251	101.251	263.182	0.012	0.055	0.091	88.112.129	7.520	1.657	-9999.990	-9999.990
65.311	101.251	264.422	0.014	0.045	0.106	100.91.150	7.714	2.356	-9999.990	-9999.990
65.371	93.653	265.248	0.013	0.047	0.104	95.95.148	7.946	2.236	-9999.990	-9999.990
65.431	93.653	265.248	0.013	0.047	0.104	95.95.148	7.946	2.236	-9999.990	-9999.990
65.491	84.370	264.422	0.014	0.045	0.105	103.91.148	7.417	2.348	-9999.990	-9999.990
65.551	103.781	264.422	0.014	0.046	0.103	98.94.146	7.630	2.229	-9999.990	-9999.990
65.611	103.783	267.314	0.014	0.046	0.103	98.94.146	7.630	2.229	-9999.990	-9999.990
65.671	106.315	268.140	0.014	0.046	0.103	98.94.146	7.630	2.229	-9999.990	-9999.990
65.731	106.316	268.140	0.013	0.049	0.101	93.100.143	7.884	2.045	-9999.990	-9999.990
65.791	98.437	268.554	0.012	0.051	0.100	90.103.141	8.087	1.974	-9999.990	-9999.990
65.851	124.046	268.554	0.012	0.050	0.099	91.103.141	7.984	1.974	-9999.990	-9999.990
65.911	124.046	268.622	0.012	0.050	0.100	91.103.141	7.998	1.976	-9999.990	-9999.990
65.971	103.785	269.001	0.012	0.050	0.100	91.103.141	7.998	1.976	-9999.990	-9999.990
66.031	103.783	269.001	0.012	0.051	0.100	89.103.142	8.167	1.976	-9999.990	-9999.990
66.091	101.251	269.380	0.013	0.049	0.101	93.100.143	7.936	2.064	-9999.990	-9999.990
66.151	75.929	269.380	0.013	0.049	0.101	93.100.143	7.936	2.064	-9999.990	-9999.990
66.211	75.929	270.895	0.013	0.049	0.101	93.100.143	7.936	2.064	-9999.990	-9999.990
66.271	113.910	271.652	0.013	0.049	0.101	93.100.143	7.936	2.064	-9999.990	-9999.990
66.331	113.914	271.652	0.013	0.049	0.101	93.100.143	7.936	2.064	-9999.990	-9999.990

Boring BK3
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
66.391	81.555	272.626	0.013	0.049	0.101	93.100.143	7.936	2.064	-9999.990	-9999.990
66.451	75.929	272.626	0.013	0.049	0.102	91.100.144	8.103	2.063	-9999.990	-9999.990
66.511	75.929	271.478	0.012	0.049	0.102	90.101.144	8.274	2.063	-9999.990	-9999.990
66.571	67.489	272.626	0.011	0.060	0.087	77.123.124	8.214	1.454	-9999.990	-9999.990
66.631	67.489	272.626	0.010	0.061	0.088	73.124.125	8.842	1.453	-9999.990	-9999.990
66.691	86.055	272.177	0.010	0.061	0.088	73.124.125	8.842	1.453	-9999.990	-9999.990
66.751	73.115	272.177	0.010	0.060	0.090	74.122.127	8.756	1.506	-9999.990	-9999.990
66.811	73.115	272.876	0.011	0.058	0.091	76.119.129	8.670	1.564	-9999.990	-9999.990
66.871	73.115	271.827	0.011	0.055	0.094	82.113.133	8.299	1.694	-9999.990	-9999.990
66.931	121.513	271.827	0.011	0.055	0.094	82.113.133	8.299	1.694	-9999.990	-9999.990
66.991	121.513	272.302	0.011	0.055	0.094	82.113.133	8.299	1.694	-9999.990	-9999.990
67.051	101.251	272.302	0.011	0.055	0.094	82.113.133	8.299	1.694	-9999.990	-9999.990
67.111	101.251	271.478	0.011	0.056	0.094	81.114.134	8.505	1.693	-9999.990	-9999.990
67.171	83.526	271.804	0.009	0.067	0.079	68.136.112	8.468	1.185	-9999.990	-9999.990
67.231	87.182	271.804	0.008	0.077	0.065	56.158.92	8.418	0.839	-9999.990	-9999.990
67.291	87.182	271.804	0.008	0.076	0.066	57.156.93	8.313	0.863	-9999.990	-9999.990
67.351	83.525	271.804	0.008	0.075	0.067	61.153.94	7.954	0.890	-9999.990	-9999.990
67.411	83.525	271.084	0.008	0.075	0.067	61.153.94	7.954	0.890	-9999.990	-9999.990
67.471	109.693	271.368	0.009	0.074	0.068	63.151.96	7.859	0.918	-9999.990	-9999.990
67.531	116.447	271.368	0.009	0.074	0.068	63.151.96	7.859	0.918	-9999.990	-9999.990
67.591	116.447	270.289	0.009	0.074	0.068	63.151.96	7.859	0.918	-9999.990	-9999.990
67.651	89.998	270.289	0.009	0.074	0.068	63.151.96	7.859	0.918	-9999.990	-9999.990
67.711	89.996	271.368	0.009	0.072	0.069	66.148.97	7.533	0.948	-9999.990	-9999.990
67.771	75.930	271.368	0.010	0.071	0.070	70.145.98	7.233	0.980	-9999.990	-9999.990
67.831	106.879	271.368	0.009	0.072	0.070	66.146.99	7.675	0.980	-9999.990	-9999.990
67.891	106.879	272.107	0.009	0.072	0.070	66.146.99	7.675	0.980	-9999.990	-9999.990
67.951	91.123	272.107	0.009	0.070	0.071	68.144.101	7.587	1.014	-9999.990	-9999.990
68.011	91.121	271.652	0.009	0.070	0.071	68.144.101	7.588	1.014	-9999.990	-9999.990
68.071	89.996	272.410	0.009	0.070	0.071	68.144.101	7.587	1.014	-9999.990	-9999.990
68.131	106.877	272.410	0.009	0.070	0.071	68.144.101	7.587	1.014	-9999.990	-9999.990
68.191	106.879	271.294	0.010	0.069	0.073	70.141.103	7.501	1.051	-9999.990	-9999.990
68.251	103.783	271.294	0.009	0.070	0.073	69.142.103	7.733	1.050	-9999.990	-9999.990
68.311	103.783	272.251	0.009	0.070	0.073	69.142.103	7.733	1.050	-9999.990	-9999.990
68.371	83.525	272.107	0.009	0.070	0.073	69.142.103	7.733	1.050	-9999.990	-9999.990
68.431	88.589	272.107	0.009	0.070	0.073	69.142.103	7.733	1.050	-9999.990	-9999.990
68.491	88.589	272.479	0.009	0.070	0.073	67.143.104	7.977	1.050	-9999.990	-9999.990
68.551	88.589	-9999.990	0.009	0.070	0.073	67.143.104	7.977	1.050	-9999.990	-9999.990
68.611	88.589	-9999.990	0.009	0.070	0.073	67.143.104	7.977	1.050	-9999.990	-9999.990
68.671	111.379	-9999.990	0.010	0.068	0.074	71.139.105	7.645	1.089	-9999.990	-9999.990
68.731	119.671	-9999.990	0.010	0.068	0.074	71.139.105	7.645	1.089	-9999.990	-9999.990
68.791	119.671	-9999.990	0.009	0.069	0.075	69.140.106	7.881	1.089	-9999.990	-9999.990
68.851	108.849	-9999.990	0.009	0.069	0.075	67.141.106	8.131	1.088	-9999.990	-9999.990
68.911	108.849	-9999.990	0.010	0.067	0.076	71.137.108	7.786	1.130	-9999.990	-9999.990
68.971	101.252	-9999.990	0.010	0.068	0.076	69.138.108	8.035	1.130	-9999.990	-9999.990
69.031	92.042	-9999.990	0.010	0.068	0.076	69.138.108	8.035	1.130	-9999.990	-9999.990
69.091	92.042	-9999.990	0.008	0.079	0.061	56.162.86	7.891	0.764	-9999.990	-9999.990
69.151	109.693	-9999.990	0.008	0.079	0.061	56.162.86	7.891	0.764	-9999.990	-9999.990
69.211	109.693	-9999.990	0.007	0.080	0.061	54.163.86	8.203	0.764	-9999.990	-9999.990
69.271	103.362	-9999.990	0.008	0.079	0.062	56.161.88	8.082	0.789	-9999.990	-9999.990
69.331	113.913	-9999.990	0.008	0.077	0.063	59.157.89	7.673	0.816	-9999.990	-9999.990
69.391	113.914	-9999.990	0.007	0.079	0.064	52.161.91	8.984	0.815	-9999.990	-9999.990
69.451	107.583	-9999.990	0.008	0.077	0.065	56.157.92	8.477	0.844	-9999.990	-9999.990
69.511	107.582	-9999.990	0.008	0.077	0.065	56.157.92	8.477	0.844	-9999.990	-9999.990
69.571	107.582	-9999.990	0.008	0.076	0.066	58.155.94	8.349	0.874	-9999.990	-9999.990
69.631	93.460	-9999.990	0.008	0.076	0.066	58.155.94	8.349	0.874	-9999.990	-9999.990
69.691	93.459	-9999.990	0.008	0.076	0.067	56.156.94	8.696	0.874	-9999.990	-9999.990
69.751	75.929	-9999.990	0.007	0.077	0.067	54.157.95	9.073	0.874	-9999.990	-9999.990
69.811	75.929	-9999.990	0.007	0.077	0.067	51.157.95	9.484	0.873	-9999.990	-9999.990
69.871	92.205	-9999.990	0.008	0.074	0.069	60.151.98	8.438	0.941	-9999.990	-9999.990
69.931	102.939	-9999.990	0.008	0.074	0.069	60.151.98	8.437	0.941	-9999.990	-9999.990
69.991	102.939	-9999.990	0.008	0.074	0.069	60.151.98	8.437	0.941	-9999.990	-9999.990
70.051	110.747	-9999.990	0.008	0.074	0.069	60.151.98	8.437	0.941	-9999.990	-9999.990
70.111	110.748	-9999.990	0.008	0.074	0.070	58.152.99	8.797	0.940	-9999.990	-9999.990
70.171	96.730	-9999.990	0.009	0.072	0.071	62.148.100	8.312	0.979	-9999.990	-9999.990
70.231	81.356	-9999.990	0.008	0.073	0.071	60.149.101	8.659	0.978	-9999.990	-9999.990
70.291	81.354	-9999.990	0.008	0.074	0.072	55.150.102	9.448	0.978	-9999.990	-9999.990
70.351	105.999	-9999.990	0.008	0.074	0.072	55.150.102	9.448	0.978	-9999.990	-9999.990
70.411	-9999.990	-9999.990	0.008	0.072	0.073	60.147.104	8.891	1.019	-9999.990	-9999.990
70.471	-9999.990	-9999.990	0.009	0.070	0.074	64.143.105	8.394	1.064	-9999.990	-9999.990
70.531	-9999.990	-9999.990	0.009	0.069	0.076	67.140.108	8.269	1.112	-9999.990	-9999.990

Boring BK3
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
70.591	-9999.990	-9999.990	0.009	0.067	0.078	67.137.111	8.471	1.163	-9999.990	-9999.990
70.651	-9999.990	-9999.990	0.010	0.065	0.080	72.133.113	8.039	1.218	-9999.990	-9999.990
70.711	-9999.990	-9999.990	0.010	0.065	0.080	72.133.113	8.039	1.218	-9999.990	-9999.990
70.771	-9999.990	-9999.990	0.009	0.066	0.081	67.135.114	8.690	1.218	-9999.990	-9999.990
70.831	-9999.990	-9999.990	0.008	0.067	0.082	60.138.116	9.902	1.216	-9999.990	-9999.990

Note:
R.G.B - Red/Green/Blue color values, each between 0 and 255, corresponding to GR_KRAT, GR_URAT and GR_THRAT, respectively
GR_KRAT, GR_URAT, GR_THRAT - Ratios of K, U, and Th to Total Gamma Ray, values used to create color cube values
-9999.99 - no data
1 - natural gamma was logged through steel casing and value was corrected to equate to values in PVC casing

Boring BK4
Summary of Geophysical Logging Data
Supplemental Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
3.467	-9999.990	6.622	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.527	-9999.990	8.194	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.587	-9999.990	8.194	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.647	-9999.990	168.110	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.707	-9999.990	168.110	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.767	-9999.990	10.921	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.827	-9999.990	14.211	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.887	-9999.990	14.211	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.947	-9999.990	14.481	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.007	-9999.990	14.481	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.067	-9999.990	14.406	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.127	-9999.990	16.375	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.187	-9999.990	16.375	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.247	-9999.990	13.497	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.307	-9999.990	13.497	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.367	-9999.990	12.840	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.427	-9999.990	12.840	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.487	-9999.990	12.840	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.547	-9999.990	8.952	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.607	-9999.990	8.952	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.667	-9999.990	6.780	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.727	-9999.990	7.134	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.787	-9999.990	7.134	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.847	-9999.990	5.265	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.907	-9999.990	5.265	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.967	-9999.990	5.265	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.027	-9999.990	5.770	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.087	-9999.990	5.770	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.147	-9999.990	5.265	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.207	-9999.990	5.265	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.267	-9999.990	4.760	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.327	-9999.990	7.285	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.387	-9999.990	7.285	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.447	-9999.990	5.316	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.507	-9999.990	5.316	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.567	-9999.990	5.770	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.627	-9999.990	7.790	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.687	-9999.990	7.790	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.747	-9999.990	5.770	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.807	-9999.990	5.770	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.867	-9999.990	6.275	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.927	-9999.990	8.295	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.987	-9999.990	8.295	-9999.990	-9999.990	-9999.990	219.0.170	-9999.990	-9999.990	-9999.990	-9999.990
6.047	60.740	6.780	0.030	0.000	0.120	219.0.170	3.910	-9999.990	-9999.990	-9999.990
6.107	61.860	6.780	0.030	0.000	0.120	219.0.170	3.910	-9999.990	-9999.990	-9999.990
6.167	53.430	6.679	0.030	0.000	0.120	219.0.170	3.910	-9999.990	-9999.990	-9999.990
6.227	53.430	9.810	0.030	0.000	0.120	219.0.170	3.910	-9999.990	-9999.990	-9999.990
6.287	53.140	9.810	0.030	0.000	0.120	219.0.170	3.910	-9999.990	-9999.990	-9999.990
6.347	53.140	8.497	0.030	0.000	0.120	219.0.170	3.910	-9999.990	-9999.990	-9999.990
6.407	53.430	8.497	0.030	0.000	0.120	219.0.170	3.910	-9999.990	-9999.990	-9999.990
6.467	78.740	9.305	0.030	0.000	0.130	219.0.184	4.050	-9999.990	-9999.990	-9999.990
6.527	78.740	11.830	0.030	0.000	0.120	219.0.170	3.950	-9999.990	-9999.990	-9999.990
6.587	50.610	11.830	0.030	0.000	0.120	219.0.170	3.950	-9999.990	-9999.990	-9999.990
6.647	50.610	8.497	0.030	0.000	0.120	219.0.170	3.950	-9999.990	-9999.990	-9999.990
6.707	63.270	8.497	0.030	0.000	0.120	219.0.170	3.840	-9999.990	-9999.990	-9999.990
6.767	36.551	8.800	0.030	0.000	0.130	219.0.184	4.450	-9999.990	-9999.990	-9999.990
6.827	36.550	8.952	0.030	0.000	0.130	219.0.184	4.450	-9999.990	-9999.990	-9999.990
6.887	42.180	8.952	0.030	0.000	0.130	219.0.184	4.350	-9999.990	-9999.990	-9999.990
6.947	42.180	6.780	0.030	0.000	0.130	219.0.184	4.350	-9999.990	-9999.990	-9999.990
7.007	53.430	6.275	0.030	0.000	0.130	219.0.184	4.250	-9999.990	-9999.990	-9999.990
7.067	55.680	6.275	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
7.127	55.680	7.134	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
7.187	53.430	7.134	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
7.247	53.430	4.255	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
7.307	43.020	3.750	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
7.367	61.860	3.750	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
7.427	61.860	3.498	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
7.487	50.610	3.498	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
7.547	60.740	1.225	0.030	0.000	0.130	219.0.184	4.070	-9999.990	-9999.990	-9999.990
7.607	60.740	1.225	0.030	0.000	0.130	219.0.184	4.070	-9999.990	-9999.990	-9999.990
7.667	50.610	1.225	0.030	0.000	0.130	219.0.184	4.470	-9999.990	-9999.990	-9999.990
7.727	50.610	2.740	0.030	0.000	0.130	219.0.184	4.470	-9999.990	-9999.990	-9999.990
7.787	47.800	2.740	0.030	0.000	0.130	219.0.184	4.590	-9999.990	-9999.990	-9999.990
7.847	91.120	0.316	0.030	0.000	0.130	219.0.184	4.590	-9999.990	-9999.990	-9999.990
7.907	91.120	0.720	0.030	0.000	0.130	219.0.184	4.500	-9999.990	-9999.990	-9999.990
7.967	36.550	0.720	0.030	0.000	0.130	219.0.184	4.420	-9999.990	-9999.990	-9999.990
8.027	36.550	2.740	0.030	0.000	0.130	219.0.184	4.440	-9999.990	-9999.990	-9999.990
8.087	30.360	2.740	0.030	0.000	0.130	219.0.184	4.440	-9999.990	-9999.990	-9999.990
8.147	56.240	0.215	0.030	0.000	0.130	219.0.184	4.560	-9999.990	-9999.990	-9999.990
8.207	56.240	0.316	0.030	0.000	0.130	219.0.184	4.560	-9999.990	-9999.990	-9999.990
8.267	67.490	0.316	0.030	0.000	0.130	219.0.184	4.560	-9999.990	-9999.990	-9999.990
8.327	67.490	2.235	0.030	0.000	0.130	219.0.184	4.470	-9999.990	-9999.990	-9999.990
8.387	60.740	2.235	0.030	0.000	0.140	219.0.199	4.780	-9999.990	-9999.990	-9999.990
8.447	47.800	-0.593	0.030	0.000	0.140	219.0.199	4.780	-9999.990	-9999.990	-9999.990
8.507	47.800	-0.290	0.030	0.000	0.140	219.0.199	4.780	-9999.990	-9999.990	-9999.990
8.567	39.360	-0.290	0.030	0.000	0.140	219.0.199	4.800	-9999.990	-9999.990	-9999.990
8.627	39.360	1.225	0.030	0.000	0.140	219.0.199	4.730	-9999.990	-9999.990	-9999.990
8.687	45.550	1.225	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
8.747	64.680	-1.502	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
8.807	64.680	-1.300	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
8.867	28.120	-1.300	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
8.927	28.120	-0.593	0.030	0.000	0.130	219.0.184	4.570	-9999.990	-9999.990	-9999.990
8.987	28.120	-0.593	0.030	0.000	0.130	219.0.184	4.570	-9999.990	-9999.990	-9999.990
9.047	40.490	-2.310	0.030	0.000	0.130	219.0.184	4.570	-9999.990	-9999.990	-9999.990
9.107	40.490	-2.310	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
9.167	42.180	-2.310	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
9.227	42.180	-1.502	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
9.287	59.050	-1.502	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
9.347	45.550	-2.815	0.030	0.000	0.130	219.0.184	4.370	-9999.990	-9999.990	-9999.990
9.407	45.550	-1.048	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
9.467	42.180	-1.048	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
9.527	42.180	-3.320	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
9.587	30.930	-3.320	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
9.647	55.680	-2.815	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
9.707	55.680	-1.957	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
9.767	39.360	-1.957	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
9.827	39.360	-3.320	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
9.887	75.930	-3.320	0.030	0.000	0.130	219.0.184	4.390	-9999.990	-9999.990	-9999.990
9.947	45.550	-3.320	0.030	0.000	0.140	219.0.199	4.720	-9999.990	-9999.990	-9999.990
10.007	45.550	-2.815	0.030	0.000	0.140	219.0.199	4.720	-9999.990	-9999.990	-9999.990
10.067	33.740	-2.815	0.030	0.000	0.140	219.0.199	4.720	-9999.990	-9999.990	-9999.990
10.127	33.740	-1.502	0.030	0.000	0.140	219.0.199	4.820	-9999.990	-9999.990	-9999.990
10.187	48.080	-1.502	0.030	0.000	0.140	219.0.199	4.820	-9999.990	-9999.990	-9999.990
10.247	30.930	-3.320	0.030	0.000	0.140	219.0.199	4.750	-9999.990	-9999.990	-9999.990
10.307	30.930	-3.320	0.030	0.000	0.140	219.0.199	4.750	-9999.990	-9999.990	-9999.990
10.367	33.740	-3.320	0.030	0.000	0.140	219.0.199	4.750	-9999.990	-9999.990	-9999.990
10.427	33.740	-0.795	0.030	0.000	0.140	219.0.199	4.840	-9999.990	-9999.990	-9999.990
10.487	40.490	-0.795	0.030	0.000	0.140	219.0.199	4.840	-9999.990	-9999.990	-9999.990
10.547	53.430	-3.320	0.030	0.000	0.130	219.0.184	4.640	-9999.990	-9999.990	-9999.990
10.607	53.430	-2.815	0.030	0.000	0.130	219.0.184	4.640	-9999.990	-9999.990	-9999.990
10.667	53.140	-2.815	0.030	0.000	0.130	219.0.184	4.640	-9999.990	-9999.990	-9999.990
10.727	53.140	-1.957	0.030	0.000	0.130	219.0.184	4.640	-9999.990	-9999.990	-9999.990
10.787	59.050	-1.957	0.030	0.000	0.130	219.0.184	4.640	-9999.990	-9999.990	-9999.990
10.847	39.360	-2.815	0.030	0.000	0.130	219.0.184	4.640	-9999.990	-9999.990	-9999.990
10.907	39.360	-3.825	0.030	0.000	0.130	219.0.184	4.510	-9999.990	-9999.990	-9999.990
10.967	33.740	-3.825	0.030	0.000	0.130	219.0.184	4.510	-9999.990	-9999.990	-9999.990
11.027	33.740	-2.411	0.030	0.000	0.130	219.0.184	4.490	-9999.990	-9999.990	-9999.990
11.087	53.140	-2.411	0.030	0.000	0.130	219.0.184	4.550	-9999.990	-9999.990	-9999.990
11.147	36.550	-3.825	0.030	0.000	0.130	219.0.184	4.490	-9999.990	-9999.990	-9999.990
11.207	36.550	-2.866	0.030	0.000	0.130	219.0.184	4.580	-9999.990	-9999.990	-9999.990
11.267	44.990	-2.866	0.030	0.000	0.130	219.0.184	4.640	-9999.990	-9999.990	-9999.990
11.327	44.990	-4.330	0.030	0.000	0.140	219.0.199	4.780	-9999.990	-9999.990	-9999.990
11.387	30.930	-4.330	0.030	0.000	0.140	219.0.199	4.880	-9999.990	-9999.990	-9999.990
11.447	50.610	-4.330	0.030	0.000	0.140	219.0.199	4.950	-9999.990	-9999.990	-9999.990

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
11.507	50.610	-3.320	0.030	0.000	0.140	219.0.199	4.950	-9999.990	-9999.990	-9999.990
11.567	67.490	-3.320	0.030	0.000	0.140	219.0.199	4.880	-9999.990	-9999.990	-9999.990
11.627	67.490	-3.825	0.030	0.000	0.140	219.0.199	4.800	-9999.990	-9999.990	-9999.990
11.687	70.300	-3.825	0.030	0.000	0.130	219.0.184	4.660	-9999.990	-9999.990	-9999.990
11.747	35.430	-5.138	0.030	0.000	0.130	219.0.184	4.660	-9999.990	-9999.990	-9999.990
11.807	35.430	-2.815	0.030	0.000	0.140	219.0.199	4.730	-9999.990	-9999.990	-9999.990
11.867	44.990	-2.815	0.030	0.000	0.130	219.0.184	4.550	-9999.990	-9999.990	-9999.990
11.927	44.990	-4.330	0.030	0.000	0.140	219.0.199	4.710	-9999.990	-9999.990	-9999.990
11.987	32.900	-4.330	0.030	0.000	0.140	219.0.199	4.710	-9999.990	-9999.990	-9999.990
12.047	28.120	-4.684	0.030	0.000	0.140	219.0.199	4.710	-9999.990	-9999.990	-9999.990
12.107	28.120	-2.815	0.030	0.000	0.140	219.0.199	4.790	-9999.990	-9999.990	-9999.990
12.167	47.800	-2.815	0.030	0.000	0.140	219.0.199	4.840	-9999.990	-9999.990	-9999.990
12.227	47.800	-4.835	0.030	0.000	0.140	219.0.199	4.840	-9999.990	-9999.990	-9999.990
12.287	35.430	-4.835	0.030	0.000	0.140	219.0.199	4.840	-9999.990	-9999.990	-9999.990
12.347	53.430	-4.835	0.030	0.000	0.140	219.0.199	4.840	-9999.990	-9999.990	-9999.990
12.407	53.430	-3.320	0.030	0.000	0.140	219.0.199	4.840	-9999.990	-9999.990	-9999.990
12.467	36.550	-3.320	0.030	0.000	0.140	219.0.199	4.930	-9999.990	-9999.990	-9999.990
12.527	36.550	-4.835	0.030	0.000	0.140	219.0.199	5.050	-9999.990	-9999.990	-9999.990
12.587	30.360	-4.835	0.030	0.000	0.140	219.0.199	5.050	-9999.990	-9999.990	-9999.990
12.647	42.180	-4.835	0.030	0.000	0.140	219.0.199	5.050	-9999.990	-9999.990	-9999.990
12.707	42.180	-3.775	0.030	0.000	0.140	219.0.199	4.960	-9999.990	-9999.990	-9999.990
12.767	32.900	-3.775	0.030	0.000	0.140	219.0.199	4.960	-9999.990	-9999.990	-9999.990
12.827	32.900	-5.340	0.030	0.000	0.140	219.0.199	4.960	-9999.990	-9999.990	-9999.990
12.887	28.120	-5.340	0.030	0.000	0.140	219.0.199	4.960	-9999.990	-9999.990	-9999.990
12.947	30.930	-4.835	0.030	0.000	0.140	219.0.199	4.750	-9999.990	-9999.990	-9999.990
13.007	30.930	-3.775	0.030	0.000	0.140	219.0.199	4.750	-9999.990	-9999.990	-9999.990
13.067	40.490	-3.775	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
13.127	40.490	-5.340	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
13.187	22.490	-5.340	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
13.247	42.180	-5.593	0.030	0.000	0.130	219.0.184	4.130	-9999.990	-9999.990	-9999.990
13.307	42.180	-2.815	0.030	0.000	0.130	219.0.184	4.130	-9999.990	1.106	0.000
13.367	47.800	-2.815	0.030	0.000	0.130	219.0.184	4.060	-9999.990	-9999.990	-9999.990
13.427	47.800	-5.340	0.030	0.000	0.130	219.0.184	4.140	-9999.990	-9999.990	-9999.990
13.487	30.360	-5.340	0.030	0.000	0.130	219.0.184	4.140	-9999.990	-9999.990	-9999.990
13.547	47.800	-5.593	0.030	0.000	0.130	219.0.184	4.040	-9999.990	-9999.990	-9999.990
13.607	47.800	-3.320	0.030	0.000	0.130	219.0.184	4.040	-9999.990	-9999.990	-9999.990
13.667	56.240	-3.320	0.030	0.000	0.130	219.0.184	4.040	-9999.990	-9999.990	-9999.990
13.727	56.240	-5.340	0.030	0.000	0.130	219.0.184	4.040	-9999.990	-9999.990	-9999.990
13.787	45.550	-5.593	0.030	0.000	0.130	219.0.184	4.060	-9999.990	-9999.990	-9999.990
13.847	59.050	-5.593	0.030	0.000	0.120	219.0.170	3.990	-9999.990	-9999.990	-9999.990
13.907	59.050	-3.320	0.030	0.000	0.130	219.0.184	4.070	-9999.990	-9999.990	-9999.990
13.967	36.550	-3.320	0.030	0.000	0.130	219.0.184	4.070	-9999.990	-9999.990	-9999.990
14.027	36.550	-5.138	0.030	0.000	0.130	219.0.184	4.160	-9999.990	-9999.990	-9999.990
14.087	32.900	-4.835	0.030	0.000	0.130	219.0.184	4.240	-9999.990	-9999.990	-9999.990
14.147	53.430	-4.835	0.030	0.000	0.130	219.0.184	4.570	-9999.990	-9999.990	-9999.990
14.207	53.430	-2.815	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
14.267	39.360	-2.815	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
14.327	55.680	-5.138	0.030	0.000	0.140	219.0.199	4.730	-9999.990	-9999.990	-9999.990
14.387	55.680	-4.835	0.030	0.000	0.140	219.0.199	4.730	-9999.990	-9999.990	-9999.990
14.447	39.360	-4.835	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
14.507	39.360	-2.815	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
14.567	48.080	-2.815	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
14.627	53.430	-5.593	0.030	0.000	0.140	219.0.199	4.760	-9999.990	-9999.990	-9999.990
14.687	53.430	-5.340	0.030	0.000	0.130	219.0.184	4.680	-9999.990	-9999.990	-9999.990
14.747	33.740	-5.340	0.030	0.000	0.140	219.0.199	4.790	-9999.990	-9999.990	-9999.990
14.807	33.740	-3.320	0.030	0.000	0.140	219.0.199	4.870	-9999.990	-9999.990	-9999.990
14.867	43.020	-3.320	0.030	0.000	0.140	219.0.199	4.870	-9999.990	-9999.990	-9999.990
14.927	28.120	-4.835	0.030	0.000	0.140	219.0.199	4.990	-9999.990	-9999.990	-9999.990
14.987	28.120	-6.047	0.030	0.000	0.140	219.0.199	5.080	-9999.990	1.037	0.000
15.047	48.080	-6.047	0.030	0.000	0.140	219.0.199	4.990	-9999.990	-9999.990	-9999.990
15.107	48.080	-3.320	0.030	0.000	0.140	219.0.199	5.080	-9999.990	-9999.990	-9999.990
15.167	50.610	-3.320	0.030	0.000	0.140	219.0.199	5.410	-9999.990	-9999.990	-9999.990
15.227	39.360	-4.835	0.030	0.000	0.140	219.0.199	5.410	-9999.990	-9999.990	-9999.990
15.287	39.360	-5.593	0.030	0.000	0.140	219.0.199	5.410	-9999.990	-9999.990	-9999.990
15.347	22.770	-5.593	0.030	0.000	0.140	219.0.199	5.410	-9999.990	-9999.990	-9999.990
15.407	22.770	-2.815	0.030	0.000	0.140	219.0.199	5.410	-9999.990	-9999.990	-9999.990
15.467	42.180	-2.815	0.030	0.000	0.140	219.0.199	5.290	-9999.990	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
15.527	33.740	-5.138	0.030	0.000	0.140	219.0.199	5.290	-9999.990	-9999.990	-9999.990
15.587	33.740	-4.330	0.030	0.000	0.140	219.0.199	4.940	-9999.990	-9999.990	-9999.990
15.647	28.120	-4.330	0.030	0.000	0.140	219.0.199	4.940	-9999.990	-9999.990	-9999.990
15.707	28.120	-1.805	0.030	0.000	0.140	219.0.199	4.940	-9999.990	-9999.990	-9999.990
15.767	55.680	-1.805	0.030	0.000	0.140	219.0.199	5.030	-9999.990	-9999.990	-9999.990
15.827	78.740	-4.229	0.030	0.000	0.140	219.0.199	5.230	-9999.990	-9999.990	-9999.990
15.887	78.740	-3.825	0.030	0.000	0.140	219.0.199	5.230	-9999.990	-9999.990	-9999.990
15.947	53.430	-3.825	0.030	0.000	0.140	219.0.199	5.370	-9999.990	-9999.990	-9999.990
16.007	53.430	-1.805	0.030	0.000	0.140	219.0.199	5.370	-9999.990	-9999.990	-9999.990
16.067	40.490	-1.805	0.030	0.000	0.140	219.0.199	5.370	-9999.990	-9999.990	-9999.990
16.127	28.120	-3.775	0.030	0.000	0.140	219.0.199	5.230	-9999.990	-9999.990	-9999.990
16.187	28.120	-2.815	0.030	0.000	0.140	219.0.199	5.370	-9999.990	-9999.990	-9999.990
16.247	55.680	-2.815	0.030	0.000	0.140	219.0.199	5.370	-9999.990	-9999.990	-9999.990
16.307	55.680	-1.048	0.030	0.000	0.150	219.0.213	5.590	-9999.990	-9999.990	-9999.990
16.367	42.180	-1.048	0.030	0.000	0.150	219.0.213	5.590	-9999.990	-9999.990	-9999.990
16.427	73.119	-2.815	0.030	0.000	0.140	219.0.199	5.500	-9999.990	-9999.990	-9999.990
16.487	73.120	-2.310	0.030	0.000	0.150	219.0.213	5.660	-9999.990	-9999.990	-9999.990
16.547	27.830	-2.310	0.030	0.000	0.150	219.0.213	5.530	-9999.990	-9999.990	-9999.990
16.607	27.830	-0.593	0.030	0.000	0.150	219.0.213	5.660	-9999.990	-9999.990	-9999.990
16.667	36.550	-0.593	0.030	0.000	0.150	219.0.213	5.660	-9999.990	-9999.990	-9999.990
16.727	35.430	-2.310	0.030	0.000	0.150	219.0.213	5.660	-9999.990	-9999.990	-9999.990
16.787	35.430	-1.805	0.030	0.000	0.150	219.0.213	5.800	-9999.990	-9999.990	-9999.990
16.847	59.050	-1.805	0.030	0.000	0.150	219.0.213	5.910	-9999.990	-9999.990	-9999.990
16.907	59.050	0.720	0.030	0.000	0.140	219.0.199	5.480	-9999.990	-9999.990	-9999.990
16.967	42.180	0.720	0.030	0.000	0.140	219.0.199	5.480	-9999.990	-9999.990	-9999.990
17.027	68.330	-1.957	0.030	0.000	0.150	219.0.213	5.590	-9999.990	-9999.990	-9999.990
17.087	68.330	-1.805	0.030	0.000	0.150	219.0.213	5.750	-9999.990	-9999.990	-9999.990
17.147	50.610	-1.805	0.030	0.000	0.150	219.0.213	5.880	-9999.990	-9999.990	-9999.990
17.207	50.610	0.720	0.030	0.000	0.150	219.0.213	5.750	-9999.990	-9999.990	-9999.990
17.267	25.301	0.720	0.030	0.000	0.150	219.0.213	5.750	-9999.990	-9999.990	-9999.990
17.327	64.680	-1.957	0.030	0.000	0.150	219.0.213	5.750	-9999.990	-9999.990	-9999.990
17.387	64.680	-1.300	0.030	0.000	0.150	219.0.213	5.750	-9999.990	-9999.990	-9999.990
17.447	47.800	-1.300	0.030	0.000	0.150	219.0.213	5.750	-9999.990	-9999.990	-9999.990
17.507	47.800	0.215	0.030	0.000	0.150	219.0.213	5.750	-9999.990	-9999.990	-9999.990
17.567	58.210	0.215	0.030	0.000	0.140	219.0.199	5.410	-9999.990	-9999.990	-9999.990
17.627	44.990	-1.957	0.030	0.000	0.140	219.0.199	5.410	-9999.990	-9999.990	-9999.990
17.687	44.990	-1.805	0.030	0.000	0.140	219.0.199	5.520	-9999.990	-9999.990	-9999.990
17.747	44.990	-1.805	0.030	0.000	0.140	219.0.199	5.520	-9999.990	-9999.990	-9999.990
17.807	44.990	-0.593	0.030	0.000	0.140	219.0.199	5.240	-9999.990	-9999.990	-9999.990
17.867	39.360	-0.593	0.030	0.000	0.140	219.0.199	4.850	-9999.990	-9999.990	-9999.990
17.927	45.550	-1.805	0.030	0.000	0.140	219.0.199	5.000	-9999.990	-9999.990	-9999.990
17.987	45.550	-1.300	0.030	0.000	0.140	219.0.199	5.000	-9999.990	0.925	2.274
18.047	30.930	-1.300	0.030	0.000	0.140	219.0.199	5.110	-9999.990	-9999.990	-9999.990
18.107	30.930	-0.139	0.030	0.000	0.140	219.0.199	5.070	-9999.990	-9999.990	-9999.990
18.167	39.360	-0.139	0.030	0.000	0.140	219.0.199	5.230	-9999.990	-9999.990	-9999.990
18.227	35.430	-0.795	0.030	0.000	0.140	219.0.199	5.110	-9999.990	-9999.990	-9999.990
18.287	35.430	0.771	0.030	0.000	0.140	219.0.199	5.110	-9999.990	-9999.990	-9999.990
18.347	39.360	0.771	0.030	0.000	0.140	219.0.199	5.110	-9999.990	-9999.990	-9999.990
18.407	39.360	0.215	0.030	0.000	0.140	219.0.199	5.000	-9999.990	-9999.990	-9999.990
18.467	35.430	0.215	0.030	0.000	0.140	219.0.199	5.320	-9999.990	-9999.990	-9999.990
18.527	61.860	0.215	0.020	0.020	0.110	146.40.156	4.950	4.510	-9999.990	-9999.990
18.587	61.860	1.680	0.030	0.000	0.150	219.0.213	5.630	462.680	-9999.990	-9999.990
18.647	39.360	1.680	0.030	0.000	0.150	219.0.213	5.580	-9999.990	-9999.990	-9999.990
18.707	39.360	-0.795	0.030	0.000	0.150	219.0.213	5.580	-9999.990	-9999.990	-9999.990
18.767	37.960	-0.795	0.030	0.000	0.150	219.0.213	5.720	-9999.990	-9999.990	-9999.990
18.827	56.240	0.215	0.030	0.000	0.150	219.0.213	5.720	-9999.990	-9999.990	-9999.990
18.887	56.240	1.225	0.030	0.000	0.150	219.0.213	5.720	-9999.990	-9999.990	-9999.990
18.947	36.550	1.225	0.030	0.000	0.150	219.0.213	5.720	-9999.990	-9999.990	-9999.990
19.007	36.550	-0.290	0.030	0.000	0.150	219.0.213	5.720	-9999.990	-9999.990	-9999.990
19.067	60.740	-0.290	0.020	0.000	0.150	146.0.213	6.100	341.890	-9999.990	-9999.990
19.127	56.240	-0.290	0.020	0.000	0.150	146.0.213	6.100	341.890	-9999.990	-9999.990
19.187	56.240	1.680	0.020	0.010	0.150	146.20.213	6.340	24.630	-9999.990	-9999.990
19.247	43.020	1.680	0.020	0.010	0.140	146.20.199	7.030	12.730	-9999.990	-9999.990
19.307	43.020	-0.795	0.020	0.010	0.140	146.20.199	7.030	12.730	-9999.990	-9999.990
19.367	64.680	-0.795	0.020	0.020	0.140	146.40.199	7.350	8.650	-9999.990	-9999.990
19.427	78.460	0.215	0.020	0.020	0.140	146.40.199	7.350	8.650	-9999.990	-9999.990
19.487	78.460	1.225	0.020	0.020	0.140	146.40.199	7.360	8.630	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
19.547	30.930	1.225	0.020	0.020	0.140	146.40.199	7.720	6.510	-9999.990	-9999.990
19.607	30.930	0.720	0.020	0.020	0.140	146.40.199	7.720	6.510	-9999.990	-9999.990
19.667	39.360	0.720	0.020	0.020	0.140	146.40.199	7.450	6.520	-9999.990	-9999.990
19.727	43.020	1.225	0.020	0.020	0.130	146.40.184	6.980	6.540	-9999.990	-9999.990
19.787	43.020	2.134	0.020	0.020	0.130	146.40.184	6.980	6.540	-9999.990	-9999.990
19.847	53.430	2.134	0.020	0.020	0.130	146.40.184	7.300	5.250	-9999.990	-9999.990
19.907	53.430	1.730	0.020	0.030	0.120	146.61.170	8.030	3.770	-9999.990	-9999.990
19.967	39.360	1.730	0.020	0.030	0.120	146.61.170	7.740	3.770	-9999.990	-9999.990
20.027	65.800	1.730	0.020	0.030	0.120	146.61.170	8.030	3.770	-9999.990	-9999.990
20.087	65.800	4.407	0.010	0.060	0.090	73.122.128	8.390	1.490	-9999.990	-9999.990
20.147	53.430	4.407	0.010	0.060	0.090	73.122.128	8.390	1.490	-9999.990	-9999.990
20.207	53.430	3.750	0.010	0.060	0.090	73.122.128	7.840	1.620	-9999.990	-9999.990
20.267	36.550	3.750	0.010	0.060	0.090	73.122.128	7.840	1.620	-9999.990	-9999.990
20.327	59.050	3.043	0.010	0.060	0.090	73.122.128	8.220	1.620	-9999.990	-9999.990
20.387	59.050	5.770	0.010	0.060	0.090	73.122.128	7.850	1.620	-9999.990	-9999.990
20.447	63.270	5.770	0.010	0.060	0.090	73.122.128	8.380	1.500	-9999.990	-9999.990
20.507	63.270	3.245	0.010	0.060	0.090	73.122.128	8.380	1.500	-9999.990	-9999.990
20.567	42.180	3.245	0.010	0.060	0.090	73.122.128	7.490	1.620	-9999.990	-9999.990
20.627	30.360	3.498	0.010	0.060	0.090	73.122.128	7.170	1.620	-9999.990	-9999.990
20.687	30.360	5.265	0.010	0.060	0.090	73.122.128	7.840	1.620	-9999.990	-9999.990
20.747	81.560	5.265	0.010	0.060	0.090	73.122.128	8.380	1.500	-9999.990	-9999.990
20.807	81.560	2.589	0.010	0.060	0.090	73.122.128	8.380	1.500	-9999.990	-9999.990
20.867	53.430	3.245	0.010	0.060	0.090	73.122.128	7.980	1.500	-9999.990	-9999.990
20.927	73.400	3.245	0.010	0.060	0.090	73.122.128	7.980	1.500	-9999.990	-9999.990
20.987	73.400	4.760	0.010	0.060	0.090	73.122.128	8.830	1.500	-9999.990	-9999.990
21.047	78.740	4.760	0.010	0.060	0.090	73.122.128	8.830	1.500	-9999.990	-9999.990
21.107	53.141	2.589	0.010	0.060	0.090	73.122.128	9.530	1.390	-9999.990	-9999.990
21.167	53.140	3.750	0.010	0.070	0.080	73.143.113	11.320	1.220	-9999.990	-9999.990
21.227	73.120	3.750	0.010	0.070	0.080	73.143.113	11.310	1.220	-9999.990	-9999.990
21.287	73.120	6.275	0.010	0.070	0.080	73.143.113	11.310	1.220	-9999.990	-9999.990
21.347	53.430	6.275	0.010	0.070	0.080	73.143.113	11.330	1.220	-9999.990	-9999.990
21.407	48.080	4.861	0.010	0.070	0.080	73.143.113	11.310	1.220	-9999.990	-9999.990
21.467	48.080	7.285	0.010	0.070	0.080	73.143.113	11.310	1.220	-9999.990	-9999.990
21.527	61.860	7.285	0.010	0.070	0.080	73.143.113	10.590	1.220	-9999.990	-9999.990
21.587	61.860	9.810	0.010	0.070	0.080	73.143.113	9.380	1.220	-9999.990	-9999.990
21.647	40.490	9.810	0.010	0.070	0.080	73.143.113	9.950	1.220	-9999.990	-9999.990
21.707	92.810	9.305	0.010	0.070	0.080	73.143.113	9.970	1.220	-9999.990	-9999.990
21.767	92.810	10.770	0.010	0.070	0.080	73.143.113	11.350	1.220	-9999.990	-9999.990
21.827	53.140	10.770	0.010	0.070	0.080	73.143.113	10.630	1.220	-9999.990	-9999.990
21.887	53.140	14.860	0.010	0.070	0.080	73.143.113	9.990	1.220	-9999.990	-9999.990
21.947	39.360	14.860	0.010	0.060	0.090	73.122.128	8.550	1.400	-9999.990	-9999.990
22.007	78.740	13.042	0.010	0.060	0.090	73.122.128	8.550	1.400	-9999.990	-9999.990
22.067	78.740	14.355	0.010	0.060	0.090	73.122.128	8.140	1.400	-9999.990	-9999.990
22.127	73.120	14.355	0.010	0.060	0.080	73.122.113	8.730	1.300	-9999.990	-9999.990
22.187	73.120	17.133	0.010	0.060	0.080	73.122.113	8.730	1.300	-9999.990	-9999.990
22.247	75.930	17.133	0.010	0.060	0.080	73.122.113	9.230	1.300	-9999.990	-9999.990
22.307	81.560	16.375	0.010	0.070	0.080	73.143.113	11.180	1.090	-9999.990	-9999.990
22.367	81.560	15.365	0.010	0.070	0.080	73.143.113	10.480	1.090	-9999.990	-9999.990
22.427	53.430	15.365	0.010	0.070	0.080	73.143.113	10.480	1.090	-9999.990	-9999.990
22.487	53.430	17.133	0.010	0.070	0.080	73.143.113	11.210	1.090	-9999.990	-9999.990
22.547	118.980	17.133	0.010	0.080	0.070	73.163.99	13.870	0.980	-9999.990	-9999.990
22.607	67.491	15.365	0.010	0.070	0.080	73.143.113	11.530	1.030	-9999.990	-9999.990
22.667	67.490	16.224	0.010	0.070	0.080	73.143.113	11.530	1.030	-9999.990	-9999.990
22.727	81.560	16.224	0.010	0.070	0.080	73.143.113	11.530	1.030	-9999.990	-9999.990
22.787	81.560	14.355	0.010	0.070	0.080	73.143.113	11.530	1.030	-9999.990	-9999.990
22.847	91.120	14.355	0.010	0.050	0.100	73.102.142	10.270	1.860	-9999.990	-9999.990
22.907	87.180	13.850	0.010	0.050	0.100	73.102.142	9.790	1.860	-9999.990	-9999.990
22.967	87.180	13.951	0.010	0.050	0.100	73.102.142	8.970	1.860	-9999.990	-9999.990
23.027	68.330	13.951	0.010	0.050	0.100	73.102.142	8.280	1.870	-9999.990	-9999.990
23.087	68.330	12.335	0.010	0.050	0.100	73.102.142	7.860	2.020	-9999.990	-9999.990
23.147	90.000	12.335	0.010	0.050	0.100	73.102.142	8.640	1.860	-9999.990	-9999.990
23.207	81.560	11.679	0.010	0.050	0.100	73.102.142	8.640	1.860	-9999.990	-9999.990
23.267	81.560	13.850	0.010	0.050	0.100	73.102.142	7.980	1.860	-9999.990	-9999.990
23.327	63.270	13.850	0.010	0.050	0.100	73.102.142	7.680	1.860	-9999.990	-9999.990
23.387	63.270	11.830	0.010	0.050	0.100	73.102.142	7.970	1.860	-9999.990	-9999.990
23.447	59.050	11.830	0.010	0.050	0.100	73.102.142	8.270	1.860	-9999.990	-9999.990
23.507	78.460	10.770	0.010	0.050	0.100	73.102.142	8.270	1.860	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
23.567	78.460	13.850	0.010	0.050	0.100	73.102.142	8.270	1.860	-9999.990	-9999.990
23.627	67.490	13.850	0.010	0.050	0.090	73.102.128	8.080	1.730	1.836	0.977
23.687	67.490	11.325	0.010	0.050	0.090	73.102.128	8.080	1.730	-9999.990	-9999.990
23.747	88.590	11.325	0.010	0.050	0.090	73.102.128	8.080	1.730	-9999.990	-9999.990
23.807	50.610	11.325	0.010	0.050	0.090	73.102.128	7.780	1.740	-9999.990	-9999.990
23.867	50.610	13.042	0.010	0.050	0.100	73.102.142	7.670	1.860	-9999.990	-9999.990
23.927	92.810	13.042	0.010	0.050	0.100	73.102.142	7.960	1.860	-9999.990	-9999.990
23.987	92.810	11.830	0.010	0.050	0.100	73.102.142	7.960	1.860	-9999.990	-9999.990
24.047	55.680	11.830	0.010	0.050	0.100	73.102.142	7.960	1.860	-9999.990	-9999.990
24.107	92.810	11.224	0.010	0.050	0.100	73.102.142	7.570	2.010	-9999.990	-9999.990
24.167	92.810	13.850	0.010	0.050	0.100	73.102.142	7.960	1.860	-9999.990	-9999.990
24.227	65.800	13.850	0.010	0.070	0.070	73.143.99	8.730	0.970	-9999.990	-9999.990
24.287	65.800	11.325	0.010	0.070	0.070	73.143.99	8.730	0.970	-9999.990	-9999.990
24.347	39.360	11.325	0.010	0.070	0.070	73.143.99	8.910	0.930	-9999.990	-9999.990
24.407	61.860	11.679	0.010	0.070	0.070	73.143.99	8.910	0.930	-9999.990	-9999.990
24.467	61.860	13.850	0.010	0.070	0.070	73.143.99	8.450	0.930	-9999.990	-9999.990
24.527	67.490	13.850	0.010	0.070	0.070	73.143.99	8.920	0.930	-9999.990	-9999.990
24.587	67.490	11.224	0.010	0.080	0.070	73.163.99	9.440	0.930	-9999.990	-9999.990
24.647	68.330	11.224	0.010	0.060	0.090	73.122.128	9.270	1.630	-9999.990	-9999.990
24.707	98.440	12.335	0.010	0.060	0.100	73.122.142	8.730	1.740	-9999.990	-9999.990
24.767	98.440	14.355	0.010	0.060	0.100	73.122.142	9.100	1.740	-9999.990	-9999.990
24.827	70.301	14.355	0.010	0.060	0.100	73.122.142	9.100	1.740	-9999.990	-9999.990
24.887	70.300	12.588	0.010	0.060	0.090	73.122.128	10.320	1.530	-9999.990	-9999.990
24.947	50.610	12.588	0.010	0.060	0.090	73.122.128	10.320	1.530	-9999.990	-9999.990
25.007	50.610	13.345	0.010	0.060	0.090	73.122.128	10.320	1.530	-9999.990	-9999.990
25.067	50.610	13.951	0.010	0.060	0.090	73.122.128	10.320	1.530	-9999.990	-9999.990
25.127	59.050	13.951	0.010	0.060	0.090	73.122.128	10.320	1.530	-9999.990	-9999.990
25.187	59.050	12.840	0.010	0.060	0.090	73.122.128	10.320	1.530	-9999.990	-9999.990
25.247	60.740	12.840	0.010	0.060	0.090	73.122.128	9.390	1.530	-9999.990	-9999.990
25.307	59.050	13.951	0.010	0.080	0.070	73.163.99	9.800	0.860	-9999.990	-9999.990
25.367	59.050	11.830	0.010	0.060	0.090	73.122.128	10.190	1.380	-9999.990	-9999.990
25.427	70.860	11.830	0.010	0.060	0.090	73.122.128	10.190	1.380	-9999.990	-9999.990
25.487	70.860	11.830	0.010	0.060	0.090	73.122.128	9.270	1.380	-9999.990	-9999.990
25.547	64.680	11.830	0.010	0.060	0.090	73.122.128	9.700	1.380	-9999.990	-9999.990
25.607	63.270	12.588	0.010	0.060	0.090	73.122.128	8.180	1.380	-9999.990	-9999.990
25.667	63.270	10.820	0.010	0.060	0.080	73.122.113	7.870	1.380	-9999.990	-9999.990
25.727	59.050	10.820	0.010	0.060	0.090	73.122.128	7.490	1.470	-9999.990	-9999.990
25.787	59.050	9.810	0.010	0.060	0.090	73.122.128	7.490	1.470	1.264	2.920
25.847	53.430	9.810	0.010	0.060	0.080	73.122.113	7.330	1.380	-9999.990	-9999.990
25.907	60.740	10.770	0.010	0.060	0.080	73.122.113	7.330	1.380	-9999.990	-9999.990
25.967	60.740	8.800	0.010	0.060	0.080	73.122.113	7.080	1.390	-9999.990	-9999.990
26.027	90.000	8.800	0.010	0.060	0.080	73.122.113	7.170	1.310	-9999.990	-9999.990
26.087	90.000	8.800	0.010	0.060	0.080	73.122.113	6.850	1.380	-9999.990	-9999.990
26.147	68.330	8.800	0.010	0.060	0.080	73.122.113	6.640	1.390	-9999.990	-9999.990
26.207	56.240	8.295	0.010	0.060	0.080	73.122.113	6.940	1.310	-9999.990	-9999.990
26.267	56.240	9.406	0.010	0.060	0.080	73.122.113	6.510	1.310	-9999.990	-9999.990
26.327	61.860	9.406	0.010	0.060	0.080	73.122.113	6.510	1.310	-9999.990	-9999.990
26.387	61.860	8.295	0.010	0.080	0.060	73.163.85	6.060	0.790	-9999.990	-9999.990
26.447	53.140	8.295	0.010	0.080	0.060	73.163.85	6.390	0.750	-9999.990	-9999.990
26.507	64.680	8.952	0.010	0.080	0.060	73.163.85	6.650	0.750	-9999.990	-9999.990
26.567	64.680	7.790	0.010	0.080	0.060	73.163.85	6.650	0.750	-9999.990	-9999.990
26.627	50.610	7.790	0.010	0.070	0.060	73.143.85	6.210	0.820	-9999.990	-9999.990
26.687	50.610	7.588	0.010	0.070	0.060	73.143.85	5.980	0.820	-9999.990	-9999.990
26.747	58.210	7.588	0.010	0.070	0.060	73.143.85	5.910	0.860	-9999.990	-9999.990
26.807	59.050	10.315	0.010	0.070	0.060	73.143.85	6.210	0.820	-9999.990	-9999.990
26.867	59.050	8.043	0.010	0.070	0.060	73.143.85	5.900	0.860	-9999.990	-9999.990
26.927	61.860	8.043	0.010	0.070	0.060	73.143.85	6.200	0.820	-9999.990	-9999.990
26.987	61.860	8.295	0.010	0.070	0.060	73.143.85	5.980	0.820	-9999.990	-9999.990
27.047	50.610	8.295	0.010	0.070	0.060	73.143.85	5.980	0.820	-9999.990	-9999.990
27.107	64.680	10.315	0.010	0.080	0.060	73.163.85	6.300	0.790	-9999.990	-9999.990
27.167	64.680	7.134	0.010	0.080	0.060	73.163.85	6.920	0.760	-9999.990	-9999.990
27.227	50.610	7.134	0.010	0.080	0.060	73.163.85	6.920	0.760	-9999.990	-9999.990
27.287	50.610	8.800	0.010	0.080	0.060	73.163.85	6.920	0.760	-9999.990	-9999.990
27.347	53.140	8.800	0.010	0.080	0.060	73.163.85	7.230	0.760	-9999.990	-9999.990
27.407	44.990	9.861	0.010	0.080	0.060	73.163.85	6.920	0.760	-9999.990	-9999.990
27.467	44.990	8.800	0.010	0.080	0.060	73.163.85	6.640	0.760	-9999.990	-9999.990
27.527	65.800	8.800	0.010	0.080	0.060	73.163.85	6.150	0.760	-9999.990	-9999.990

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
27.587	65.800	8.295	0.010	0.080	0.060	73.163.85	6.150	0.760	-9999.990	-9999.990
27.647	64.680	9.861	0.010	0.080	0.060	73.163.85	6.930	0.760	-9999.990	-9999.990
27.707	53.430	9.861	0.010	0.080	0.060	73.163.85	6.650	0.760	-9999.990	-9999.990
27.767	53.430	8.800	0.010	0.080	0.060	73.163.85	6.480	0.730	-9999.990	-9999.990
27.827	40.490	8.800	0.010	0.080	0.060	73.163.85	6.850	0.700	-9999.990	-9999.990
27.887	40.490	10.770	0.010	0.080	0.060	73.163.85	6.570	0.700	-9999.990	-9999.990
27.947	59.050	9.305	0.010	0.080	0.060	73.163.85	7.630	0.670	-9999.990	-9999.990
28.007	78.460	9.305	0.010	0.080	0.060	73.163.85	6.860	0.700	-9999.990	-9999.990
28.067	78.460	9.810	0.010	0.080	0.060	73.163.85	6.860	0.700	-9999.990	-9999.990
28.127	56.240	9.810	0.010	0.080	0.060	73.163.85	7.160	0.700	-9999.990	-9999.990
28.187	58.210	9.305	0.010	0.070	0.080	73.143.113	7.470	1.140	-9999.990	-9999.990
28.247	58.210	11.679	0.010	0.070	0.080	73.143.113	6.980	1.140	-9999.990	-9999.990
28.307	70.300	11.679	0.010	0.060	0.080	73.122.113	6.670	1.190	-9999.990	-9999.990
28.367	70.300	10.315	0.010	0.060	0.080	73.122.113	6.600	1.250	-9999.990	-9999.990
28.427	98.440	10.315	0.010	0.060	0.080	73.122.113	6.600	1.250	-9999.990	-9999.990
28.487	48.080	9.305	0.010	0.060	0.080	73.122.113	6.810	1.250	-9999.990	-9999.990
28.547	48.080	11.224	0.010	0.060	0.080	73.122.113	6.080	1.390	-9999.990	-9999.990
28.607	61.860	11.224	0.010	0.060	0.080	73.122.113	6.080	1.390	-9999.990	-9999.990
28.667	61.860	10.315	0.010	0.070	0.060	73.143.85	5.190	0.870	-9999.990	-9999.990
28.727	75.930	10.315	0.010	0.070	0.060	73.143.85	5.190	0.870	-9999.990	-9999.990
28.787	78.740	12.588	0.010	0.070	0.060	73.143.85	5.190	0.870	-9999.990	-9999.990
28.847	78.740	10.820	0.010	0.070	0.060	73.143.85	5.610	0.830	-9999.990	-9999.990
28.907	81.560	10.820	0.010	0.070	0.060	73.143.85	5.420	0.830	-9999.990	-9999.990
28.967	81.560	11.224	0.010	0.070	0.060	73.143.85	5.680	0.800	-9999.990	-9999.990
29.027	96.189	11.224	0.010	0.070	0.060	73.143.85	5.680	0.800	1.221	1.482
29.087	39.360	13.345	0.010	0.080	0.060	73.163.85	5.960	0.760	-9999.990	-9999.990
29.147	39.360	11.325	0.010	0.070	0.060	73.143.85	5.670	0.800	-9999.990	-9999.990
29.207	73.120	11.325	0.010	0.070	0.060	73.143.85	5.490	0.800	-9999.990	-9999.990
29.267	73.120	11.679	0.010	0.070	0.060	73.143.85	5.080	0.830	-9999.990	-9999.990
29.327	70.300	11.679	0.010	0.070	0.060	73.143.85	4.880	0.870	-9999.990	-9999.990
29.387	55.680	15.365	0.010	0.070	0.060	73.143.85	4.880	0.870	-9999.990	-9999.990
29.447	55.680	13.042	0.010	0.070	0.060	73.143.85	4.880	0.870	-9999.990	-9999.990
29.507	67.490	13.042	0.010	0.070	0.060	73.143.85	5.030	0.870	-9999.990	-9999.990
29.567	67.490	14.355	0.010	0.070	0.060	73.143.85	5.030	0.870	-9999.990	-9999.990
29.627	35.430	14.355	0.010	0.070	0.060	73.143.85	4.830	0.920	-9999.990	-9999.990
29.687	47.799	16.678	0.010	0.070	0.060	73.143.85	4.690	0.920	-9999.990	-9999.990
29.747	47.800	16.375	0.020	0.050	0.080	146.102.113	5.240	1.620	-9999.990	-9999.990
29.807	55.680	16.375	0.020	0.050	0.080	146.102.113	5.370	1.620	-9999.990	-9999.990
29.867	55.680	17.385	0.020	0.050	0.080	146.102.113	5.660	1.610	-9999.990	-9999.990
29.927	61.860	17.385	0.020	0.050	0.090	146.102.128	5.460	1.720	-9999.990	-9999.990
29.987	64.680	19.860	0.020	0.050	0.090	146.102.128	5.300	1.830	-9999.990	-9999.990
30.047	64.680	19.910	0.020	0.050	0.090	146.102.128	5.430	1.830	-9999.990	-9999.990
30.107	75.930	19.910	0.020	0.050	0.090	146.102.128	5.430	1.830	-9999.990	-9999.990
30.167	75.930	20.415	0.020	0.050	0.090	146.102.128	5.430	1.840	-9999.990	-9999.990
30.227	59.050	20.415	0.020	0.050	0.090	146.102.128	5.300	1.840	-9999.990	-9999.990
30.287	45.550	23.496	0.020	0.050	0.090	146.102.128	5.300	1.840	-9999.990	-9999.990
30.347	45.550	23.950	0.020	0.050	0.090	146.102.128	5.300	1.840	-9999.990	-9999.990
30.407	59.050	23.950	0.020	0.050	0.090	146.102.128	5.300	1.840	-9999.990	-9999.990
30.467	59.050	24.455	0.020	0.050	0.090	146.102.128	5.300	1.840	-9999.990	-9999.990
30.527	91.118	24.455	0.020	0.050	0.090	146.102.128	5.430	1.840	-9999.990	-9999.990
30.587	95.620	27.132	0.020	0.050	0.090	146.102.128	5.250	1.970	-9999.990	-9999.990
30.647	95.620	27.485	0.020	0.050	0.090	146.102.128	5.250	1.970	-9999.990	-9999.990
30.707	78.740	27.485	0.020	0.050	0.090	146.102.128	5.430	1.830	-9999.990	-9999.990
30.767	78.740	27.485	0.020	0.050	0.090	146.102.128	5.770	1.710	-9999.990	-9999.990
30.827	65.800	27.485	0.020	0.050	0.090	146.102.128	5.570	1.830	-9999.990	-9999.990
30.887	61.860	29.859	0.020	0.050	0.090	146.102.128	5.780	1.710	-9999.990	-9999.990
30.947	61.860	28.495	0.010	0.050	0.090	73.102.128	5.940	1.710	-9999.990	-9999.990
31.007	86.060	28.495	0.010	0.050	0.090	73.102.128	5.940	1.710	-9999.990	-9999.990
31.067	86.060	29.859	0.010	0.050	0.090	73.102.128	5.940	1.710	-9999.990	-9999.990
31.127	61.860	29.859	0.010	0.050	0.090	73.102.128	5.940	1.710	-9999.990	-9999.990
31.187	64.680	28.495	0.010	0.050	0.090	73.102.128	5.940	1.710	-9999.990	-9999.990
31.247	64.680	28.041	0.020	0.030	0.110	146.61.156	6.100	3.690	-9999.990	-9999.990
31.307	55.680	28.041	0.020	0.020	0.120	146.40.170	5.740	4.790	-9999.990	-9999.990
31.367	55.680	30.515	0.020	0.020	0.120	146.40.170	5.870	4.790	-9999.990	-9999.990
31.427	90.000	30.515	0.020	0.020	0.120	146.40.170	5.860	4.820	-9999.990	-9999.990
31.487	59.050	28.495	0.020	0.020	0.120	146.40.170	5.860	4.820	-9999.990	-9999.990
31.547	59.050	29.505	0.020	0.020	0.120	146.40.170	5.860	4.820	-9999.990	-9999.990

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
31.607	55.680	29.505	0.020	0.020	0.120	146.40.170	5.820	5.670	-9999.990	-9999.990
31.667	55.680	32.030	0.020	0.020	0.120	146.40.170	5.950	5.660	-9999.990	-9999.990
31.727	84.370	32.030	0.020	0.020	0.120	146.40.170	5.950	5.660	-9999.990	-9999.990
31.787	61.860	29.859	0.020	0.020	0.120	146.40.170	5.950	5.660	-9999.990	-9999.990
31.847	61.860	31.020	0.020	0.020	0.120	146.40.170	6.090	5.650	-9999.990	-9999.990
31.907	65.800	31.020	0.020	0.020	0.120	146.40.170	6.000	4.830	-9999.990	-9999.990
31.967	65.800	33.949	0.020	0.030	0.120	146.61.170	6.140	4.830	-9999.990	-9999.990
32.027	75.930	33.949	0.020	0.030	0.120	146.61.170	6.290	4.820	-9999.990	-9999.990
32.087	58.210	33.040	0.020	0.030	0.120	146.61.170	6.490	4.200	-9999.990	-9999.990
32.147	58.210	34.555	0.020	0.030	0.120	146.61.170	6.650	4.200	-9999.990	-9999.990
32.207	56.240	34.555	0.020	0.030	0.120	146.61.170	6.430	4.840	-9999.990	-9999.990
32.267	56.240	36.222	0.020	0.030	0.120	146.61.170	6.270	4.850	-9999.990	-9999.990
32.327	65.800	36.222	0.020	0.030	0.120	146.61.170	6.270	4.850	-9999.990	-9999.990
32.387	56.240	36.575	0.020	0.010	0.130	146.20.184	5.850	8.790	-9999.990	-9999.990
32.447	56.240	39.403	0.020	0.020	0.130	146.40.184	5.980	8.770	-9999.990	-9999.990
32.507	81.560	39.403	0.020	0.020	0.130	146.40.184	5.980	8.770	-9999.990	-9999.990
32.567	81.560	38.595	0.020	0.020	0.130	146.40.184	5.980	8.770	-9999.990	-9999.990
32.627	80.990	38.595	0.020	0.020	0.130	146.40.184	6.170	6.870	-9999.990	-9999.990
32.687	64.680	40.615	0.020	0.020	0.130	146.40.184	5.980	8.770	-9999.990	-9999.990
32.747	64.680	43.494	0.020	0.020	0.130	146.40.184	5.980	8.770	-9999.990	-9999.990
32.807	45.550	43.494	0.020	0.020	0.130	146.40.184	5.980	8.770	-9999.990	-9999.990
32.867	45.550	43.645	0.020	0.020	0.130	146.40.184	6.380	5.620	-9999.990	-9999.990
32.927	67.490	43.645	0.020	0.040	0.100	146.81.142	6.580	2.310	-9999.990	-9999.990
32.987	50.610	46.170	0.020	0.040	0.100	146.81.142	6.580	2.310	-9999.990	-9999.990
33.047	50.610	49.402	0.010	0.040	0.100	73.81.142	7.010	2.310	-9999.990	-9999.990
33.107	56.240	49.402	0.010	0.050	0.100	73.102.142	7.580	2.110	-9999.990	-9999.990
33.167	56.240	50.210	0.010	0.050	0.100	73.102.142	7.600	2.110	-9999.990	-9999.990
33.227	59.050	50.210	0.010	0.040	0.100	73.81.142	7.230	2.310	-9999.990	-9999.990
33.287	37.960	52.584	0.010	0.050	0.100	73.102.142	7.940	1.970	-9999.990	-9999.990
33.347	37.960	57.280	0.010	0.050	0.100	73.102.142	7.940	1.970	-9999.990	-9999.990
33.407	61.860	57.280	0.010	0.050	0.100	73.102.142	8.590	1.970	-9999.990	-9999.990
33.467	61.860	58.290	0.010	0.050	0.100	73.102.142	8.600	1.970	-9999.990	-9999.990
33.527	53.140	58.290	0.010	0.050	0.100	73.102.142	8.600	1.970	-9999.990	-9999.990
33.587	64.680	60.765	0.010	0.050	0.100	73.102.142	9.090	1.830	-9999.990	-9999.990
33.647	64.680	66.370	0.010	0.050	0.100	73.102.142	9.090	1.830	-9999.990	-9999.990
33.707	42.181	66.370	0.010	0.030	0.130	73.61.184	9.230	4.010	-9999.990	-9999.990
33.767	42.180	67.128	0.010	0.030	0.130	73.61.184	9.230	4.010	-9999.990	-9999.990
33.827	39.360	67.128	0.010	0.030	0.130	73.61.184	9.230	4.010	-9999.990	-9999.990
33.887	53.139	71.420	0.010	0.030	0.130	73.61.184	9.570	4.010	-9999.990	-9999.990
33.947	53.140	77.480	0.010	0.040	0.130	73.81.184	10.080	3.560	-9999.990	-9999.990
34.007	70.300	77.480	0.010	0.040	0.130	73.81.184	10.080	3.560	-9999.990	-9999.990
34.067	70.300	79.399	0.010	0.040	0.130	73.81.184	10.080	3.560	-9999.990	-9999.990
34.127	60.740	79.399	0.010	0.040	0.120	73.81.170	9.850	3.200	-9999.990	-9999.990
34.187	39.360	84.045	0.010	0.040	0.120	73.81.170	9.850	3.200	-9999.990	-9999.990
34.247	39.360	90.307	0.010	0.040	0.120	73.81.170	9.990	2.910	-9999.990	-9999.990
34.307	47.800	90.307	0.010	0.040	0.120	73.81.170	9.620	2.920	-9999.990	-9999.990
34.367	47.800	94.145	0.010	0.040	0.120	73.81.170	9.150	3.210	-9999.990	-9999.990
34.427	73.400	100.760	0.010	0.030	0.120	73.61.170	9.030	3.570	-9999.990	-9999.990
34.487	64.680	100.760	0.010	0.030	0.120	73.61.170	9.030	3.570	-9999.990	-9999.990
34.547	64.680	104.245	0.020	0.010	0.160	146.20.227	9.260	11.500	-9999.990	-9999.990
34.607	45.550	104.245	0.020	0.010	0.160	146.20.227	9.260	11.500	-9999.990	-9999.990
34.667	45.550	109.295	0.020	0.020	0.150	146.40.213	9.680	8.710	-9999.990	-9999.990
34.727	42.180	115.759	0.010	0.040	0.120	73.81.170	9.880	3.140	-9999.990	-9999.990
34.787	58.210	115.759	0.010	0.040	0.120	73.81.170	9.880	3.140	-9999.990	-9999.990
34.847	58.210	119.395	0.010	0.040	0.120	73.81.170	9.880	3.140	-9999.990	-9999.990
34.907	61.860	119.395	0.010	0.040	0.120	73.81.170	9.880	3.140	-9999.990	-9999.990
34.967	61.860	124.445	0.010	0.040	0.130	73.81.184	9.380	3.490	-9999.990	-9999.990
35.027	61.860	131.212	0.020	0.030	0.130	146.61.184	8.530	4.480	-9999.990	-9999.990
35.087	70.860	131.212	0.010	0.030	0.130	73.61.184	8.640	3.940	-9999.990	-9999.990
35.147	70.860	134.545	0.010	0.030	0.130	73.61.184	8.630	3.950	-9999.990	-9999.990
35.207	44.991	134.545	0.010	0.030	0.130	73.61.184	8.630	3.950	-9999.990	-9999.990
35.267	65.800	139.090	0.010	0.040	0.130	73.81.184	9.370	3.520	-9999.990	-9999.990
35.327	65.800	144.847	0.010	0.040	0.130	73.81.184	10.100	3.510	-9999.990	-9999.990
35.387	47.800	144.847	0.010	0.030	0.130	73.61.184	10.340	3.940	-9999.990	-9999.990
35.447	47.800	147.675	0.010	0.050	0.100	73.102.142	9.630	2.040	-9999.990	-9999.990
35.507	40.490	147.675	0.010	0.050	0.100	73.102.142	9.240	2.050	-9999.990	-9999.990
35.567	53.429	150.755	0.010	0.050	0.100	73.102.142	9.240	2.050	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
35.627	53.430	154.745	0.010	0.050	0.110	73.102.156	10.130	2.040	-9999.990	-9999.990
35.687	50.610	154.745	0.010	0.050	0.110	73.102.156	10.130	2.040	-9999.990	-9999.990
35.747	50.610	152.574	0.010	0.050	0.110	73.102.156	12.540	2.040	-9999.990	-9999.990
35.807	53.140	152.574	0.010	0.050	0.110	73.102.156	13.320	2.040	-9999.990	-9999.990
35.867	47.800	152.220	0.010	0.050	0.110	73.102.156	13.320	2.040	-9999.990	-9999.990
35.927	47.800	153.230	0.010	0.050	0.110	73.102.156	13.840	2.210	-9999.990	-9999.990
35.987	36.550	153.230	0.010	0.050	0.110	73.102.156	13.840	2.210	-9999.990	-9999.990
36.047	36.550	148.938	0.010	0.050	0.110	73.102.156	14.810	2.210	-9999.990	-9999.990
36.107	55.680	148.938	0.010	0.050	0.120	73.102.170	14.400	2.420	-9999.990	-9999.990
36.167	61.860	147.675	0.010	0.050	0.120	73.102.170	15.850	2.220	-9999.990	-9999.990
36.227	61.860	146.665	0.010	0.050	0.120	73.102.170	18.570	2.210	-9999.990	-9999.990
36.287	32.900	146.665	0.010	0.050	0.120	73.102.170	15.410	2.420	-9999.990	-9999.990
36.347	32.900	142.625	0.010	0.050	0.120	73.102.170	15.410	2.420	-9999.990	-9999.990
36.407	55.680	142.625	0.010	0.050	0.120	73.102.170	17.950	2.430	-9999.990	-9999.990
36.467	28.120	142.120	0.010	0.050	0.120	73.102.170	17.950	2.430	-9999.990	-9999.990
36.527	28.120	139.595	0.010	0.050	0.120	73.102.170	19.550	2.420	-9999.990	-9999.990
36.587	40.490	139.595	0.010	0.050	0.130	73.102.184	17.320	2.680	-9999.990	-9999.990
36.647	40.490	138.585	0.010	0.050	0.130	73.102.184	16.060	2.680	-9999.990	-9999.990
36.707	33.740	138.585	0.010	0.050	0.120	73.102.170	17.910	2.430	-9999.990	-9999.990
36.767	37.960	139.393	0.010	0.050	0.120	73.102.170	19.540	2.430	-9999.990	-9999.990
36.827	37.960	136.565	0.010	0.050	0.120	73.102.170	19.540	2.430	-9999.990	-9999.990
36.887	30.360	136.565	0.010	0.050	0.130	73.102.184	17.320	2.680	-9999.990	-9999.990
36.947	30.360	135.303	0.010	0.050	0.120	73.102.170	14.950	2.680	-9999.990	-9999.990
37.007	42.180	135.303	0.010	0.040	0.130	73.81.184	13.640	2.990	-9999.990	-9999.990
37.067	37.960	137.070	0.010	0.040	0.130	73.81.184	13.640	2.990	-9999.990	-9999.990
37.127	37.960	133.535	0.010	0.040	0.130	73.81.184	15.600	2.980	-9999.990	-9999.990
37.187	17.710	133.535	0.010	0.040	0.130	73.81.184	14.520	2.990	-9999.990	-9999.990
37.247	17.710	133.030	0.010	0.040	0.130	73.81.184	12.500	3.380	-9999.990	-9999.990
37.307	39.360	133.030	0.010	0.030	0.140	73.61.199	10.780	4.530	-9999.990	-9999.990
37.367	30.360	133.535	0.010	0.030	0.140	73.61.199	10.780	4.530	-9999.990	-9999.990
37.427	30.360	130.000	0.010	0.030	0.140	73.61.199	10.780	4.530	-9999.990	-9999.990
37.487	43.020	130.000	0.010	0.030	0.140	73.61.199	11.340	4.520	-9999.990	-9999.990
37.547	43.020	128.939	0.010	0.030	0.140	73.61.199	11.970	4.520	-9999.990	-9999.990
37.607	42.180	128.939	0.010	0.030	0.140	73.61.199	13.440	4.510	-9999.990	-9999.990
37.667	27.830	130.303	0.010	0.030	0.140	73.61.199	13.440	4.510	-9999.990	-9999.990
37.727	27.830	128.485	0.010	0.030	0.140	73.61.199	13.440	4.510	-9999.990	-9999.990
37.787	44.990	128.485	0.010	0.030	0.150	73.61.213	14.320	4.500	-9999.990	-9999.990
37.847	44.990	128.939	0.010	0.030	0.150	73.61.213	14.320	4.500	-9999.990	-9999.990
37.907	68.330	128.939	0.010	0.030	0.150	73.61.213	13.990	5.430	-9999.990	-9999.990
37.967	35.430	126.970	0.010	0.020	0.160	73.40.227	12.820	6.850	-9999.990	-9999.990
38.027	35.430	125.303	0.010	0.020	0.160	73.40.227	13.630	6.840	-9999.990	-9999.990
38.087	47.800	125.303	0.010	0.020	0.160	73.40.227	11.860	9.260	-9999.990	-9999.990
38.147	47.800	125.303	0.010	0.020	0.160	73.40.227	13.600	6.940	-9999.990	-9999.990
38.207	43.020	125.303	0.010	0.030	0.150	73.61.213	13.940	5.550	-9999.990	-9999.990
38.267	44.990	122.425	0.010	0.030	0.150	73.61.213	14.000	5.280	-9999.990	-9999.990
38.327	44.990	120.758	0.010	0.030	0.150	73.61.213	17.900	4.400	-9999.990	-9999.990
38.387	48.080	120.758	0.010	0.030	0.150	73.61.213	17.900	4.400	-9999.990	-9999.990
38.447	48.080	116.214	0.010	0.030	0.150	73.61.213	17.900	4.400	-9999.990	-9999.990
38.507	47.800	116.214	0.010	0.030	0.150	73.61.213	17.900	4.400	-9999.990	-9999.990
38.567	45.550	113.335	0.010	0.030	0.150	73.61.213	17.900	4.400	-9999.990	-9999.990
38.627	45.550	111.669	0.010	0.030	0.150	73.61.213	17.900	4.400	-9999.990	-9999.990
38.687	40.490	111.669	0.010	0.000	0.190	73.0.255	15.190	68.070	-9999.990	-9999.990
38.747	40.490	106.215	0.010	0.000	0.190	73.0.255	15.190	68.070	-9999.990	-9999.990
38.807	50.610	106.215	0.010	0.000	0.200	73.0.255	16.120	67.010	-9999.990	-9999.990
38.867	58.210	104.851	0.010	0.010	0.190	73.20.255	17.610	22.110	-9999.990	-9999.990
38.927	58.210	99.700	0.010	0.010	0.180	73.20.255	18.090	13.280	-9999.990	-9999.990
38.987	45.550	99.700	0.010	0.020	0.180	73.40.255	21.740	9.340	-9999.990	-9999.990
39.047	45.550	98.943	0.010	0.010	0.180	73.20.255	19.430	13.230	-9999.990	-9999.990
39.107	56.240	98.943	0.010	0.010	0.180	73.20.255	19.430	13.230	-9999.990	-9999.990
39.167	55.680	94.145	0.010	0.010	0.180	73.20.255	19.380	13.370	-9999.990	-9999.990
39.227	55.680	91.216	0.010	0.010	0.180	73.20.255	19.380	13.370	-9999.990	-9999.990
39.287	55.680	91.216	0.010	0.020	0.180	73.40.255	23.620	9.410	-9999.990	-9999.990
39.347	55.680	91.620	0.010	0.020	0.180	73.40.255	23.620	9.410	-9999.990	-9999.990
39.407	47.800	91.620	0.010	0.020	0.180	73.40.255	25.960	9.390	-9999.990	-9999.990
39.467	50.610	86.217	0.010	0.020	0.180	73.40.255	30.110	7.300	-9999.990	-9999.990
39.527	50.610	84.045	0.000	0.030	0.170	0.61.241	35.880	5.970	-9999.990	-9999.990
39.587	37.960	84.045	0.010	0.020	0.180	73.40.255	29.990	7.350	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
39.647	37.960	82.126	0.010	0.020	0.180	73.40.255	29.990	7.350	-9999.990	-9999.990
39.707	53.430	82.126	0.010	0.020	0.180	73.40.255	29.990	7.350	-9999.990	-9999.990
39.767	32.900	77.985	0.010	0.020	0.190	73.40.255	28.590	9.520	-9999.990	-9999.990
39.827	32.900	77.127	0.000	0.050	0.140	0.102.199	60.040	2.790	-9999.990	-9999.990
39.887	39.360	77.127	0.000	0.050	0.140	0.102.199	60.040	2.790	-9999.990	-9999.990
39.947	39.360	72.582	0.000	0.050	0.140	0.102.199	98.940	2.520	-9999.990	-9999.990
40.007	27.830	72.582	0.010	0.030	0.180	73.61.255	34.890	6.700	-9999.990	-9999.990
40.067	35.430	72.582	0.010	0.020	0.180	73.40.255	28.860	8.710	-9999.990	-9999.990
40.127	35.430	69.400	0.010	0.020	0.180	73.40.255	28.860	8.710	-9999.990	-9999.990
40.187	33.740	69.400	0.010	0.020	0.180	73.40.255	26.010	8.730	-9999.990	-9999.990
40.247	33.740	67.128	0.010	0.020	0.180	73.40.255	26.010	8.730	-9999.990	-9999.990
40.307	27.830	67.128	0.010	0.020	0.180	73.40.255	20.960	12.060	-9999.990	-9999.990
40.367	25.300	69.400	0.010	0.020	0.190	73.40.255	22.830	12.020	-9999.990	-9999.990
40.427	25.300	67.380	0.010	0.000	0.200	73.0.255	15.330	-9999.990	-9999.990	-9999.990
40.487	22.770	67.380	0.010	0.000	0.200	73.0.255	15.330	-9999.990	-9999.990	-9999.990
40.547	22.770	68.946	0.010	0.000	0.200	73.0.255	15.330	-9999.990	-9999.990	-9999.990
40.607	47.800	68.946	0.010	0.000	0.200	73.0.255	15.330	-9999.990	0.627	0.000
40.667	25.300	67.128	0.010	0.000	0.200	73.0.255	15.330	-9999.990	-9999.990	-9999.990
40.727	25.300	67.380	0.010	0.000	0.200	73.0.255	16.330	-9999.990	-9999.990	-9999.990
40.787	50.610	67.380	0.010	0.000	0.200	73.0.255	15.330	-9999.990	-9999.990	-9999.990
40.847	50.610	68.946	0.010	0.000	0.200	73.0.255	15.330	-9999.990	-9999.990	-9999.990
40.907	36.550	68.946	0.010	0.000	0.200	73.0.255	14.440	-9999.990	-9999.990	-9999.990
40.967	53.140	66.673	0.010	0.000	0.200	73.0.255	14.440	-9999.990	-9999.990	-9999.990
41.027	53.140	69.400	0.010	0.000	0.200	73.0.255	14.400	-9999.990	-9999.990	-9999.990
41.087	32.900	69.400	0.010	0.000	0.190	73.0.255	13.320	-9999.990	-9999.990	-9999.990
41.147	32.900	65.764	0.010	0.000	0.190	73.0.255	14.080	-9999.990	-9999.990	-9999.990
41.207	56.240	65.865	0.010	0.000	0.190	73.0.255	14.080	-9999.990	-9999.990	-9999.990
41.267	48.080	65.865	0.010	0.000	0.200	73.0.255	14.910	-9999.990	-9999.990	-9999.990
41.327	48.080	67.128	0.010	0.000	0.200	73.0.255	18.140	-9999.990	-9999.990	-9999.990
41.387	59.049	67.128	0.010	0.000	0.200	73.0.255	18.140	-9999.990	-9999.990	-9999.990
41.447	59.050	64.855	0.010	0.000	0.200	73.0.255	18.140	-9999.990	-9999.990	-9999.990
41.507	40.490	66.875	0.010	0.000	0.200	73.0.255	15.870	-9999.990	-9999.990	-9999.990
41.567	45.550	66.875	0.010	0.000	0.200	73.0.255	18.170	-9999.990	-9999.990	-9999.990
41.627	45.550	63.492	0.010	0.000	0.200	73.0.255	18.170	-9999.990	-9999.990	-9999.990
41.687	42.180	63.492	0.010	0.000	0.200	73.0.255	18.170	-9999.990	-9999.990	-9999.990
41.747	30.360	63.340	0.010	0.000	0.210	73.0.255	19.840	-9999.990	-9999.990	-9999.990
41.807	30.360	64.855	0.010	0.000	0.210	73.0.255	21.260	-9999.990	-9999.990	-9999.990
41.867	35.430	64.855	0.010	0.000	0.210	73.0.255	19.880	-9999.990	-9999.990	-9999.990
41.927	35.430	62.330	0.010	0.000	0.210	73.0.255	19.880	-9999.990	-9999.990	-9999.990
41.987	50.609	62.330	0.010	0.000	0.200	73.0.255	17.500	-9999.990	-9999.990	-9999.990
42.047	50.610	63.946	0.010	0.000	0.210	73.0.255	18.790	-9999.990	-9999.990	-9999.990
42.107	50.610	61.219	0.010	0.000	0.210	73.0.255	18.790	-9999.990	-9999.990	-9999.990
42.167	48.080	61.219	0.010	0.000	0.200	73.0.255	15.660	-9999.990	-9999.990	-9999.990
42.227	48.080	61.320	0.010	0.000	0.200	73.0.255	15.070	-9999.990	-9999.990	-9999.990
42.287	50.610	61.320	0.010	0.000	0.200	73.0.255	15.070	-9999.990	-9999.990	-9999.990
42.347	32.900	62.128	0.010	0.000	0.200	73.0.255	15.070	-9999.990	-9999.990	-9999.990
42.407	32.900	60.310	0.010	0.000	0.200	73.0.255	15.690	-9999.990	-9999.990	-9999.990
42.467	59.050	60.310	0.010	0.000	0.200	73.0.255	15.100	-9999.990	-9999.990	-9999.990
42.527	59.050	62.330	0.010	0.000	0.200	73.0.255	15.940	-9999.990	-9999.990	-9999.990
42.587	35.430	62.330	0.010	0.000	0.200	73.0.255	15.940	-9999.990	-9999.990	-9999.990
42.647	44.990	59.856	0.010	0.000	0.200	73.0.255	15.940	-9999.990	-9999.990	-9999.990
42.707	44.990	62.583	0.010	0.000	0.200	73.0.255	15.060	-9999.990	-9999.990	-9999.990
42.767	32.900	62.583	0.010	0.000	0.200	73.0.255	14.290	-9999.990	-9999.990	-9999.990
42.827	32.900	60.815	0.010	0.000	0.200	73.0.255	14.830	-9999.990	-9999.990	-9999.990
42.887	56.239	60.815	0.010	0.000	0.200	73.0.255	15.640	-9999.990	-9999.990	-9999.990
42.947	58.210	61.219	0.010	0.000	0.190	73.0.255	14.030	-9999.990	-9999.990	-9999.990
43.007	58.210	63.946	0.010	0.000	0.200	73.0.255	14.760	-9999.990	-9999.990	-9999.990
43.067	40.491	63.946	0.010	0.000	0.200	73.0.255	16.190	-9999.990	-9999.990	-9999.990
43.127	40.490	63.340	0.010	0.000	0.200	73.0.255	16.190	-9999.990	-9999.990	-9999.990
43.187	81.560	63.340	0.010	0.000	0.200	73.0.255	16.190	-9999.990	-9999.990	-9999.990
43.247	37.960	65.310	0.010	0.000	0.200	73.0.255	16.180	-9999.990	-9999.990	-9999.990
43.307	37.960	63.492	0.010	0.000	0.200	73.0.255	17.140	-9999.990	-9999.990	-9999.990
43.367	60.740	63.492	0.010	0.000	0.210	73.0.255	18.240	-9999.990	-9999.990	-9999.990
43.427	60.740	64.855	0.010	0.000	0.200	73.0.255	16.180	-9999.990	0.276	1.237
43.487	25.300	64.855	0.010	0.000	0.200	73.0.255	17.170	-9999.990	-9999.990	-9999.990
43.547	44.990	66.673	0.010	0.000	0.200	73.0.255	17.180	-9999.990	-9999.990	-9999.990
43.607	44.990	64.855	0.010	0.000	0.210	73.0.255	18.290	-9999.990	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
43.667	37.960	64.855	0.010	0.000	0.200	73.0.255	17.170	-9999.990	-9999.990	-9999.990
43.727	37.960	67.128	0.010	0.000	0.200	73.0.255	17.170	-9999.990	-9999.990	-9999.990
43.787	64.680	67.128	0.010	0.000	0.200	73.0.255	17.090	-9999.990	-9999.990	-9999.990
43.847	55.680	64.855	0.010	0.000	0.200	73.0.255	17.090	-9999.990	-9999.990	-9999.990
43.907	55.680	65.310	0.010	0.000	0.200	73.0.255	15.540	-9999.990	-9999.990	-9999.990
43.967	45.550	65.310	0.010	0.000	0.200	73.0.255	15.540	-9999.990	-9999.990	-9999.990
44.027	45.550	67.380	0.010	0.000	0.200	73.0.255	14.540	-9999.990	-9999.990	-9999.990
44.087	60.740	67.380	0.010	0.000	0.190	73.0.255	14.080	-9999.990	-9999.990	-9999.990
44.147	53.430	64.855	0.010	0.000	0.190	73.0.255	13.650	-9999.990	-9999.990	-9999.990
44.207	53.430	67.128	0.010	0.000	0.190	73.0.255	13.490	-9999.990	-9999.990	-9999.990
44.267	63.270	67.128	0.010	0.000	0.200	73.0.255	14.740	-9999.990	-9999.990	-9999.990
44.327	63.270	66.370	0.010	0.000	0.190	73.0.255	14.090	-9999.990	-9999.990	-9999.990
44.387	59.050	66.370	0.010	0.000	0.190	73.0.255	13.910	-9999.990	-9999.990	-9999.990
44.447	60.740	65.764	0.010	0.000	0.190	73.0.255	13.910	-9999.990	-9999.990	-9999.990
44.507	60.740	68.390	0.010	0.000	0.190	73.0.255	13.910	-9999.990	-9999.990	-9999.990
44.567	53.430	68.390	0.010	0.000	0.190	73.0.255	13.910	-9999.990	-9999.990	-9999.990
44.627	53.430	66.219	0.010	0.000	0.190	73.0.255	13.910	-9999.990	-9999.990	-9999.990
44.687	60.740	66.219	0.010	0.000	0.200	73.0.255	14.430	-9999.990	-9999.990	-9999.990
44.747	55.680	68.037	0.010	0.000	0.190	73.0.255	13.930	-9999.990	-9999.990	-9999.990
44.807	55.680	66.219	0.010	0.000	0.190	73.0.255	13.240	-9999.990	-9999.990	-9999.990
44.867	56.240	66.219	0.020	0.000	0.190	146.0.255	12.560	-9999.990	-9999.990	-9999.990
44.927	56.240	65.865	0.020	0.000	0.190	146.0.255	12.560	-9999.990	-9999.990	-9999.990
44.987	40.491	65.865	0.020	0.000	0.190	146.0.255	12.560	-9999.990	-9999.990	-9999.990
45.047	53.430	67.128	0.020	0.000	0.190	146.0.255	12.560	-9999.990	-9999.990	-9999.990
45.107	53.430	64.855	0.010	0.000	0.190	73.0.255	13.070	-9999.990	-9999.990	-9999.990
45.167	27.830	64.855	0.010	0.000	0.190	73.0.255	12.920	-9999.990	-9999.990	-9999.990
45.227	27.830	67.380	0.020	0.000	0.190	146.0.255	12.420	-9999.990	-9999.990	-9999.990
45.287	65.800	67.380	0.020	0.000	0.190	146.0.255	12.560	-9999.990	-9999.990	-9999.990
45.347	47.801	64.401	0.020	0.000	0.190	146.0.255	12.560	-9999.990	-9999.990	-9999.990
45.407	47.800	65.764	0.020	0.000	0.190	146.0.255	11.770	-9999.990	-9999.990	-9999.990
45.467	45.550	65.764	0.020	0.000	0.190	146.0.255	12.350	-9999.990	-9999.990	-9999.990
45.527	45.550	65.360	0.010	0.000	0.190	73.0.255	12.850	-9999.990	-9999.990	-9999.990
45.587	53.430	65.360	0.010	0.000	0.190	73.0.255	13.230	-9999.990	-9999.990	-9999.990
45.647	55.680	64.401	0.010	0.000	0.200	73.0.255	14.430	-9999.990	-9999.990	-9999.990
45.707	55.680	67.380	0.010	0.000	0.200	73.0.255	14.430	-9999.990	-9999.990	-9999.990
45.767	40.490	67.380	0.010	0.000	0.200	73.0.255	14.430	-9999.990	-9999.990	-9999.990
45.827	40.490	64.855	0.010	0.000	0.200	73.0.255	14.430	-9999.990	-9999.990	-9999.990
45.887	39.360	64.855	0.010	0.000	0.200	73.0.255	14.430	-9999.990	-9999.990	-9999.990
45.947	45.550	66.370	0.010	0.000	0.190	73.0.255	13.580	-9999.990	-9999.990	-9999.990
46.007	45.550	68.037	0.010	0.000	0.190	73.0.255	14.140	-9999.990	-9999.990	-9999.990
46.067	37.960	68.037	0.010	0.000	0.190	73.0.255	14.140	-9999.990	-9999.990	-9999.990
46.127	37.960	66.673	0.010	0.000	0.190	73.0.255	14.140	-9999.990	-9999.990	-9999.990
46.187	53.430	66.673	0.010	0.000	0.200	73.0.255	14.730	-9999.990	-9999.990	-9999.990
46.247	75.930	69.905	0.010	0.000	0.200	73.0.255	14.730	-9999.990	-9999.990	-9999.990
46.307	75.930	67.582	0.010	0.000	0.190	73.0.255	13.750	-9999.990	-9999.990	-9999.990
46.367	48.080	67.582	0.010	0.000	0.200	73.0.255	14.320	-9999.990	-9999.990	-9999.990
46.427	48.080	68.895	0.010	0.000	0.200	73.0.255	14.740	-9999.990	-9999.990	-9999.990
46.487	53.430	68.895	0.010	0.000	0.200	73.0.255	14.730	-9999.990	-9999.990	-9999.990
46.547	65.800	70.309	0.010	0.000	0.200	73.0.255	14.730	-9999.990	-9999.990	-9999.990
46.607	65.800	68.491	0.010	0.000	0.190	73.0.255	14.070	-9999.990	-9999.990	-9999.990
46.667	40.491	68.491	0.010	0.000	0.200	73.0.255	14.660	-9999.990	-9999.990	-9999.990
46.727	40.490	71.420	0.010	0.000	0.200	73.0.255	15.290	-9999.990	-9999.990	-9999.990
46.787	39.360	71.420	0.010	0.000	0.200	73.0.255	14.400	-9999.990	-9999.990	-9999.990
46.847	48.080	69.400	0.010	0.000	0.200	73.0.255	14.400	-9999.990	-9999.990	-9999.990
46.907	48.080	71.673	0.010	0.000	0.200	73.0.255	14.400	-9999.990	-9999.990	-9999.990
46.967	61.860	71.673	0.010	0.000	0.200	73.0.255	14.400	-9999.990	-9999.990	-9999.990
47.027	61.860	70.915	0.010	0.000	0.190	73.0.255	13.610	-9999.990	-9999.990	-9999.990
47.087	73.400	70.915	0.010	0.000	0.190	73.0.255	13.600	-9999.990	-9999.990	-9999.990
47.147	33.740	70.764	0.010	0.000	0.190	73.0.255	13.600	-9999.990	-9999.990	-9999.990
47.207	33.740	72.582	0.010	0.000	0.190	73.0.255	13.600	-9999.990	-9999.990	-9999.990
47.267	58.210	72.582	0.010	0.000	0.190	73.0.255	13.630	-9999.990	-9999.990	-9999.990
47.327	58.210	71.925	0.010	0.000	0.200	73.0.255	14.600	-9999.990	-9999.990	-9999.990
47.387	30.930	71.925	0.010	0.000	0.190	73.0.255	13.780	-9999.990	-9999.990	-9999.990
47.447	37.960	74.854	0.010	0.000	0.200	73.0.255	14.980	-9999.990	-9999.990	-9999.990
47.507	37.960	74.400	0.010	0.000	0.190	73.0.255	14.120	-9999.990	-9999.990	-9999.990
47.567	50.609	74.400	0.010	0.000	0.190	73.0.255	13.720	-9999.990	-9999.990	-9999.990
47.627	50.610	76.470	0.010	0.000	0.190	73.0.255	13.720	-9999.990	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
47.687	56.240	76.470	0.010	0.000	0.190	73.0.255	13.720	-9999.990	-9999.990	-9999.990
47.747	53.140	78.945	0.010	0.000	0.190	73.0.255	13.340	-9999.990	-9999.990	-9999.990
47.807	53.140	79.500	0.010	0.000	0.190	73.0.255	13.190	-9999.990	-9999.990	-9999.990
47.867	63.270	79.500	0.010	0.000	0.190	73.0.255	13.330	-9999.990	-9999.990	-9999.990
47.927	63.270	82.126	0.010	0.000	0.190	73.0.255	13.330	-9999.990	-9999.990	-9999.990
47.987	78.740	82.126	0.010	0.000	0.190	73.0.255	14.170	-9999.990	-9999.990	-9999.990
48.047	75.930	83.035	0.010	0.000	0.190	73.0.255	13.800	-9999.990	-9999.990	-9999.990
48.107	75.930	85.055	0.010	0.000	0.190	73.0.255	13.800	-9999.990	-9999.990	-9999.990
48.167	60.740	85.055	0.010	0.000	0.190	73.0.255	13.790	-9999.990	-9999.990	-9999.990
48.227	60.740	88.489	0.010	0.000	0.190	73.0.255	13.810	-9999.990	-9999.990	-9999.990
48.287	67.490	87.580	0.010	0.000	0.190	73.0.255	13.670	-9999.990	-9999.990	-9999.990
48.347	43.021	87.580	0.010	0.000	0.190	73.0.255	14.030	-9999.990	-9999.990	-9999.990
48.407	43.020	90.307	0.010	0.000	0.190	73.0.255	14.030	-9999.990	-9999.990	-9999.990
48.467	75.930	90.307	0.010	0.000	0.190	73.0.255	13.270	-9999.990	-9999.990	-9999.990
48.527	87.180	90.105	0.010	0.000	0.190	73.0.255	13.960	-9999.990	-9999.990	-9999.990
48.587	87.180	90.762	0.010	0.000	0.200	73.0.255	14.720	-9999.990	-9999.990	-9999.990
48.647	83.520	90.762	0.010	0.000	0.200	73.0.255	14.720	-9999.990	-9999.990	-9999.990
48.707	83.520	93.034	0.010	0.000	0.200	73.0.255	14.720	-9999.990	-9999.990	-9999.990
48.767	61.860	93.034	0.010	0.000	0.200	73.0.255	17.050	-9999.990	-9999.990	-9999.990
48.827	86.060	91.620	0.010	0.000	0.200	73.0.255	17.050	-9999.990	-9999.990	-9999.990
48.887	86.060	94.398	0.010	0.000	0.200	73.0.255	17.330	-9999.990	-9999.990	-9999.990
48.947	58.210	94.398	0.010	0.000	0.200	73.0.255	16.430	-9999.990	-9999.990	-9999.990
49.007	58.210	92.580	0.010	0.000	0.200	73.0.255	15.610	-9999.990	-9999.990	-9999.990
49.067	75.929	92.580	0.010	0.000	0.200	73.0.255	14.860	-9999.990	-9999.990	-9999.990
49.127	108.850	94.650	0.010	0.000	0.200	73.0.255	14.860	-9999.990	-9999.990	-9999.990
49.187	108.850	96.670	0.010	0.000	0.200	73.0.255	14.860	-9999.990	-9999.990	-9999.990
49.247	67.490	96.670	0.010	0.000	0.200	73.0.255	15.600	-9999.990	-9999.990	-9999.990
49.307	67.490	96.670	0.010	0.000	0.200	73.0.255	15.070	-9999.990	-9999.990	-9999.990
49.367	98.720	96.670	0.010	0.000	0.200	73.0.255	15.830	-9999.990	-9999.990	-9999.990
49.427	53.430	100.710	0.010	0.000	0.190	73.0.255	14.080	-9999.990	-9999.990	-9999.990
49.487	53.430	98.943	0.010	0.000	0.190	73.0.255	14.080	-9999.990	-9999.990	-9999.990
49.547	86.060	98.943	0.010	0.000	0.190	73.0.255	13.540	-9999.990	-9999.990	-9999.990
49.607	86.060	102.578	0.010	0.000	0.190	73.0.255	13.550	-9999.990	-9999.990	-9999.990
49.667	40.492	102.578	0.010	0.000	0.200	73.0.255	14.270	-9999.990	-9999.990	-9999.990
49.727	81.560	101.215	0.010	0.000	0.190	73.0.255	13.860	-9999.990	-9999.990	-9999.990
49.787	81.560	101.215	0.010	0.000	0.190	73.0.255	13.860	-9999.990	-9999.990	-9999.990
49.847	70.860	101.215	0.010	0.000	0.190	73.0.255	13.860	-9999.990	-9999.990	-9999.990
49.907	70.860	103.033	0.010	0.000	0.190	73.0.255	13.860	-9999.990	-9999.990	-9999.990
49.967	73.400	103.033	0.010	0.000	0.200	73.0.255	14.440	-9999.990	-9999.990	-9999.990
50.027	106.878	101.215	0.010	0.000	0.200	73.0.255	16.570	-9999.990	-9999.990	-9999.990
50.087	106.880	103.033	0.010	0.000	0.200	73.0.255	16.610	-9999.990	-9999.990	-9999.990
50.147	108.850	103.033	0.010	0.010	0.190	73.20.255	18.340	25.360	-9999.990	-9999.990
50.207	108.850	100.205	0.010	0.010	0.190	73.20.255	19.510	17.180	-9999.990	-9999.990
50.267	118.140	100.205	0.010	0.010	0.190	73.20.255	20.400	17.140	-9999.990	-9999.990
50.327	103.781	99.397	0.010	0.010	0.190	73.20.255	20.400	17.140	-9999.990	-9999.990
50.387	103.780	101.215	0.010	0.010	0.190	73.20.255	20.380	17.140	-9999.990	-9999.990
50.447	86.060	101.215	0.010	0.010	0.190	73.20.255	20.380	17.140	-9999.990	-9999.990
50.507	86.060	98.034	0.000	0.050	0.140	0.102.199	40.950	2.730	-9999.990	-9999.990
50.567	109.690	98.034	0.000	0.050	0.140	0.102.199	40.950	2.730	-9999.990	-9999.990
50.627	96.190	99.397	0.000	0.050	0.140	0.102.199	40.950	2.730	-9999.990	-9999.990
50.687	96.190	97.680	0.000	0.050	0.140	0.102.199	40.950	2.730	-9999.990	-9999.990
50.747	126.580	97.680	0.000	0.050	0.140	0.102.199	40.950	2.730	-9999.990	-9999.990
50.807	126.580	96.216	0.000	0.050	0.140	0.102.199	40.950	2.730	-9999.990	-9999.990
50.867	104.070	96.216	0.000	0.050	0.140	0.102.199	39.010	2.910	-9999.990	-9999.990
50.927	151.910	98.690	0.000	0.050	0.140	0.102.199	38.990	2.910	-9999.990	-9999.990
50.987	151.910	95.307	0.000	0.050	0.140	0.102.199	38.990	2.910	-9999.990	-9999.990
51.047	131.650	95.307	0.000	0.050	0.140	0.102.199	38.990	2.910	-9999.990	-9999.990
51.107	131.650	94.852	0.000	0.050	0.140	0.102.199	33.630	3.130	-9999.990	-9999.990
51.167	109.690	94.852	0.000	0.050	0.140	0.102.199	43.980	2.910	-9999.990	-9999.990
51.227	136.710	93.135	0.000	0.050	0.140	0.102.199	37.150	3.130	-9999.990	-9999.990
51.287	136.710	91.216	0.000	0.050	0.140	0.102.199	37.150	3.130	-9999.990	-9999.990
51.347	151.909	91.216	0.000	0.050	0.140	0.102.199	37.190	3.130	-9999.990	-9999.990
51.407	151.910	91.216	0.000	0.050	0.140	0.102.199	37.190	3.130	-9999.990	-9999.990
51.467	124.050	91.216	0.000	0.040	0.150	0.81.213	32.250	3.380	-9999.990	-9999.990
51.527	120.950	88.590	0.000	0.050	0.140	0.102.199	37.260	3.130	-9999.990	-9999.990
51.587	120.950	87.580	0.000	0.050	0.140	0.102.199	33.600	3.130	0.292	10.339
51.647	124.050	87.580	0.000	0.050	0.140	0.102.199	37.210	3.130	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
51.707	124.050	84.399	0.010	0.020	0.170	73.40.241	24.431	7.010	-9999.990	-9999.990
51.767	144.310	84.399	0.010	0.020	0.170	73.40.241	24.430	7.010	-9999.990	-9999.990
51.827	118.140	83.035	0.010	0.020	0.170	73.40.241	24.440	7.010	-9999.990	-9999.990
51.887	118.140	83.490	0.010	0.020	0.170	73.40.241	23.000	7.020	-9999.990	-9999.990
51.947	93.650	83.490	0.010	0.020	0.170	73.40.241	24.420	7.010	-9999.990	-9999.990
52.007	93.650	80.763	0.010	0.030	0.170	73.61.241	26.810	6.110	-9999.990	-9999.990
52.067	91.120	80.763	0.000	0.050	0.140	0.102.199	38.970	2.910	-9999.990	-9999.990
52.127	81.560	82.025	0.000	0.050	0.140	0.102.199	38.970	2.910	-9999.990	-9999.990
52.187	81.560	78.490	0.000	0.050	0.140	0.102.199	46.960	2.710	-9999.990	-9999.990
52.247	108.850	78.490	0.000	0.050	0.140	0.102.199	46.960	2.710	-9999.990	-9999.990
52.307	108.850	79.399	0.000	0.070	0.110	0.143.156	148.780	1.720	-9999.990	-9999.990
52.367	98.721	79.399	0.000	0.070	0.110	0.143.156	295.212	1.720	-9999.990	-9999.990
52.427	81.560	76.975	0.000	0.070	0.110	0.143.156	295.220	1.720	-9999.990	-9999.990
52.487	81.560	75.763	0.000	0.070	0.110	0.143.156	295.220	1.720	-9999.990	-9999.990
52.547	96.190	75.763	0.000	0.070	0.120	0.143.170	25122.600	1.720	-9999.990	-9999.990
52.607	96.190	76.470	0.000	0.060	0.120	0.122.170	121.320	1.800	-9999.990	-9999.990
52.667	80.990	76.470	0.000	0.060	0.120	0.122.170	121.320	1.800	-9999.990	-9999.990
52.727	56.243	73.036	0.000	0.070	0.110	0.143.156	147.567	1.720	-9999.990	-9999.990
52.787	56.240	72.935	0.000	0.070	0.110	0.143.156	98.620	1.720	-9999.990	-9999.990
52.847	45.550	72.935	0.000	0.070	0.110	0.143.156	139.430	1.570	-9999.990	-9999.990
52.907	45.550	73.491	0.000	0.070	0.110	0.143.156	139.430	1.570	-9999.990	-9999.990
52.967	103.780	73.491	0.000	0.070	0.110	0.143.156	139.430	1.570	-9999.990	-9999.990
53.027	81.560	72.430	0.000	0.070	0.110	0.143.156	65.210	1.640	-9999.990	-9999.990
53.087	81.560	73.491	0.000	0.070	0.110	0.143.156	53.520	1.640	-9999.990	-9999.990
53.147	86.060	73.491	0.000	0.060	0.110	0.122.156	37.260	1.720	-9999.990	-9999.990
53.207	86.060	71.673	0.000	0.060	0.110	0.122.156	31.640	1.810	-9999.990	-9999.990
53.267	59.050	71.673	0.000	0.060	0.110	0.122.156	28.640	1.810	-9999.990	-9999.990
53.327	68.330	73.440	0.000	0.060	0.110	0.122.156	31.730	1.810	-9999.990	-9999.990
53.387	68.330	75.309	0.000	0.060	0.110	0.122.156	42.869	1.720	-9999.990	-9999.990
53.447	43.020	75.309	0.000	0.060	0.110	0.122.156	35.620	1.800	-9999.990	-9999.990
53.507	43.020	75.309	0.000	0.060	0.110	0.122.156	31.830	1.800	-9999.990	-9999.990
53.567	33.740	75.309	0.000	0.060	0.110	0.122.156	27.610	1.900	-9999.990	-9999.990
53.627	48.080	79.500	0.000	0.060	0.110	0.122.156	27.610	1.900	-9999.990	-9999.990
53.687	48.080	78.036	0.000	0.060	0.110	0.122.156	31.830	1.800	-9999.990	-9999.990
53.747	50.610	78.036	0.000	0.060	0.110	0.122.156	28.780	1.800	-9999.990	-9999.990
53.807	50.610	81.217	0.000	0.060	0.110	0.122.156	28.780	1.800	-9999.990	-9999.990
53.867	17.710	81.217	0.000	0.060	0.110	0.122.156	30.010	1.720	-9999.990	-9999.990
53.927	70.300	82.025	0.000	0.080	0.090	0.163.128	55.580	1.140	-9999.990	-9999.990
53.987	70.300	83.490	0.000	0.090	0.070	0.184.99	174.880	0.770	-9999.990	-9999.990
54.047	55.682	83.490	0.000	0.090	0.070	0.184.99	-9999.990	0.740	-9999.990	-9999.990
54.107	55.680	88.489	0.000	0.090	0.070	0.184.99	-9999.990	0.740	-9999.990	-9999.990
54.167	53.140	88.489	0.000	0.090	0.070	0.184.99	998.150	0.760	-9999.990	-9999.990
54.227	56.240	90.105	0.000	0.090	0.070	0.184.99	-9999.990	0.760	-9999.990	-9999.990
54.287	56.240	94.398	0.000	0.090	0.070	0.184.99	-9999.990	0.760	-9999.990	-9999.990
54.347	55.680	94.398	0.000	0.090	0.070	0.184.99	97.860	0.820	-9999.990	-9999.990
54.407	55.680	96.216	0.000	0.090	0.070	0.184.99	97.860	0.820	-9999.990	-9999.990
54.467	48.081	96.216	0.000	0.090	0.070	0.184.99	96.840	0.820	-9999.990	-9999.990
54.527	56.240	100.710	0.000	0.090	0.070	0.184.99	313.520	0.790	-9999.990	-9999.990
54.587	56.240	107.123	0.000	0.090	0.070	0.184.99	313.520	0.790	-9999.990	-9999.990
54.647	45.550	107.123	0.000	0.090	0.070	0.184.99	313.520	0.790	-9999.990	-9999.990
54.707	45.550	110.810	0.000	0.090	0.070	0.184.99	-9999.990	0.740	-9999.990	-9999.990
54.767	75.930	110.810	0.000	0.090	0.070	0.184.99	247.160	0.740	-9999.990	-9999.990
54.827	90.000	118.486	0.000	0.090	0.070	0.184.99	109.220	0.740	-9999.990	-9999.990
54.887	90.000	122.425	0.000	0.090	0.070	0.184.99	70.860	0.740	-9999.990	-9999.990
54.947	98.720	122.425	0.000	0.100	0.050	0.204.71	-9999.990	0.490	-9999.990	-9999.990
55.007	98.720	128.031	0.000	0.100	0.050	0.204.71	-9999.990	0.490	-9999.990	-9999.990
55.067	80.992	136.565	0.000	0.100	0.050	0.204.71	-9999.990	0.470	-9999.990	-9999.990
55.127	87.180	136.565	0.000	0.100	0.050	0.204.71	-9999.990	0.470	-9999.990	-9999.990
55.187	87.180	140.757	0.000	0.100	0.050	0.204.71	-9999.990	0.470	-9999.990	-9999.990
55.247	101.250	140.757	0.000	0.100	0.050	0.204.71	-9999.990	0.470	-9999.990	-9999.990
55.307	101.250	148.938	0.000	0.100	0.050	0.204.71	-9999.990	0.470	-9999.990	-9999.990
55.367	88.590	152.725	0.000	0.100	0.050	0.204.71	-9999.990	0.450	-9999.990	-9999.990
55.427	84.370	152.725	0.000	0.100	0.050	0.204.71	-9999.990	0.450	-9999.990	-9999.990
55.487	84.370	157.573	0.000	0.100	0.050	0.204.71	-9999.990	0.450	-9999.990	-9999.990
55.547	113.910	157.573	0.000	0.090	0.060	0.184.85	195.130	0.700	-9999.990	-9999.990
55.607	126.580	165.299	0.000	0.090	0.070	0.184.99	58.160	0.720	-9999.990	-9999.990
55.667	126.580	168.380	0.000	0.080	0.080	0.163.113	23.570	1.050	-9999.990	-9999.990

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
55.727	111.382	168.380	0.000	0.070	0.080	0.143.113	18.661	1.130	-9999.990	-9999.990
55.787	111.380	174.389	0.000	0.070	0.080	0.143.113	18.660	1.130	-9999.990	-9999.990
55.847	90.000	174.389	0.000	0.070	0.080	0.143.113	18.660	1.130	-9999.990	-9999.990
55.907	116.450	177.117	0.000	0.070	0.080	0.143.113	18.660	1.130	-9999.990	-9999.990
55.967	116.450	183.025	0.000	0.070	0.080	0.143.113	18.660	1.130	-9999.990	-9999.990
56.027	123.770	183.025	0.000	0.070	0.080	0.143.113	18.520	1.150	-9999.990	-9999.990
56.087	123.770	186.206	0.000	0.090	0.070	0.184.99	24.850	0.770	-9999.990	-9999.990
56.147	98.720	186.206	0.000	0.080	0.070	0.163.99	21.220	0.800	-9999.990	-9999.990
56.207	124.050	190.600	0.000	0.080	0.070	0.163.99	21.220	0.800	-9999.990	-9999.990
56.267	124.050	196.660	0.000	0.080	0.070	0.163.99	18.540	0.830	-9999.990	-9999.990
56.327	106.880	196.660	0.000	0.080	0.070	0.163.99	18.540	0.830	-9999.990	-9999.990
56.387	106.880	198.932	0.000	0.080	0.070	0.163.99	20.350	0.830	-9999.990	-9999.990
56.447	93.650	198.932	0.000	0.080	0.070	0.163.99	17.860	0.860	-9999.990	-9999.990
56.507	129.110	204.510	0.000	0.080	0.070	0.163.99	17.860	0.860	-9999.990	-9999.990
56.567	129.110	208.477	0.000	0.080	0.070	0.163.99	15.970	0.890	-9999.990	-9999.990
56.627	98.440	208.477	0.000	0.080	0.070	0.163.99	15.970	0.890	-9999.990	-9999.990
56.687	98.440	210.295	0.000	0.080	0.070	0.163.99	15.970	0.890	-9999.990	-9999.990
56.747	70.860	210.295	0.000	0.080	0.070	0.163.99	18.140	0.920	-9999.990	-9999.990
56.807	83.520	214.385	0.000	0.080	0.070	0.163.99	16.170	0.960	-9999.990	-9999.990
56.867	83.520	215.345	0.000	0.080	0.080	0.163.113	15.680	1.000	-9999.990	-9999.990
56.927	75.930	215.345	0.000	0.080	0.080	0.163.113	16.400	1.040	-9999.990	-9999.990
56.987	75.930	218.145	0.000	0.080	0.080	0.163.113	16.400	1.040	-9999.990	-9999.990
57.047	106.317	218.145	0.000	0.080	0.080	0.163.113	16.400	1.040	-9999.990	-9999.990
57.107	124.050	218.021	0.000	0.080	0.080	0.163.113	19.380	1.040	-9999.990	-9999.990
57.167	124.050	221.038	0.000	0.080	0.080	0.163.113	23.740	1.040	-9999.990	-9999.990
57.227	64.680	221.038	0.000	0.080	0.080	0.163.113	23.740	1.040	-9999.990	-9999.990
57.287	64.680	220.749	0.000	0.080	0.080	0.163.113	23.740	1.040	-9999.990	-9999.990
57.347	106.320	220.749	0.000	0.080	0.080	0.163.113	26.670	1.040	-9999.990	-9999.990
57.407	63.270	223.517	0.000	0.080	0.080	0.163.113	26.670	1.040	-9999.990	-9999.990
57.467	63.270	224.839	0.000	0.080	0.080	0.163.113	22.650	1.080	-9999.990	-9999.990
57.527	106.880	224.839	0.000	0.080	0.080	0.163.113	28.780	1.080	-9999.990	-9999.990
57.587	106.880	224.688	0.000	0.070	0.090	0.143.128	20.740	1.180	-9999.990	-9999.990
57.647	86.060	224.688	0.000	0.070	0.090	0.143.128	25.720	1.180	-9999.990	-9999.990
57.707	90.000	226.202	0.000	0.070	0.090	0.143.128	29.260	1.180	-9999.990	-9999.990
57.767	90.000	225.824	0.000	0.070	0.090	0.143.128	29.260	1.180	-9999.990	-9999.990
57.827	86.060	225.824	0.000	0.080	0.090	0.163.128	33.970	1.180	-9999.990	-9999.990
57.887	86.060	226.960	0.000	0.090	0.070	0.184.99	72.300	0.760	-9999.990	-9999.990
57.947	118.140	226.960	0.000	0.090	0.070	0.184.99	60.650	0.790	-9999.990	-9999.990
58.007	98.720	226.852	0.000	0.090	0.070	0.184.99	60.650	0.790	-9999.990	-9999.990
58.067	98.720	228.475	0.000	0.090	0.070	0.184.99	39.872	0.820	-9999.990	-9999.990
58.127	92.810	228.475	0.000	0.090	0.070	0.184.99	52.340	0.820	-9999.990	-9999.990
58.187	92.810	227.501	0.000	0.090	0.070	0.184.99	52.340	0.820	-9999.990	-9999.990
58.247	70.860	227.501	0.000	0.090	0.070	0.184.99	52.340	0.820	-9999.990	-9999.990
58.307	78.740	228.475	0.000	0.090	0.070	0.184.99	76.980	0.820	-9999.990	-9999.990
58.367	78.740	228.475	0.000	0.090	0.070	0.184.99	46.190	0.860	-9999.990	-9999.990
58.427	93.650	228.475	0.000	0.090	0.070	0.184.99	46.190	0.860	-9999.990	-9999.990
58.487	93.650	227.869	0.000	0.090	0.070	0.184.99	63.728	0.860	-9999.990	-9999.990
58.547	101.250	227.869	0.000	0.080	0.080	0.163.113	81.080	0.900	-9999.990	-9999.990
58.607	116.450	228.005	0.000	0.080	0.080	0.163.113	42.780	0.990	-9999.990	-9999.990
58.667	116.450	-9999.990	0.000	0.080	0.080	0.163.113	29.220	1.100	-9999.990	-9999.990
58.727	101.252	-9999.990	0.000	0.080	0.080	0.163.113	29.220	1.100	-9999.990	-9999.990
58.787	101.250	-9999.990	0.000	0.080	0.080	0.163.113	29.220	1.100	-9999.990	-9999.990
58.847	98.720	-9999.990	0.000	0.080	0.080	0.163.113	29.220	1.100	-9999.990	-9999.990
58.907	96.190	-9999.990	0.000	0.080	0.080	0.163.113	29.220	1.100	-9999.990	-9999.990
58.967	96.190	-9999.990	0.000	0.080	0.080	0.163.113	29.220	1.100	-9999.990	-9999.990
59.027	83.520	-9999.990	0.000	0.070	0.090	0.143.128	27.230	1.170	-9999.990	-9999.990
59.087	83.520	-9999.990	0.000	0.070	0.090	0.143.128	27.230	1.170	-9999.990	-9999.990
59.147	73.401	-9999.990	0.000	0.070	0.090	0.143.128	25.510	1.240	-9999.990	-9999.990
59.207	92.040	-9999.990	0.000	0.070	0.090	0.143.128	25.510	1.240	-9999.990	-9999.990
59.267	92.040	-9999.990	0.000	0.070	0.090	0.143.128	25.510	1.240	-9999.990	-9999.990
59.327	124.630	-9999.990	0.000	0.070	0.090	0.143.128	21.080	1.320	-9999.990	-9999.990
59.387	124.630	-9999.990	0.000	0.070	0.100	0.143.142	20.050	1.410	-9999.990	-9999.990
59.447	109.690	-9999.990	0.010	0.060	0.100	73.122.142	17.240	1.510	-9999.990	-9999.990
59.507	103.200	-9999.990	0.000	0.090	0.070	0.184.99	27.170	0.780	-9999.990	-9999.990
59.567	103.200	-9999.990	0.000	0.090	0.070	0.184.99	27.170	0.780	-9999.990	-9999.990
59.627	99.300	-9999.990	0.000	0.090	0.070	0.184.99	27.170	0.780	-9999.990	-9999.990
59.687	99.300	-9999.990	0.000	0.090	0.070	0.184.99	27.170	0.780	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
59.747	121.510	-9999.990	0.000	0.080	0.070	0.163.99	20.800	0.820	-9999.990	-9999.990
59.807	98.270	-9999.990	0.000	0.080	0.070	0.163.99	15.970	0.930	-9999.990	-9999.990
59.867	98.270	-9999.990	0.000	0.080	0.070	0.163.99	18.280	0.930	-9999.990	-9999.990
59.927	137.010	-9999.990	0.000	0.080	0.070	0.163.99	18.280	0.930	-9999.990	-9999.990
59.987	137.010	-9999.990	0.000	0.080	0.070	0.163.99	18.280	0.930	-9999.990	-9999.990
60.047	93.800	-9999.990	0.010	0.080	0.080	73.163.113	15.180	0.990	-9999.990	-9999.990
60.107	99.760	-9999.990	0.010	0.070	0.080	73.143.113	10.070	1.240	-9999.990	-9999.990
60.167	99.760	-9999.990	0.010	0.060	0.090	73.122.128	9.070	1.360	-9999.990	-9999.990
60.227	94.690	-9999.990	0.010	0.060	0.090	73.122.128	9.070	1.360	-9999.990	-9999.990
60.287	94.690	-9999.990	0.010	0.060	0.090	73.122.128	8.270	1.490	-9999.990	-9999.990
60.347	87.680	-9999.990	0.010	0.060	0.090	73.122.128	8.270	1.490	-9999.990	-9999.990
60.407	107.360	-9999.990	0.010	0.060	0.090	73.122.128	8.270	1.490	-9999.990	-9999.990
60.467	107.360	-9999.990	0.010	0.060	0.090	73.122.128	8.270	1.490	-9999.990	-9999.990
60.527	2.220	-9999.990	0.010	0.060	0.090	73.122.128	8.830	1.490	-9999.990	-9999.990
60.587	-9999.990	-9999.990	0.010	0.060	0.090	73.122.128	8.830	1.490	-9999.990	-9999.990
60.647	-9999.990	-9999.990	0.010	0.060	0.090	73.122.128	8.080	1.650	-9999.990	-9999.990
60.707	-9999.990	-9999.990	0.010	0.060	0.090	73.122.128	8.080	1.650	-9999.990	-9999.990
60.767	-9999.990	-9999.990	0.010	0.060	0.090	73.122.128	8.080	1.650	-9999.990	-9999.990
60.827	-9999.990	-9999.990	0.010	0.060	0.090	73.122.128	8.080	1.650	-9999.990	-9999.990
60.887	-9999.990	-9999.990	0.010	0.060	0.090	73.122.128	8.080	1.650	-9999.990	-9999.990
60.947	-9999.990	-9999.990	0.010	0.060	0.090	73.122.128	8.080	1.650	-9999.990	-9999.990
61.007	-9999.990	-9999.990	0.010	0.060	0.090	73.122.128	8.610	1.650	-9999.990	-9999.990

Note:

R.G.B - Red/Green/Blue color values, each between 0 and 255, corresponding to GR_KRAT, GR_URAT and GR_THRAT, respectively
GR_KRAT, GR_URAT, GR_THRAT - Ratios of K, U, and Th to Total Gamma Ray, values used to create color cube values
-9999.99 - no data

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ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
0.000	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	0.000	-9999.990
0.060	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.120	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.180	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.240	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.300	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.360	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.420	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.480	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.540	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.600	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.660	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.720	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.780	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.840	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.900	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.960	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.020	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.080	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.140	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.200	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.260	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.320	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.380	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.440	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.500	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.560	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.620	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.680	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.740	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.800	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.860	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.920	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.980	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.040	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.100	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.160	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.220	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.280	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.340	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.400	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.460	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.520	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.580	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.640	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.700	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.760	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.820	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.880	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.940	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.000	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.060	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.120	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.180	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.240	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.300	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.360	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.420	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.480	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.540	-9999.990	27.043	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.600	-9999.990	27.043	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.660	-9999.990	26.105	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.720	-9999.990	26.105	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.780	-9999.990	25.237	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.840	-9999.990	24.741	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.900	-9999.990	24.741	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.960	-9999.990	25.377	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.020	-9999.990	25.377	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.080	-9999.990	26.580	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.140	-9999.990	30.308	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.200	-9999.990	30.308	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.260	-9999.990	35.426	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.320	-9999.990	35.426	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.380	-9999.990	-1.984	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990

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Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
4.440	-9999.990	-36.660	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.500	-9999.990	-36.660	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.560	-9999.990	19.419	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.620	-9999.990	19.419	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.680	-9999.990	33.546	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.740	-9999.990	28.640	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.800	-9999.990	28.640	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.860	-9999.990	23.412	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.920	-9999.990	23.412	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.980	-9999.990	18.536	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.040	-9999.990	10.786	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.100	-9999.990	10.786	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.160	-9999.990	12.453	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.220	-9999.990	12.453	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.280	-9999.990	74.401	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.340	-9999.990	42.135	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.400	-9999.990	42.135	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.460	-9999.990	6.224	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.520	-9999.990	6.224	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.580	-9999.990	2.584	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.640	-9999.990	6.523	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.700	-9999.990	6.523	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.760	-9999.990	11.109	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.820	-9999.990	11.109	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.880	-9999.990	17.207	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.940	-9999.990	26.433	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
6.000	-9999.990	26.433	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
6.060	45.227	22.177	0.021	0.000	0.165	154.0.234	7.823	-9999.990	-9999.990	-9999.990
6.120	75.387	22.177	0.021	0.000	0.165	154.0.234	7.823	-9999.990	-9999.990	-9999.990
6.180	75.388	18.220	0.021	0.000	0.165	154.0.234	7.823	-9999.990	-9999.990	-9999.990
6.240	50.253	22.296	0.021	0.000	0.164	156.0.232	7.656	-9999.990	-9999.990	-9999.990
6.300	50.253	22.296	0.021	0.000	0.164	156.0.232	7.656	-9999.990	-9999.990	-9999.990
6.360	42.713	23.795	0.022	0.000	0.163	159.0.230	7.497	-9999.990	-9999.990	-9999.990
6.420	75.388	23.795	0.023	0.000	0.160	164.0.225	7.108	-9999.990	-9999.990	-9999.990
6.480	75.388	21.877	0.023	0.000	0.160	164.0.225	7.108	-9999.990	-9999.990	-9999.990
6.540	32.661	19.119	0.022	0.000	0.160	163.0.226	7.160	-9999.990	-9999.990	-9999.990
6.600	32.661	19.119	0.023	0.000	0.158	167.0.223	6.890	-9999.990	-9999.990	-9999.990
6.660	80.975	18.933	0.023	0.000	0.156	171.0.220	6.684	-9999.990	-9999.990	-9999.990
6.720	47.740	19.850	0.024	0.000	0.155	173.0.219	6.565	-9999.990	-9999.990	-9999.990
6.780	47.739	19.850	0.024	0.000	0.155	173.0.219	6.565	-9999.990	-9999.990	-9999.990
6.840	57.793	20.351	0.024	0.000	0.155	173.0.219	6.565	-9999.990	-9999.990	-9999.990
6.900	57.793	20.351	0.024	0.000	0.152	178.0.214	6.234	-9999.990	-9999.990	-9999.990
6.960	103.045	20.204	0.024	0.000	0.152	178.0.214	6.234	-9999.990	-9999.990	-9999.990
7.020	72.595	19.095	0.025	0.000	0.150	182.0.211	6.034	-9999.990	-9999.990	-9999.990
7.080	72.595	19.095	0.025	0.000	0.149	184.0.210	5.937	-9999.990	-9999.990	-9999.990
7.140	110.589	19.321	0.026	0.000	0.147	187.0.207	5.754	-9999.990	-9999.990	-9999.990
7.200	110.589	19.321	0.026	0.000	0.147	189.0.205	5.665	-9999.990	-9999.990	-9999.990
7.260	75.388	19.370	0.026	0.000	0.147	189.0.205	5.665	-9999.990	-9999.990	-9999.990
7.320	67.009	19.811	0.025	0.000	0.149	184.0.209	5.903	-9999.990	-9999.990	-9999.990
7.380	67.009	19.811	0.025	0.000	0.149	184.0.209	5.903	-9999.990	-9999.990	-9999.990
7.440	85.444	19.742	0.025	0.000	0.149	184.0.209	5.903	-9999.990	-9999.990	-9999.990
7.500	85.444	19.742	0.025	0.000	0.149	184.0.209	5.903	-9999.990	-9999.990	-9999.990
7.560	86.562	19.517	0.025	0.000	0.150	182.0.211	6.020	-9999.990	-9999.990	-9999.990
7.620	75.388	18.448	0.025	0.000	0.150	182.0.211	6.020	-9999.990	-9999.990	-9999.990
7.680	75.388	18.448	0.025	0.000	0.150	182.0.211	6.020	-9999.990	-9999.990	-9999.990
7.740	65.334	18.487	0.025	0.000	0.150	182.0.211	6.020	-9999.990	-9999.990	-9999.990
7.800	65.333	18.487	0.025	0.000	0.150	182.0.211	6.020	-9999.990	-9999.990	-9999.990
7.860	94.943	18.232	0.025	0.000	0.150	182.0.211	6.020	-9999.990	-9999.990	-9999.990
7.920	72.874	19.075	0.025	0.000	0.150	182.0.211	6.020	-9999.990	-9999.990	-9999.990
7.980	72.874	19.075	0.025	0.000	0.149	184.0.210	5.932	-9999.990	-9999.990	-9999.990
8.040	85.444	19.689	0.025	0.000	0.149	184.0.210	5.932	-9999.990	-9999.990	-9999.990
8.100	85.444	19.689	0.025	0.000	0.151	181.0.211	6.052	-9999.990	-9999.990	-9999.990
8.160	75.388	19.419	0.025	0.000	0.151	181.0.211	6.052	-9999.990	-9999.990	-9999.990
8.220	75.388	19.075	0.025	0.000	0.151	181.0.211	6.052	-9999.990	-9999.990	-9999.990
8.280	75.388	19.075	0.025	0.000	0.151	181.0.211	6.052	-9999.990	-9999.990	-9999.990
8.340	92.149	19.689	0.025	0.000	0.151	181.0.211	6.052	-9999.990	-9999.990	-9999.990
8.400	92.149	19.689	0.025	0.000	0.151	181.0.211	6.052	-9999.990	-9999.990	-9999.990
8.460	65.334	19.365	0.025	0.000	0.151	181.0.211	6.052	-9999.990	-9999.990	-9999.990
8.520	65.333	20.007	0.025	0.000	0.151	181.0.211	6.052	-9999.990	-9999.990	-9999.990
8.580	65.333	20.007	0.025	0.000	0.150	183.0.210	5.963	-9999.990	-9999.990	-9999.990
8.640	92.987	20.228	0.025	0.000	0.149	185.0.209	5.877	-9999.990	-9999.990	-9999.990
8.700	92.987	20.228	0.025	0.000	0.149	185.0.209	5.877	-9999.990	-9999.990	-9999.990
8.760	100.530	21.307	0.025	0.000	0.149	185.0.209	5.877	-9999.990	-9999.990	-9999.990
8.820	92.987	-9999.990	0.025	0.000	0.149	185.0.209	5.877	-9999.990	-9999.990	-9999.990

Boring DD-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
8.880	92.987	-9999.990	0.025	0.000	0.149	185.0.209	5.877	-9999.990	-9999.990	-9999.990
8.940	75.388	-9999.990	0.025	0.000	0.149	185.0.209	5.877	-9999.990	-9999.990	-9999.990
9.000	80.975	-9999.990	0.025	0.000	0.149	185.0.209	5.877	-9999.990	-9999.990	-9999.990
9.060	80.975	-9999.990	0.025	0.000	0.149	185.0.209	5.877	-9999.990	-9999.990	-9999.990
9.120	92.987	-9999.990	0.025	0.000	0.149	185.0.209	5.877	-9999.990	-9999.990	-9999.990
9.180	92.987	-9999.990	0.025	0.000	0.149	185.0.209	5.877	-9999.990	1.528	1.149
9.240	122.884	-9999.990	0.025	0.000	0.149	185.0.209	5.877	-9999.990	-9999.990	-9999.990
9.300	103.045	-9999.990	0.025	0.000	0.149	185.0.209	5.877	-9999.990	-9999.990	-9999.990
9.360	103.045	-9999.990	0.025	0.000	0.150	182.0.210	5.993	-9999.990	-9999.990	-9999.990
9.420	106.118	-9999.990	0.025	0.000	0.150	182.0.211	6.025	-9999.990	-9999.990	-9999.990
9.480	106.118	-9999.990	0.025	0.000	0.150	182.0.211	6.025	-9999.990	-9999.990	-9999.990
9.540	92.987	-9999.990	0.025	0.000	0.150	182.0.211	6.025	-9999.990	-9999.990	-9999.990
9.600	65.333	-9999.990	0.025	0.000	0.149	184.0.210	5.937	-9999.990	-9999.990	-9999.990
9.660	65.333	-9999.990	0.025	0.000	0.151	181.0.211	6.055	-9999.990	-9999.990	-9999.990
9.720	78.182	-9999.990	0.025	0.000	0.151	181.0.211	6.054	-9999.990	-9999.990	-9999.990
9.780	78.182	-9999.990	0.024	0.000	0.153	177.0.215	6.306	-9999.990	-9999.990	-9999.990
9.840	103.045	-9999.990	0.024	0.000	0.153	177.0.215	6.306	-9999.990	-9999.990	-9999.990
9.900	67.009	-9999.990	0.024	0.000	0.154	175.0.217	6.442	-9999.990	-9999.990	-9999.990
9.960	67.009	-9999.990	0.024	0.000	0.154	175.0.217	6.442	-9999.990	-9999.990	-9999.990
10.020	75.388	-9999.990	0.024	0.000	0.154	175.0.217	6.442	-9999.990	-9999.990	-9999.990
10.080	75.388	-9999.990	0.024	0.000	0.156	172.0.219	6.584	-9999.990	-9999.990	-9999.990
10.140	55.838	-9999.990	0.023	0.000	0.157	170.0.221	6.733	-9999.990	-9999.990	-9999.990
10.200	50.253	-9999.990	0.024	0.000	0.156	172.0.219	6.624	-9999.990	-9999.990	-9999.990
10.260	50.253	-9999.990	0.024	0.000	0.155	173.0.218	6.519	-9999.990	-9999.990	-9999.990
10.320	72.874	-9999.990	0.024	0.000	0.155	173.0.218	6.519	-9999.990	-9999.990	-9999.990
10.380	72.874	-9999.990	0.024	0.000	0.155	173.0.218	6.519	-9999.990	-9999.990	-9999.990
10.440	52.766	-9999.990	0.024	0.000	0.154	175.0.217	6.416	-9999.990	-9999.990	-9999.990
10.500	53.045	-9999.990	0.024	0.000	0.155	173.0.218	6.559	-9999.990	-9999.990	-9999.990
10.560	53.045	-9999.990	0.024	0.000	0.155	173.0.218	6.559	-9999.990	-9999.990	-9999.990
10.620	35.174	-9999.990	0.024	0.000	0.155	173.0.218	6.559	-9999.990	-9999.990	-9999.990
10.680	35.174	-9999.990	0.024	0.000	0.155	173.0.218	6.559	-9999.990	-9999.990	-9999.990
10.740	47.739	-9999.990	0.024	0.000	0.155	173.0.218	6.559	-9999.990	-9999.990	-9999.990
10.800	53.045	-9999.990	0.024	0.000	0.154	174.0.217	6.452	-9999.990	-9999.990	-9999.990
10.860	53.045	-9999.990	0.024	0.000	0.154	174.0.217	6.452	-9999.990	-9999.990	-9999.990
10.920	47.739	-9999.990	0.024	0.000	0.154	174.0.217	6.452	-9999.990	-9999.990	-9999.990
10.980	47.739	-9999.990	0.024	0.000	0.154	174.0.217	6.452	-9999.990	-9999.990	-9999.990
11.040	47.739	-9999.990	0.024	0.000	0.155	172.0.219	6.576	-9999.990	-9999.990	-9999.990
11.100	36.291	-9999.990	0.023	0.000	0.158	168.0.222	6.853	-9999.990	-9999.990	-9999.990
11.160	36.291	-9999.990	0.023	0.000	0.160	164.0.226	7.110	-9999.990	-9999.990	-9999.990
11.220	45.226	-9999.990	0.022	0.000	0.164	157.0.231	7.586	-9999.990	-9999.990	-9999.990
11.280	45.226	-9999.990	0.022	0.000	0.163	158.0.230	7.521	-9999.990	-9999.990	-9999.990
11.340	35.174	-9999.990	0.022	0.000	0.162	160.0.229	7.411	-9999.990	-9999.990	-9999.990
11.400	47.460	-9999.990	0.022	0.000	0.163	158.0.230	7.525	-9999.990	-9999.990	-9999.990
11.460	47.460	-9999.990	0.022	0.000	0.163	158.0.230	7.525	-9999.990	-9999.990	-9999.990
11.520	35.174	-9999.990	0.022	0.000	0.163	158.0.230	7.525	-9999.990	-9999.990	-9999.990
11.580	35.174	-9999.990	0.022	0.000	0.163	158.0.230	7.525	-9999.990	-9999.990	-9999.990
11.640	47.739	-9999.990	0.022	0.000	0.163	158.0.230	7.525	-9999.990	-9999.990	-9999.990
11.700	36.291	-9999.990	0.021	0.000	0.164	157.0.232	7.646	-9999.990	-9999.990	-9999.990
11.760	36.291	-9999.990	0.022	0.000	0.162	160.0.229	7.376	-9999.990	-9999.990	-9999.990
11.820	60.305	-9999.990	0.023	0.000	0.160	165.0.225	7.074	-9999.990	-9999.990	-9999.990
11.880	60.306	-9999.990	0.022	0.000	0.164	157.0.231	7.586	-9999.990	-9999.990	-9999.990
11.940	61.423	-9999.990	0.022	0.000	0.161	161.0.228	7.288	-9999.990	-9999.990	-9999.990
12.000	33.499	-9999.990	0.022	0.000	0.163	159.0.230	7.459	-9999.990	-9999.990	-9999.990
12.060	33.499	-9999.990	0.022	0.000	0.164	158.0.231	7.565	-9999.990	-9999.990	-9999.990
12.120	35.174	-9999.990	0.022	0.000	0.164	157.0.231	7.609	-9999.990	-9999.990	-9999.990
12.180	35.174	-9999.990	0.021	0.000	0.166	153.0.234	7.902	-9999.990	-9999.990	-9999.990
12.240	40.200	-9999.990	0.021	0.000	0.166	153.0.234	7.902	-9999.990	-9999.990	-9999.990
12.300	36.291	-9999.990	0.021	0.000	0.167	151.0.236	8.043	-9999.990	-9999.990	-9999.990
12.360	36.291	-9999.990	0.021	0.000	0.166	153.0.235	7.924	-9999.990	-9999.990	-9999.990
12.420	55.279	-9999.990	0.021	0.000	0.166	153.0.235	7.924	-9999.990	-9999.990	-9999.990
12.480	55.279	-9999.990	0.022	0.000	0.163	158.0.230	7.510	-9999.990	-9999.990	-9999.990
12.540	50.253	-9999.990	0.022	0.000	0.162	161.0.228	7.304	-9999.990	-9999.990	-9999.990
12.600	33.499	-9999.990	0.022	0.000	0.161	162.0.227	7.268	-9999.990	-9999.990	-9999.990
12.660	33.499	-9999.990	0.022	0.000	0.161	162.0.227	7.268	-9999.990	-9999.990	-9999.990
12.720	45.226	-9999.990	0.022	0.000	0.162	160.0.229	7.367	-9999.990	-9999.990	-9999.990
12.780	45.226	-9999.990	0.022	0.000	0.161	162.0.227	7.233	-9999.990	-9999.990	-9999.990
12.840	55.279	-9999.990	0.023	0.000	0.159	166.0.224	7.008	-9999.990	-9999.990	-9999.990
12.900	50.253	-9999.990	0.023	0.000	0.159	166.0.224	6.974	-9999.990	-9999.990	-9999.990
12.960	50.253	-9999.990	0.023	0.000	0.159	166.0.224	6.974	-9999.990	-9999.990	-9999.990
13.020	50.253	-9999.990	0.023	0.000	0.158	167.0.223	6.885	-9999.990	-9999.990	-9999.990
13.080	50.253	-9999.990	0.023	0.000	0.159	166.0.224	6.974	-9999.990	-9999.990	-9999.990
13.140	67.846	-9999.990	0.023	0.000	0.160	164.0.225	7.100	-9999.990	-9999.990	-9999.990
13.200	30.707	-9999.990	0.023	0.000	0.159	166.0.224	6.974	-9999.990	-9999.990	-9999.990
13.260	30.707	-9999.990	0.023	0.000	0.159	166.0.224	6.974	-9999.990	-9999.990	-9999.990

Boring DD-BK
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ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
13.320	52.766	-9999.990	0.023	0.000	0.158	168.0.222	6.844	-9999.990	-9999.990	-9999.990
13.380	52.766	-9999.990	0.023	0.000	0.157	170.0.221	6.752	-9999.990	-9999.990	-9999.990
13.440	30.149	18.232	0.023	0.000	0.156	171.0.220	6.662	-9999.990	-9999.990	-9999.990
13.500	41.875	17.440	0.023	0.000	0.158	168.0.222	6.849	-9999.990	-9999.990	-9999.990
13.560	41.875	17.440	0.023	0.000	0.158	168.0.222	6.849	-9999.990	-9999.990	-9999.990
13.620	42.713	17.260	0.023	0.000	0.157	169.0.222	6.791	-9999.990	-9999.990	-9999.990
13.680	42.713	17.260	0.023	0.000	0.157	170.0.220	6.700	-9999.990	-9999.990	-9999.990
13.740	33.499	16.289	0.023	0.000	0.157	170.0.220	6.700	-9999.990	-9999.990	-9999.990
13.800	30.149	16.343	0.023	0.000	0.157	170.0.220	6.700	-9999.990	-9999.990	-9999.990
13.860	30.149	16.343	0.024	0.000	0.155	173.0.218	6.545	-9999.990	-9999.990	-9999.990
13.920	72.595	16.541	0.024	0.000	0.155	173.0.218	6.545	-9999.990	-9999.990	-9999.990
13.980	72.595	16.541	0.024	0.000	0.154	175.0.217	6.431	-9999.990	-9999.990	-9999.990
14.040	65.333	16.991	0.024	0.000	0.155	172.0.219	6.582	-9999.990	-9999.990	-9999.990
14.100	47.460	17.260	0.024	0.000	0.155	172.0.219	6.582	-9999.990	-9999.990	-9999.990
14.160	47.460	17.260	0.023	0.000	0.157	170.0.221	6.752	-9999.990	-9999.990	-9999.990
14.220	55.279	17.422	0.023	0.000	0.157	170.0.221	6.752	-9999.990	-9999.990	-9999.990
14.280	55.279	17.422	0.023	0.000	0.157	170.0.221	6.752	-9999.990	-9999.990	-9999.990
14.340	41.875	17.980	0.023	0.000	0.157	170.0.221	6.752	-9999.990	-9999.990	-9999.990
14.400	52.766	19.365	0.023	0.000	0.158	167.0.223	6.921	-9999.990	-9999.990	-9999.990
14.460	52.766	19.365	0.023	0.000	0.158	167.0.223	6.921	-9999.990	-9999.990	-9999.990
14.520	37.688	20.318	0.023	0.000	0.158	167.0.223	6.921	-9999.990	-9999.990	-9999.990
14.580	37.687	20.318	0.023	0.000	0.157	169.0.222	6.789	-9999.990	-9999.990	-9999.990
14.640	30.707	22.980	0.023	0.000	0.156	171.0.220	6.639	-9999.990	-9999.990	-9999.990
14.700	42.713	25.354	0.023	0.000	0.157	169.0.221	6.776	-9999.990	-9999.990	-9999.990
14.760	42.713	25.354	0.023	0.000	0.157	169.0.221	6.776	-9999.990	-9999.990	-9999.990
14.820	57.792	28.651	0.024	0.000	0.155	173.0.218	6.545	-9999.990	-9999.990	-9999.990
14.880	57.793	28.651	0.024	0.000	0.155	173.0.218	6.545	-9999.990	-9999.990	-9999.990
14.940	36.291	34.041	0.024	0.000	0.155	173.0.218	6.545	-9999.990	-9999.990	-9999.990
15.000	50.253	39.802	0.024	0.000	0.155	173.0.218	6.545	-9999.990	-9999.990	-9999.990
15.060	50.253	39.802	0.023	0.000	0.156	171.0.220	6.639	-9999.990	-9999.990	-9999.990
15.120	30.149	47.099	0.023	0.000	0.156	171.0.220	6.639	-9999.990	-9999.990	-9999.990
15.180	30.149	47.099	0.024	0.000	0.155	174.0.218	6.508	-9999.990	-9999.990	-9999.990
15.240	33.499	55.630	0.024	0.000	0.155	174.0.218	6.508	-9999.990	-9999.990	-9999.990
15.300	40.200	62.644	0.025	0.000	0.150	183.0.210	5.985	-9999.990	0.601	2.743
15.360	40.200	62.644	0.025	0.000	0.151	181.0.212	6.073	-9999.990	-9999.990	-9999.990
15.420	33.499	70.678	0.025	0.000	0.150	183.0.210	5.955	-9999.990	-9999.990	-9999.990
15.480	33.499	70.678	0.025	0.000	0.149	185.0.209	5.869	-9999.990	-9999.990	-9999.990
15.540	40.200	78.352	0.025	0.000	0.149	185.0.209	5.869	-9999.990	-9999.990	-9999.990
15.600	55.279	83.567	0.025	0.000	0.150	183.0.210	5.952	-9999.990	-9999.990	-9999.990
15.660	55.279	83.567	0.025	0.000	0.150	182.0.211	6.039	-9999.990	-9999.990	-9999.990
15.720	47.460	87.188	0.025	0.000	0.148	186.0.208	5.809	-9999.990	-9999.990	-9999.990
15.780	42.713	87.188	0.025	0.000	0.148	186.0.208	5.809	-9999.990	-9999.990	-9999.990
15.840	42.713	88.663	0.025	0.000	0.150	182.0.211	6.042	-9999.990	-9999.990	-9999.990
15.900	55.279	86.055	0.025	0.000	0.149	184.0.209	5.900	-9999.990	-9999.990	-9999.990
15.960	55.279	86.055	0.025	0.000	0.149	184.0.209	5.900	-9999.990	-9999.990	-9999.990
16.020	30.707	81.409	0.026	0.000	0.148	186.0.207	5.785	-9999.990	-9999.990	-9999.990
16.080	37.687	81.409	0.025	0.000	0.149	185.0.209	5.877	-9999.990	-9999.990	-9999.990
16.140	37.687	75.234	0.026	0.000	0.144	193.0.202	5.466	-9999.990	-9999.990	-9999.990
16.200	53.045	66.361	0.027	0.000	0.143	195.0.200	5.340	-9999.990	-9999.990	-9999.990
16.260	53.045	66.361	0.027	0.000	0.142	197.0.198	5.251	-9999.990	-9999.990	-9999.990
16.320	27.636	57.548	0.027	0.000	0.143	195.0.200	5.341	-9999.990	-9999.990	-9999.990
16.380	30.707	57.548	0.027	0.000	0.143	195.0.200	5.341	-9999.990	-9999.990	-9999.990
16.440	30.707	48.663	0.027	0.000	0.143	195.0.200	5.341	-9999.990	-9999.990	-9999.990
16.500	47.459	41.121	0.026	0.000	0.145	192.0.203	5.497	-9999.990	-9999.990	-9999.990
16.560	47.460	41.121	0.026	0.000	0.145	192.0.203	5.497	-9999.990	-9999.990	-9999.990
16.620	32.661	35.606	0.026	0.000	0.144	193.0.202	5.463	-9999.990	-9999.990	-9999.990
16.680	19.540	35.606	0.026	0.000	0.146	189.0.205	5.658	-9999.990	-9999.990	-9999.990
16.740	19.540	31.949	0.026	0.000	0.146	189.0.205	5.658	-9999.990	-9999.990	-9999.990
16.800	32.661	29.724	0.025	0.000	0.148	186.0.208	5.829	-9999.990	-9999.990	-9999.990
16.860	32.661	29.724	0.025	0.000	0.149	184.0.210	5.937	-9999.990	-9999.990	-9999.990
16.920	32.661	29.371	0.025	0.000	0.149	184.0.210	5.937	-9999.990	-9999.990	-9999.990
16.980	52.766	29.371	0.025	0.000	0.149	184.0.210	5.937	-9999.990	-9999.990	-9999.990
17.040	52.766	29.724	0.024	0.000	0.153	177.0.215	6.283	-9999.990	-9999.990	-9999.990
17.100	58.630	30.570	0.024	0.000	0.155	173.0.218	6.533	-9999.990	-9999.990	-9999.990
17.160	58.630	30.570	0.023	0.000	0.156	171.0.220	6.668	-9999.990	-9999.990	-9999.990
17.220	35.174	32.422	0.023	0.000	0.159	166.0.224	6.954	-9999.990	-9999.990	-9999.990
17.280	53.045	32.422	0.022	0.000	0.162	161.0.228	7.337	-9999.990	-9999.990	-9999.990
17.340	53.045	32.368	0.022	0.000	0.162	161.0.228	7.337	-9999.990	-9999.990	-9999.990
17.400	42.713	31.409	0.022	0.000	0.160	164.0.226	7.137	-9999.990	-9999.990	-9999.990
17.460	42.713	31.409	0.022	0.000	0.160	164.0.226	7.137	-9999.990	-9999.990	-9999.990
17.520	52.765	29.455	0.023	0.000	0.159	166.0.224	6.954	-9999.990	-9999.990	-9999.990
17.580	22.611	29.455	0.022	0.000	0.161	163.0.227	7.211	-9999.990	-9999.990	-9999.990
17.640	22.611	27.033	0.021	0.000	0.165	155.0.233	7.779	-9999.990	-9999.990	-9999.990
17.700	41.875	24.695	0.022	0.000	0.163	159.0.230	7.483	-9999.990	-9999.990	-9999.990

Boring DD-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
17.760	41.875	24.695	0.022	0.000	0.163	159.0.230	7.483	-9999.990	-9999.990	-9999.990
17.820	45.226	22.356	0.022	0.000	0.161	162.0.228	7.279	-9999.990	-9999.990	-9999.990
17.880	58.630	22.356	0.023	0.000	0.160	164.0.225	7.086	-9999.990	-9999.990	-9999.990
17.940	58.630	20.066	0.022	0.000	0.161	161.0.228	7.293	-9999.990	-9999.990	-9999.990
18.000	42.713	18.220	0.022	0.000	0.160	164.0.226	7.129	-9999.990	-9999.990	-9999.990
18.060	42.713	18.220	0.022	0.000	0.160	164.0.226	7.131	-9999.990	-9999.990	-9999.990
18.120	47.460	15.912	0.022	0.000	0.160	164.0.226	7.131	-9999.990	-9999.990	-9999.990
18.180	45.226	15.912	0.023	0.000	0.158	167.0.223	6.915	-9999.990	-9999.990	-9999.990
18.240	45.226	15.162	0.023	0.000	0.158	167.0.223	6.915	-9999.990	-9999.990	-9999.990
18.300	50.253	14.023	0.023	0.000	0.158	167.0.223	6.915	-9999.990	-9999.990	-9999.990
18.360	50.253	14.023	0.023	0.000	0.157	169.0.221	6.766	-9999.990	-9999.990	-9999.990
18.420	37.687	12.944	0.023	0.000	0.159	166.0.224	6.970	-9999.990	-9999.990	-9999.990
18.480	39.083	12.944	0.023	0.000	0.159	165.0.225	7.028	-9999.990	-9999.990	-9999.990
18.540	39.083	12.296	0.022	0.000	0.161	162.0.227	7.251	-9999.990	-9999.990	-9999.990
18.600	42.713	12.027	0.022	0.000	0.161	162.0.227	7.251	-9999.990	-9999.990	-9999.990
18.660	42.713	12.027	0.022	0.000	0.162	160.0.229	7.424	-9999.990	-9999.990	-9999.990
18.720	30.707	11.985	0.022	0.000	0.162	160.0.229	7.425	-9999.990	-9999.990	-9999.990
18.780	47.739	11.985	0.022	0.000	0.162	160.0.229	7.425	-9999.990	-9999.990	-9999.990
18.840	47.739	11.919	0.022	0.000	0.163	159.0.230	7.491	-9999.990	-9999.990	-9999.990
18.900	30.149	11.625	0.022	0.000	0.163	159.0.230	7.491	-9999.990	-9999.990	-9999.990
18.960	30.149	11.625	0.022	0.000	0.163	159.0.230	7.491	-9999.990	-9999.990	-9999.990
19.020	53.045	11.085	0.022	0.000	0.163	159.0.230	7.491	-9999.990	-9999.990	-9999.990
19.080	45.226	11.085	0.022	0.000	0.163	159.0.230	7.491	-9999.990	-9999.990	-9999.990
19.140	45.226	11.163	0.022	0.000	0.163	159.0.230	7.491	-9999.990	-9999.990	-9999.990
19.200	45.226	10.006	0.022	0.000	0.162	161.0.228	7.315	-9999.990	-9999.990	-9999.990
19.260	45.226	10.006	0.022	0.000	0.162	161.0.228	7.315	-9999.990	-9999.990	-9999.990
19.320	47.460	9.491	0.022	0.000	0.162	161.0.228	7.315	-9999.990	-9999.990	-9999.990
19.380	37.687	9.491	0.022	0.000	0.162	161.0.228	7.315	-9999.990	-9999.990	-9999.990
19.440	37.687	10.486	0.023	0.000	0.160	164.0.225	7.089	-9999.990	-9999.990	-9999.990
19.500	35.174	9.766	0.023	0.000	0.159	165.0.225	7.031	-9999.990	-9999.990	-9999.990
19.560	35.174	9.766	0.023	0.000	0.159	165.0.225	7.031	-9999.990	-9999.990	-9999.990
19.620	27.915	9.706	0.023	0.000	0.159	165.0.225	7.031	-9999.990	-9999.990	-9999.990
19.680	50.253	9.706	0.022	0.000	0.161	163.0.226	7.191	-9999.990	-9999.990	-9999.990
19.740	50.253	10.246	0.022	0.000	0.161	163.0.226	7.191	-9999.990	-9999.990	-9999.990
19.800	30.149	10.246	0.023	0.000	0.159	166.0.224	6.977	-9999.990	-9999.990	-9999.990
19.860	30.149	10.246	0.023	0.000	0.156	171.0.220	6.679	-9999.990	-9999.990	-9999.990
19.920	58.630	10.300	0.024	0.000	0.153	177.0.215	6.319	-9999.990	-9999.990	-9999.990
19.980	27.636	10.300	0.023	0.000	0.156	171.0.220	6.680	-9999.990	-9999.990	-9999.990
20.040	27.636	10.486	0.024	0.000	0.155	174.0.218	6.493	-9999.990	-9999.990	-9999.990
20.100	50.252	9.922	0.024	0.000	0.155	174.0.218	6.493	-9999.990	-9999.990	-9999.990
20.160	50.253	9.922	0.025	0.000	0.152	179.0.213	6.195	-9999.990	-9999.990	-9999.990
20.220	42.713	9.826	0.025	0.000	0.150	182.0.211	6.035	-9999.990	-9999.990	-9999.990
20.280	40.200	10.192	0.025	0.000	0.151	180.0.213	6.151	-9999.990	-9999.990	-9999.990
20.340	40.200	10.192	0.024	0.000	0.153	178.0.214	6.271	-9999.990	-9999.990	-9999.990
20.400	67.009	10.066	0.024	0.000	0.153	177.0.215	6.316	-9999.990	-9999.990	-9999.990
20.460	67.009	10.066	0.024	0.000	0.153	177.0.215	6.316	-9999.990	-9999.990	-9999.990
20.520	27.638	9.946	0.024	0.000	0.153	177.0.215	6.316	-9999.990	-9999.990	-9999.990
20.580	36.291	10.030	0.024	0.000	0.154	175.0.217	6.444	-9999.990	-9999.990	-9999.990
20.640	36.291	10.030	0.025	0.000	0.151	180.0.213	6.148	-9999.990	-9999.990	-9999.990
20.700	52.766	9.706	0.025	0.000	0.151	180.0.213	6.148	-9999.990	-9999.990	-9999.990
20.760	52.766	9.706	0.025	0.000	0.150	182.0.211	6.033	-9999.990	-9999.990	-9999.990
20.820	33.499	9.221	0.025	0.000	0.150	182.0.211	6.033	-9999.990	-9999.990	-9999.990
20.880	22.332	9.527	0.025	0.000	0.150	182.0.211	6.035	-9999.990	-9999.990	-9999.990
20.940	22.331	9.527	0.024	0.000	0.153	177.0.215	6.289	-9999.990	-9999.990	-9999.990
21.000	50.253	8.465	0.025	0.000	0.152	179.0.213	6.182	-9999.990	-9999.990	-9999.990
21.060	50.253	8.465	0.025	0.000	0.152	179.0.213	6.182	-9999.990	-9999.990	-9999.990
21.120	39.083	8.987	0.025	0.000	0.152	179.0.213	6.182	-9999.990	-9999.990	-9999.990
21.180	40.200	9.491	0.025	0.000	0.151	181.0.212	6.086	-9999.990	-9999.990	-9999.990
21.240	40.200	9.491	0.025	0.000	0.151	181.0.212	6.086	-9999.990	-9999.990	-9999.990
21.300	42.713	9.826	0.025	0.000	0.149	184.0.210	5.933	-9999.990	-9999.990	-9999.990
21.360	42.713	9.826	0.025	0.000	0.149	184.0.210	5.933	-9999.990	-9999.990	-9999.990
21.420	47.460	10.246	0.026	0.000	0.146	190.0.205	5.621	-9999.990	-9999.990	-9999.990
21.480	37.687	9.946	0.026	0.000	0.147	187.0.207	5.738	-9999.990	-9999.990	-9999.990
21.540	37.687	9.946	0.025	0.000	0.150	182.0.211	6.038	-9999.990	-9999.990	-9999.990
21.600	57.793	10.462	0.025	0.000	0.150	182.0.211	6.038	-9999.990	-9999.990	-9999.990
21.660	57.793	10.462	0.025	0.000	0.150	182.0.211	6.038	-9999.990	-9999.990	-9999.990
21.720	27.636	10.306	0.026	0.000	0.148	187.0.207	5.778	-9999.990	-9999.990	-9999.990
21.780	39.083	10.300	0.026	0.000	0.147	188.0.206	5.698	-9999.990	-9999.990	-9999.990
21.840	39.083	10.300	0.026	0.000	0.147	188.0.206	5.695	-9999.990	-9999.990	-9999.990
21.900	30.149	10.186	0.026	0.000	0.147	188.0.206	5.695	-9999.990	-9999.990	-9999.990
21.960	30.149	10.186	0.026	0.000	0.145	191.0.203	5.538	-9999.990	-9999.990	-9999.990
22.020	52.766	10.246	0.026	0.000	0.145	191.0.203	5.538	-9999.990	-9999.990	-9999.990
22.080	58.630	9.706	0.025	0.000	0.148	186.0.208	5.815	-9999.990	-9999.990	-9999.990
22.140	58.630	9.706	0.026	0.000	0.148	187.0.207	5.771	-9999.990	-9999.990	-9999.990

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Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
22.200	75.388	10.084	0.027	0.000	0.142	197.0.199	5.257	-9999.990	-9999.990	-9999.990
22.260	75.388	10.084	0.027	0.000	0.141	198.0.198	5.214	-9999.990	-9999.990	-9999.990
22.320	39.083	10.126	0.028	0.000	0.140	201.0.195	5.055	-9999.990	-9999.990	-9999.990
22.380	30.149	10.006	0.028	0.000	0.137	206.0.191	4.841	-9999.990	-9999.990	-9999.990
22.440	30.149	10.006	0.028	0.000	0.137	206.0.191	4.842	-9999.990	-9999.990	-9999.990
22.500	30.149	10.192	0.028	0.000	0.139	203.0.193	4.978	-9999.990	-9999.990	-9999.990
22.560	22.332	10.192	0.027	0.000	0.142	197.0.199	5.278	-9999.990	-9999.990	-9999.990
22.620	22.331	10.066	0.026	0.000	0.146	190.0.205	5.618	-9999.990	-9999.990	-9999.990
22.680	50.253	10.624	0.026	0.000	0.146	190.0.205	5.618	-9999.990	-9999.990	-9999.990
22.740	50.253	10.624	0.026	0.000	0.146	190.0.205	5.618	-9999.990	-9999.990	-9999.990
22.800	41.875	10.138	0.026	0.000	0.146	190.0.205	5.618	-9999.990	-9999.990	-9999.990
22.860	42.713	10.138	0.025	0.003	0.143	183.6.200	5.681	41.779	-9999.990	-9999.990
22.920	42.713	10.786	0.025	0.004	0.145	180.7.202	5.870	41.187	-9999.990	-9999.990
22.980	47.460	11.055	0.025	0.004	0.145	180.7.202	5.872	41.181	-9999.990	-9999.990
23.040	47.460	11.055	0.023	0.010	0.140	165.20.195	6.151	14.172	-9999.990	-9999.990
23.100	32.662	10.906	0.022	0.010	0.141	162.20.197	6.374	14.102	-9999.990	-9999.990
23.160	33.499	10.906	0.022	0.010	0.141	162.20.197	6.374	14.102	-9999.990	-9999.990
23.220	33.499	11.001	0.025	0.004	0.145	179.7.202	5.875	41.089	-9999.990	-9999.990
23.280	30.149	11.025	0.025	0.004	0.145	179.7.202	5.875	41.090	-9999.990	-9999.990
23.340	30.149	11.025	0.023	0.010	0.138	169.19.193	5.944	14.452	-9999.990	-9999.990
23.400	47.460	10.906	0.023	0.010	0.138	169.19.193	5.944	14.452	-9999.990	-9999.990
23.460	50.253	10.906	0.024	0.009	0.135	176.18.188	5.570	14.598	-9999.990	-9999.990
23.520	50.253	10.948	0.024	0.009	0.135	176.18.188	5.570	14.598	-9999.990	-9999.990
23.580	52.766	11.805	0.024	0.009	0.136	173.19.190	5.751	14.525	-9999.990	-9999.990
23.640	52.766	11.805	0.022	0.015	0.132	160.31.183	6.019	8.652	-9999.990	-9999.990
23.700	47.460	11.001	0.022	0.015	0.132	160.31.183	6.019	8.652	-9999.990	-9999.990
23.760	55.279	11.001	0.023	0.010	0.140	165.20.195	6.153	14.221	-9999.990	-9999.990
23.820	55.279	11.265	0.023	0.010	0.140	166.20.195	6.147	14.223	-9999.990	-9999.990
23.880	55.279	11.265	0.023	0.010	0.140	166.20.195	6.147	14.223	-9999.990	-9999.990
23.940	55.279	11.265	0.023	0.010	0.140	166.20.195	6.147	14.223	-9999.990	-9999.990
24.000	36.291	11.379	0.023	0.010	0.138	169.19.192	5.938	14.294	-9999.990	-9999.990
24.060	37.687	11.379	0.023	0.010	0.138	169.19.192	5.938	14.294	-9999.990	-9999.990
24.120	37.687	11.385	0.018	0.043	0.094	129.87.126	5.317	2.191	-9999.990	-9999.990
24.180	45.226	11.565	0.018	0.042	0.093	132.86.125	5.106	2.194	-9999.990	-9999.990
24.240	45.226	11.565	0.018	0.042	0.093	132.86.125	5.106	2.194	-9999.990	-9999.990
24.300	27.915	11.379	0.017	0.046	0.089	125.94.119	5.176	1.922	-9999.990	-9999.990
24.360	30.149	11.379	0.017	0.046	0.089	125.94.119	5.176	1.922	-9999.990	-9999.990
24.420	30.149	11.085	0.017	0.046	0.089	125.94.119	5.176	1.922	-9999.990	-9999.990
24.480	39.083	11.745	0.017	0.046	0.089	125.94.119	5.176	1.922	-9999.990	-9999.990
24.540	39.083	11.745	0.017	0.046	0.089	125.94.119	5.176	1.922	-9999.990	-9999.990
24.600	45.226	11.379	0.016	0.050	0.086	115.103.115	5.471	1.709	-9999.990	-9999.990
24.660	50.253	11.379	0.015	0.054	0.083	109.110.110	5.553	1.540	-9999.990	-9999.990
24.720	50.253	11.625	0.015	0.054	0.083	109.110.110	5.553	1.540	-9999.990	-9999.990
24.780	36.291	11.973	0.016	0.050	0.085	119.101.114	5.243	1.716	-9999.990	-9999.990
24.840	36.291	11.973	0.015	0.054	0.083	109.110.110	5.549	1.542	-9999.990	-9999.990
24.900	37.687	12.105	0.013	0.058	0.081	96.118.108	6.181	1.399	-9999.990	-9999.990
24.960	30.707	12.105	0.013	0.058	0.081	96.118.108	6.181	1.399	-9999.990	-9999.990
25.020	30.707	12.242	0.013	0.058	0.081	96.118.108	6.181	1.399	-9999.990	-9999.990
25.080	32.661	12.284	0.012	0.061	0.078	90.125.103	6.292	1.280	-9999.990	-9999.990
25.140	32.661	12.284	0.018	0.033	0.112	130.68.154	6.315	3.370	-9999.990	-9999.990
25.200	22.332	12.782	0.018	0.033	0.112	130.68.154	6.315	3.370	-9999.990	-9999.990
25.260	35.174	12.782	0.018	0.033	0.111	133.67.152	6.094	3.374	-9999.990	-9999.990
25.320	35.174	12.644	0.017	0.037	0.108	123.76.148	6.397	2.908	-9999.990	-9999.990
25.380	58.630	12.135	0.017	0.037	0.108	123.76.148	6.400	2.908	-9999.990	-9999.990
25.440	58.630	12.135	0.017	0.037	0.107	126.75.146	6.171	2.911	-9999.990	-9999.990
25.500	60.306	12.284	0.017	0.037	0.107	126.75.146	6.171	2.911	-9999.990	-9999.990
25.560	39.084	12.284	0.017	0.037	0.107	126.75.146	6.170	2.911	-9999.990	-9999.990
25.620	39.083	12.296	0.019	0.033	0.110	136.66.151	5.891	3.370	-9999.990	-9999.990
25.680	52.766	11.445	0.016	0.041	0.104	117.83.142	6.497	2.538	-9999.990	-9999.990
25.740	52.766	11.445	0.016	0.041	0.104	117.83.142	6.497	2.538	-9999.990	-9999.990
25.800	37.687	11.541	0.017	0.040	0.102	123.82.139	6.035	2.543	-9999.990	-9999.990
25.860	30.149	11.541	0.017	0.040	0.102	123.82.139	6.035	2.543	-9999.990	-9999.990
25.920	30.149	10.966	0.016	0.044	0.099	114.90.135	6.342	2.260	1.016	0.371
25.980	58.630	10.624	0.012	0.067	0.068	87.137.88	5.752	1.023	-9999.990	-9999.990
26.040	58.630	10.624	0.011	0.068	0.070	80.139.90	6.328	1.020	-9999.990	-9999.990
26.100	42.713	10.486	0.012	0.065	0.071	88.133.93	5.924	1.096	-9999.990	-9999.990
26.160	22.611	10.486	0.013	0.062	0.073	96.127.96	5.577	1.182	-9999.990	-9999.990
26.220	22.611	10.408	0.014	0.061	0.073	99.125.95	5.342	1.183	-9999.990	-9999.990
26.280	58.630	10.186	0.014	0.061	0.072	102.124.94	5.126	1.184	-9999.990	-9999.990
26.340	58.630	10.186	0.014	0.061	0.072	102.124.94	5.125	1.184	-9999.990	-9999.990
26.400	30.149	10.666	0.013	0.064	0.070	94.131.91	5.422	1.096	-9999.990	-9999.990
26.460	27.915	10.666	0.012	0.067	0.068	86.137.88	5.752	1.020	-9999.990	-9999.990
26.520	27.915	10.606	0.012	0.067	0.068	86.137.88	5.752	1.020	-9999.990	-9999.990
26.580	42.712	10.246	0.012	0.066	0.068	90.136.87	5.509	1.020	-9999.990	-9999.990

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Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
26.640	42.713	10.246	0.012	0.067	0.068	86.137.88	5.764	1.020	-9999.990	-9999.990
26.700	42.713	10.726	0.011	0.070	0.067	79.143.86	6.146	0.953	-9999.990	-9999.990
26.760	33.499	10.726	0.011	0.070	0.067	79.143.86	6.146	0.953	-9999.990	-9999.990
26.820	33.499	10.732	0.011	0.070	0.067	79.143.86	6.146	0.953	-9999.990	-9999.990
26.880	40.200	10.726	0.011	0.070	0.067	79.143.86	6.146	0.953	-9999.990	-9999.990
26.940	40.200	10.726	0.011	0.069	0.066	82.142.85	5.858	0.954	-9999.990	-9999.990
27.000	47.460	11.325	0.010	0.072	0.064	75.147.82	6.258	0.894	-9999.990	-9999.990
27.060	42.713	11.325	0.010	0.072	0.064	75.147.82	6.258	0.894	-9999.990	-9999.990
27.120	42.713	11.205	0.010	0.072	0.064	75.147.82	6.258	0.894	-9999.990	-9999.990
27.180	41.875	11.649	0.011	0.072	0.064	78.146.82	5.960	0.895	-9999.990	-9999.990
27.240	41.875	11.649	0.011	0.071	0.063	81.145.81	5.691	0.895	-9999.990	-9999.990
27.300	40.200	11.865	0.011	0.071	0.063	81.145.81	5.691	0.895	-9999.990	-9999.990
27.360	41.875	11.649	0.011	0.071	0.063	81.145.81	5.691	0.895	-9999.990	-9999.990
27.420	41.875	11.649	0.011	0.071	0.063	81.145.81	5.694	0.894	-9999.990	-9999.990
27.480	30.149	12.404	0.012	0.069	0.062	90.141.79	5.012	0.896	-9999.990	-9999.990
27.540	30.149	12.404	0.012	0.069	0.062	90.141.79	5.012	0.896	-9999.990	-9999.990
27.600	61.422	11.217	0.012	0.069	0.062	90.141.79	5.010	0.896	-9999.990	-9999.990
27.660	57.793	11.685	0.014	0.066	0.063	100.135.80	4.580	0.956	-9999.990	-9999.990
27.720	57.793	11.685	0.016	0.060	0.066	115.123.85	4.181	1.098	-9999.990	-9999.990
27.780	60.306	11.541	0.016	0.060	0.066	118.122.84	4.046	1.099	1.169	0.379
27.840	60.306	11.541	0.016	0.060	0.066	118.122.84	4.046	1.099	-9999.990	-9999.990
27.900	53.046	11.505	0.017	0.059	0.065	121.121.83	3.920	1.099	-9999.990	-9999.990
27.960	60.306	11.625	0.016	0.062	0.063	116.126.80	3.960	1.024	-9999.990	-9999.990
28.020	60.306	11.625	0.016	0.062	0.063	116.126.80	3.960	1.024	-9999.990	-9999.990
28.080	40.200	11.865	0.012	0.082	0.036	90.168.40	2.894	0.437	-9999.990	-9999.990
28.140	40.200	11.865	0.012	0.083	0.036	88.169.40	3.005	0.437	-9999.990	-9999.990
28.200	41.875	12.944	0.011	0.085	0.035	81.174.39	3.162	0.415	-9999.990	-9999.990
28.260	40.200	13.064	0.010	0.087	0.034	75.178.37	3.342	0.395	-9999.990	-9999.990
28.320	40.200	13.064	0.010	0.087	0.034	75.178.37	3.342	0.395	-9999.990	-9999.990
28.380	50.253	14.077	0.010	0.087	0.034	75.178.37	3.342	0.395	-9999.990	-9999.990
28.440	50.253	14.077	0.010	0.088	0.035	72.179.38	3.494	0.394	-9999.990	-9999.990
28.500	42.713	14.263	0.011	0.086	0.036	78.175.39	3.301	0.414	-9999.990	-9999.990
28.560	42.713	14.982	0.011	0.084	0.037	82.172.41	3.261	0.436	-9999.990	-9999.990
28.620	42.713	14.982	0.015	0.062	0.063	113.127.81	4.087	1.016	-9999.990	-9999.990
28.680	58.630	15.912	0.015	0.062	0.063	113.127.81	4.087	1.016	-9999.990	-9999.990
28.740	58.630	15.912	0.015	0.062	0.063	113.127.81	4.087	1.016	-9999.990	-9999.990
28.800	62.820	15.762	0.015	0.062	0.063	113.127.81	4.087	1.016	-9999.990	-9999.990
28.860	45.226	15.822	0.015	0.063	0.064	110.128.81	4.225	1.016	-9999.990	-9999.990
28.920	45.226	15.822	0.014	0.065	0.062	105.133.78	4.271	0.950	-9999.990	-9999.990
28.980	39.083	15.912	0.015	0.063	0.064	110.128.81	4.225	1.016	-9999.990	-9999.990
29.040	39.083	15.912	0.015	0.063	0.064	110.128.81	4.225	1.016	-9999.990	-9999.990
29.100	80.416	16.001	0.015	0.062	0.063	113.127.81	4.089	1.016	-9999.990	-9999.990
29.160	58.630	16.127	0.015	0.062	0.063	113.127.81	4.089	1.016	-9999.990	-9999.990
29.220	58.630	16.127	0.016	0.064	0.060	114.130.76	3.877	0.951	-9999.990	-9999.990
29.280	47.740	15.882	0.014	0.067	0.060	104.136.75	4.176	0.893	-9999.990	-9999.990
29.340	50.253	15.882	0.014	0.067	0.060	104.136.75	4.176	0.893	-9999.990	-9999.990
29.400	50.253	15.804	0.014	0.067	0.060	104.136.75	4.176	0.893	-9999.990	-9999.990
29.460	40.200	16.061	0.015	0.066	0.059	107.135.74	4.040	0.893	-9999.990	-9999.990
29.520	40.200	16.061	0.015	0.066	0.059	107.135.74	4.040	0.893	-9999.990	-9999.990
29.580	67.008	15.966	0.015	0.066	0.059	107.135.74	4.040	0.893	-9999.990	-9999.990
29.640	47.460	15.966	0.014	0.068	0.057	102.139.72	4.083	0.840	-9999.990	-9999.990
29.700	47.460	15.162	0.014	0.068	0.057	102.139.72	4.083	0.840	-9999.990	-9999.990
29.760	50.253	13.807	0.013	0.071	0.056	96.144.70	4.269	0.793	-9999.990	-9999.990
29.820	50.253	13.807	0.013	0.073	0.054	92.148.67	4.318	0.750	-9999.990	-9999.990
29.880	50.253	12.464	0.013	0.073	0.054	92.148.67	4.318	0.750	-9999.990	-9999.990
29.940	42.714	12.464	0.012	0.073	0.055	89.149.68	4.477	0.750	-9999.990	-9999.990
30.000	42.713	12.189	0.012	0.075	0.053	86.153.66	4.531	0.713	-9999.990	-9999.990
30.060	60.306	12.464	0.014	0.070	0.055	101.142.69	3.997	0.793	-9999.990	-9999.990
30.120	60.306	12.464	0.014	0.070	0.055	101.142.69	3.997	0.793	-9999.990	-9999.990
30.180	33.500	13.376	0.014	0.070	0.055	101.142.69	3.997	0.793	-9999.990	-9999.990
30.240	55.278	13.376	0.014	0.070	0.055	101.142.69	3.994	0.793	-9999.990	-9999.990
30.300	55.279	15.522	0.014	0.070	0.055	101.142.69	3.994	0.793	-9999.990	-9999.990
30.360	67.847	16.961	0.014	0.070	0.055	101.142.69	3.994	0.793	-9999.990	-9999.990
30.420	67.847	16.961	0.014	0.069	0.055	103.141.68	3.867	0.793	-9999.990	-9999.990
30.480	61.423	18.987	0.012	0.074	0.053	91.151.64	4.217	0.712	-9999.990	-9999.990
30.540	87.959	18.987	0.014	0.071	0.053	99.145.66	3.904	0.751	-9999.990	-9999.990
30.600	87.959	21.817	0.014	0.071	0.053	102.144.65	3.784	0.751	-9999.990	-9999.990
30.660	65.333	23.975	0.013	0.073	0.052	96.149.63	3.944	0.712	-9999.990	-9999.990
30.720	65.333	23.975	0.013	0.073	0.052	93.150.64	4.074	0.712	-9999.990	-9999.990
30.780	55.838	25.462	0.012	0.075	0.051	87.154.62	4.262	0.677	-9999.990	-9999.990
30.840	70.361	25.462	0.012	0.075	0.051	87.154.62	4.261	0.677	-9999.990	-9999.990
30.900	70.361	27.332	0.012	0.075	0.051	90.153.62	4.116	0.677	-9999.990	-9999.990
30.960	69.802	27.632	0.011	0.078	0.050	81.158.61	4.468	0.645	-9999.990	-9999.990
31.020	69.802	27.632	0.011	0.078	0.050	81.158.61	4.468	0.645	-9999.990	-9999.990

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Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
31.080	60.306	28.861	0.008	0.094	0.028	60.193.28	3.442	0.301	-9999.990	-9999.990
31.140	69.802	28.861	0.008	0.095	0.029	57.194.29	3.613	0.301	-9999.990	-9999.990
31.200	69.802	28.891	0.008	0.095	0.029	57.194.29	3.613	0.301	-9999.990	-9999.990
31.260	55.279	28.591	0.009	0.093	0.028	65.190.28	3.137	0.301	-9999.990	-9999.990
31.320	55.279	28.591	0.010	0.091	0.028	72.186.28	2.859	0.314	-9999.990	-9999.990
31.380	62.820	28.807	0.010	0.090	0.028	75.184.28	2.752	0.314	-9999.990	-9999.990
31.440	67.009	28.807	0.010	0.090	0.028	75.184.28	2.752	0.314	-9999.990	-9999.990
31.500	67.009	28.969	0.011	0.090	0.028	77.183.28	2.653	0.314	-9999.990	-9999.990
31.560	57.793	29.491	0.011	0.089	0.028	79.182.28	2.560	0.314	-9999.990	-9999.990
31.620	57.793	29.491	0.012	0.087	0.029	85.178.29	2.455	0.328	-9999.990	-9999.990
31.680	50.253	30.750	0.012	0.087	0.029	85.178.29	2.455	0.328	-9999.990	-9999.990
31.740	67.847	30.750	0.012	0.087	0.029	85.178.29	2.455	0.328	-9999.990	-9999.990
31.800	67.847	31.709	0.012	0.087	0.029	85.178.29	2.455	0.328	-9999.990	-9999.990
31.860	64.216	33.070	0.011	0.088	0.029	80.181.29	2.630	0.327	-9999.990	-9999.990
31.920	64.216	33.070	0.011	0.088	0.029	80.181.29	2.632	0.328	-9999.990	-9999.990
31.980	67.847	35.126	0.011	0.089	0.029	78.182.29	2.730	0.328	-9999.990	-9999.990
32.040	78.181	35.126	0.010	0.091	0.029	72.186.28	2.863	0.314	-9999.990	-9999.990
32.100	78.182	36.631	0.010	0.091	0.029	72.186.28	2.863	0.314	-9999.990	-9999.990
32.160	77.902	38.663	0.010	0.091	0.028	72.186.28	2.867	0.314	-9999.990	-9999.990
32.220	77.902	38.663	0.010	0.091	0.028	72.186.28	2.867	0.314	-9999.990	-9999.990
32.280	60.306	40.042	0.010	0.091	0.029	70.187.29	2.982	0.314	-9999.990	-9999.990
32.340	89.355	40.042	0.010	0.091	0.029	70.187.29	2.982	0.314	-9999.990	-9999.990
32.400	89.355	40.732	0.009	0.093	0.028	65.190.28	3.147	0.301	-9999.990	-9999.990
32.460	108.074	41.541	0.010	0.091	0.028	72.186.28	2.866	0.314	-9999.990	-9999.990
32.520	108.074	41.541	0.010	0.091	0.028	72.186.28	2.866	0.314	-9999.990	-9999.990
32.580	100.530	41.181	0.010	0.091	0.029	70.187.29	2.983	0.313	-9999.990	-9999.990
32.640	115.618	41.181	0.010	0.091	0.029	70.187.29	2.983	0.313	-9999.990	-9999.990
32.700	115.618	40.678	0.012	0.076	0.049	89.155.60	4.034	0.651	-9999.990	-9999.990
32.760	77.902	40.762	0.013	0.075	0.049	91.154.59	3.902	0.652	-9999.990	-9999.990
32.820	77.902	40.762	0.013	0.075	0.049	91.154.59	3.902	0.652	-9999.990	-9999.990
32.880	80.975	41.001	0.015	0.061	0.070	106.124.91	4.805	1.148	-9999.990	-9999.990
32.940	65.333	41.001	0.015	0.059	0.071	112.119.93	4.627	1.218	-9999.990	-9999.990
33.000	65.333	41.109	0.015	0.059	0.071	112.119.93	4.627	1.218	-9999.990	-9999.990
33.060	90.471	41.661	0.014	0.061	0.070	104.125.91	4.943	1.146	-9999.990	-9999.990
33.120	90.473	41.661	0.014	0.063	0.069	100.129.89	4.989	1.086	-9999.990	-9999.990
33.180	106.118	41.865	0.014	0.063	0.069	100.129.89	4.989	1.086	-9999.990	-9999.990
33.240	85.444	41.865	0.014	0.063	0.069	100.129.89	4.989	1.086	-9999.990	-9999.990
33.300	85.444	40.342	0.014	0.063	0.069	100.129.89	4.989	1.086	-9999.990	-9999.990
33.360	92.987	39.982	0.013	0.064	0.069	98.130.89	5.139	1.085	-9999.990	-9999.990
33.420	92.987	39.982	0.013	0.064	0.069	98.130.89	5.139	1.085	-9999.990	-9999.990
33.480	67.009	40.786	0.015	0.061	0.070	106.124.90	4.799	1.147	-9999.990	-9999.990
33.540	85.443	40.786	0.014	0.063	0.069	100.129.88	4.988	1.085	-9999.990	-9999.990
33.600	85.444	40.762	0.013	0.065	0.070	93.132.90	5.469	1.083	-9999.990	-9999.990
33.660	78.182	41.109	0.013	0.065	0.070	93.132.90	5.469	1.083	-9999.990	-9999.990
33.720	78.182	41.109	0.014	0.062	0.071	99.127.93	5.240	1.147	-9999.990	-9999.990
33.780	80.416	41.301	0.014	0.062	0.071	99.127.93	5.240	1.147	-9999.990	-9999.990
33.840	103.324	41.301	0.014	0.062	0.071	101.126.92	5.083	1.147	-9999.990	-9999.990
33.900	103.324	41.703	0.014	0.062	0.071	101.126.92	5.088	1.147	-9999.990	-9999.990
33.960	95.501	41.721	0.013	0.064	0.069	95.131.90	5.304	1.084	-9999.990	-9999.990
34.020	95.501	41.721	0.013	0.064	0.069	98.130.89	5.142	1.084	-9999.990	-9999.990
34.080	86.562	41.919	0.013	0.064	0.069	98.130.89	5.142	1.084	-9999.990	-9999.990
34.140	67.847	42.141	0.013	0.065	0.067	97.133.86	5.039	1.027	-9999.990	-9999.990
34.200	67.847	42.141	0.013	0.065	0.067	97.133.86	5.039	1.027	1.220	3.858
34.260	69.802	42.782	0.014	0.065	0.066	99.132.85	4.890	1.028	-9999.990	-9999.990
34.320	69.802	42.782	0.013	0.065	0.067	97.133.86	5.037	1.027	-9999.990	-9999.990
34.380	72.874	42.380	0.014	0.063	0.069	100.129.88	4.987	1.084	-9999.990	-9999.990
34.440	100.530	42.296	0.014	0.063	0.069	100.129.88	4.987	1.084	-9999.990	-9999.990
34.500	100.530	42.296	0.014	0.063	0.068	102.128.88	4.846	1.084	-9999.990	-9999.990
34.560	61.425	41.361	0.014	0.063	0.068	102.128.88	4.846	1.084	-9999.990	-9999.990
34.620	61.423	41.361	0.014	0.063	0.068	102.128.88	4.846	1.084	-9999.990	-9999.990
34.680	85.444	41.421	0.015	0.062	0.067	107.127.87	4.584	1.084	-9999.990	-9999.990
34.740	89.355	41.433	0.015	0.060	0.068	113.122.88	4.423	1.145	-9999.990	-9999.990
34.800	89.355	41.433	0.015	0.060	0.068	113.122.88	4.423	1.145	-9999.990	-9999.990
34.860	75.389	42.440	0.015	0.062	0.067	107.127.86	4.585	1.081	-9999.990	-9999.990
34.920	75.388	42.440	0.015	0.062	0.067	107.127.86	4.585	1.081	-9999.990	-9999.990
34.980	90.473	45.138	0.016	0.059	0.068	115.121.88	4.312	1.144	-9999.990	-9999.990
35.040	105.558	47.045	0.017	0.057	0.069	121.116.90	4.174	1.214	-9999.990	-9999.990
35.100	105.559	47.045	0.015	0.062	0.067	109.126.86	4.466	1.080	-9999.990	-9999.990
35.160	83.768	47.776	0.015	0.060	0.068	113.122.88	4.428	1.142	-9999.990	-9999.990
35.220	83.768	47.776	0.013	0.075	0.047	95.154.56	3.607	0.624	-9999.990	-9999.990
35.280	90.473	48.196	0.013	0.075	0.047	95.154.56	3.607	0.624	-9999.990	-9999.990
35.340	103.324	48.933	0.013	0.076	0.047	93.155.57	3.717	0.624	-9999.990	-9999.990
35.400	103.324	48.933	0.014	0.074	0.048	98.151.58	3.576	0.654	-9999.990	-9999.990
35.460	95.501	48.136	0.013	0.076	0.047	93.155.57	3.718	0.624	-9999.990	-9999.990

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35.520	95.501	48.136	0.012	0.076	0.048	90.156.57	3.836	0.624	-9999.990	-9999.990
35.580	83.768	46.997	0.012	0.076	0.048	90.156.57	3.836	0.624	-9999.990	-9999.990
35.640	105.559	45.210	0.013	0.076	0.047	93.155.57	3.719	0.624	-9999.990	-9999.990
35.700	105.559	45.210	0.012	0.076	0.048	90.156.57	3.837	0.624	-9999.990	-9999.990
35.760	89.355	43.879	0.013	0.076	0.047	93.155.57	3.720	0.624	-9999.990	-9999.990
35.820	89.355	43.879	0.013	0.074	0.049	96.152.59	3.681	0.655	-9999.990	-9999.990
35.880	115.617	42.404	0.011	0.079	0.047	83.161.56	4.139	0.597	-9999.990	-9999.990
35.940	89.355	41.001	0.011	0.079	0.047	83.161.56	4.139	0.597	-9999.990	-9999.990
36.000	89.355	41.001	0.012	0.076	0.048	90.156.57	3.834	0.625	-9999.990	-9999.990
36.060	85.445	39.922	0.013	0.076	0.047	93.155.57	3.720	0.625	-9999.990	-9999.990
36.120	85.444	39.922	0.013	0.074	0.049	96.152.59	3.685	0.655	-9999.990	-9999.990
36.180	86.562	39.563	0.012	0.076	0.048	90.156.57	3.836	0.625	-9999.990	-9999.990
36.240	72.874	39.167	0.012	0.076	0.048	90.156.57	3.836	0.625	-9999.990	-9999.990
36.300	72.874	39.167	0.012	0.076	0.048	90.156.57	3.836	0.625	-9999.990	-9999.990
36.360	50.253	38.783	0.012	0.078	0.047	85.160.56	4.001	0.598	-9999.990	-9999.990
36.420	52.766	38.783	0.011	0.079	0.047	83.161.56	4.137	0.598	-9999.990	-9999.990
36.480	52.766	38.897	0.011	0.079	0.047	80.162.57	4.283	0.598	-9999.990	-9999.990
36.540	53.045	38.783	0.012	0.077	0.048	88.157.58	3.962	0.626	-9999.990	-9999.990
36.600	53.045	38.783	0.012	0.077	0.048	88.157.58	3.964	0.625	-9999.990	-9999.990
36.660	65.333	38.304	0.011	0.078	0.049	83.159.59	4.236	0.625	-9999.990	-9999.990
36.720	87.957	38.304	0.011	0.078	0.049	83.159.59	4.236	0.625	-9999.990	-9999.990
36.780	87.959	38.519	0.011	0.079	0.047	80.162.57	4.289	0.597	-9999.990	-9999.990
36.840	80.975	37.944	0.011	0.079	0.047	83.161.56	4.141	0.597	-9999.990	-9999.990
36.900	80.975	37.944	0.011	0.079	0.047	83.161.56	4.141	0.597	-9999.990	-9999.990
36.960	52.766	36.985	0.011	0.079	0.047	83.161.56	4.141	0.597	-9999.990	-9999.990
37.020	82.930	36.985	0.010	0.081	0.046	75.166.55	4.500	0.571	-9999.990	-9999.990
37.080	82.930	36.577	0.010	0.081	0.046	75.166.55	4.500	0.571	-9999.990	-9999.990
37.140	53.045	36.145	0.011	0.079	0.047	83.161.56	4.141	0.597	-9999.990	-9999.990
37.200	53.045	36.145	0.011	0.081	0.046	77.165.55	4.338	0.571	-9999.990	-9999.990
37.260	65.333	36.685	0.011	0.081	0.046	77.165.55	4.338	0.571	-9999.990	-9999.990
37.320	75.388	36.685	0.010	0.081	0.046	75.166.55	4.499	0.571	-9999.990	-9999.990
37.380	75.388	35.876	0.010	0.082	0.047	73.167.56	4.670	0.571	-9999.990	-9999.990
37.440	72.595	33.507	0.010	0.081	0.046	75.166.55	4.496	0.571	-9999.990	-9999.990
37.500	72.595	33.507	0.011	0.079	0.047	80.162.57	4.280	0.597	-9999.990	-9999.990
37.560	70.361	32.129	0.010	0.080	0.048	76.164.57	4.602	0.597	-9999.990	-9999.990
37.620	85.444	32.129	0.010	0.080	0.048	76.164.57	4.602	0.597	-9999.990	-9999.990
37.680	85.444	31.397	0.010	0.080	0.048	76.164.57	4.601	0.597	-9999.990	-9999.990
37.740	53.045	30.690	0.010	0.081	0.048	73.165.58	4.782	0.596	-9999.990	-9999.990
37.800	53.045	30.690	0.010	0.081	0.048	73.165.58	4.782	0.596	-9999.990	-9999.990
37.860	52.766	30.696	0.009	0.084	0.046	63.173.55	5.339	0.548	-9999.990	-9999.990
37.920	72.874	30.696	0.011	0.069	0.067	81.142.86	5.990	0.959	-9999.990	-9999.990
37.980	72.874	30.989	0.011	0.069	0.066	83.141.85	5.785	0.959	-9999.990	-9999.990
38.040	58.631	30.330	0.011	0.070	0.067	78.143.86	6.218	0.959	-9999.990	-9999.990
38.100	58.630	30.330	0.012	0.067	0.068	86.137.88	5.736	1.009	-9999.990	-9999.990
38.160	75.388	30.642	0.012	0.068	0.068	84.138.88	5.941	1.009	-9999.990	-9999.990
38.220	37.689	30.642	0.012	0.068	0.068	84.138.88	5.941	1.009	-9999.990	-9999.990
38.280	37.687	30.858	0.012	0.066	0.070	87.135.91	5.865	1.065	-9999.990	-9999.990
38.340	44.668	30.630	0.013	0.063	0.071	96.129.92	5.420	1.128	-9999.990	-9999.990
38.400	44.668	30.630	0.012	0.067	0.068	86.137.88	5.735	1.012	-9999.990	-9999.990
38.460	70.361	30.858	0.012	0.067	0.068	86.137.88	5.735	1.012	-9999.990	-9999.990
38.520	58.630	30.858	0.012	0.067	0.068	86.137.88	5.735	1.012	-9999.990	-9999.990
38.580	58.630	30.318	0.012	0.067	0.068	86.137.88	5.735	1.012	-9999.990	-9999.990
38.640	70.361	30.030	0.015	0.050	0.090	109.102.121	6.030	1.811	-9999.990	-9999.990
38.700	70.361	30.030	0.015	0.050	0.090	111.101.120	5.864	1.812	-9999.990	-9999.990
38.760	67.009	29.239	0.012	0.069	0.066	85.140.85	5.611	0.963	-9999.990	-9999.990
38.820	42.713	29.239	0.012	0.068	0.066	88.139.84	5.426	0.963	-9999.990	-9999.990
38.880	42.713	28.322	0.011	0.070	0.064	82.143.82	5.678	0.916	-9999.990	-9999.990
38.940	44.668	27.692	0.012	0.070	0.064	85.142.82	5.488	0.917	-9999.990	-9999.990
39.000	44.668	27.692	0.012	0.068	0.066	88.139.84	5.426	0.962	-9999.990	-9999.990
39.060	67.846	26.487	0.011	0.072	0.063	79.147.80	5.747	0.874	-9999.990	-9999.990
39.120	62.820	26.487	0.011	0.072	0.063	79.147.80	5.747	0.874	-9999.990	-9999.990
39.180	62.820	26.325	0.010	0.074	0.062	74.151.78	6.031	0.835	-9999.990	-9999.990
39.240	36.291	25.054	0.010	0.075	0.060	71.154.76	6.112	0.799	-9999.990	-9999.990
39.300	36.291	25.054	0.010	0.075	0.060	71.154.76	6.112	0.799	-9999.990	-9999.990
39.360	47.739	24.545	0.009	0.077	0.061	65.156.77	6.881	0.798	-9999.990	-9999.990
39.420	72.874	24.545	0.010	0.074	0.062	72.152.78	6.266	0.833	-9999.990	-9999.990
39.480	72.874	24.395	0.010	0.076	0.060	69.155.76	6.354	0.797	1.176	1.540
39.540	53.046	24.491	0.010	0.076	0.060	69.155.76	6.354	0.797	-9999.990	-9999.990
39.600	53.045	24.491	0.010	0.075	0.060	71.154.76	6.118	0.798	-9999.990	-9999.990
39.660	52.766	25.474	0.010	0.075	0.060	71.154.76	6.118	0.798	-9999.990	-9999.990
39.720	64.216	25.474	0.010	0.074	0.062	74.151.78	6.036	0.833	-9999.990	-9999.990
39.780	64.216	26.757	0.010	0.076	0.060	69.155.76	6.350	0.798	-9999.990	-9999.990
39.840	45.226	27.752	0.010	0.074	0.062	74.151.78	6.033	0.834	-9999.990	-9999.990
39.900	45.226	27.752	0.011	0.072	0.063	79.147.80	5.748	0.872	-9999.990	-9999.990

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
39.960	52.766	29.023	0.011	0.072	0.063	79.147.80	5.748	0.872	-9999.990	-9999.990
40.020	67.009	29.023	0.011	0.072	0.063	77.148.80	5.956	0.872	-9999.990	-9999.990
40.080	67.009	30.330	0.011	0.072	0.063	77.148.80	5.956	0.872	-9999.990	-9999.990
40.140	67.847	31.937	0.011	0.070	0.064	82.143.82	5.681	0.913	-9999.990	-9999.990
40.200	67.847	31.937	0.011	0.070	0.064	82.143.82	5.681	0.913	-9999.990	-9999.990
40.260	61.423	34.365	0.011	0.072	0.063	77.148.80	5.954	0.872	-9999.990	-9999.990
40.320	40.200	34.365	0.011	0.072	0.063	79.147.80	5.748	0.872	-9999.990	-9999.990
40.380	40.200	36.091	0.011	0.072	0.063	77.148.80	5.957	0.872	-9999.990	-9999.990
40.440	67.009	37.884	0.011	0.072	0.063	79.147.80	5.751	0.872	-9999.990	-9999.990
40.500	67.009	37.884	0.011	0.072	0.063	77.148.80	5.961	0.872	-9999.990	-9999.990
40.560	50.254	37.926	0.012	0.068	0.065	88.139.84	5.433	0.959	-9999.990	-9999.990
40.620	44.668	37.926	0.011	0.069	0.066	83.141.85	5.815	0.958	-9999.990	-9999.990
40.680	44.668	38.627	0.011	0.070	0.067	80.142.86	6.025	0.958	-9999.990	-9999.990
40.740	42.713	38.951	0.011	0.070	0.067	80.142.86	6.023	0.958	-9999.990	-9999.990
40.800	42.713	38.951	0.010	0.072	0.065	75.146.84	6.336	0.913	-9999.990	-9999.990
40.860	86.562	39.742	0.010	0.072	0.065	75.146.84	6.336	0.913	-9999.990	-9999.990
40.920	62.820	40.354	0.011	0.070	0.067	80.142.86	6.025	0.958	-9999.990	-9999.990
40.980	62.820	40.354	0.011	0.070	0.067	78.143.86	6.249	0.958	-9999.990	-9999.990
41.040	44.669	42.135	0.011	0.070	0.067	78.143.86	6.254	0.958	-9999.990	-9999.990
41.100	44.668	42.135	0.011	0.068	0.068	84.138.88	5.952	1.008	-9999.990	-9999.990
41.160	75.388	46.037	0.011	0.068	0.069	81.139.89	6.173	1.007	-9999.990	-9999.990
41.220	72.875	47.045	0.012	0.067	0.068	86.138.88	5.749	1.008	-9999.990	-9999.990
41.280	72.874	47.045	0.012	0.067	0.068	86.138.88	5.749	1.008	-9999.990	-9999.990
41.340	58.630	48.196	0.011	0.069	0.069	78.140.90	6.428	1.007	-9999.990	-9999.990
41.400	58.630	48.196	0.010	0.069	0.070	76.141.90	6.682	1.006	-9999.990	-9999.990
41.460	62.820	48.987	0.011	0.068	0.069	81.139.89	6.180	1.007	-9999.990	-9999.990
41.520	58.630	49.874	0.011	0.068	0.069	81.139.89	6.180	1.007	-9999.990	-9999.990
41.580	58.630	49.874	0.011	0.068	0.069	81.139.89	6.180	1.007	-9999.990	-9999.990
41.640	77.902	51.091	0.011	0.069	0.069	78.140.90	6.419	1.007	-9999.990	-9999.990
41.700	77.902	51.091	0.010	0.069	0.070	76.141.90	6.676	1.006	-9999.990	-9999.990
41.760	60.306	51.847	0.010	0.069	0.070	76.141.90	6.676	1.006	-9999.990	-9999.990
41.820	57.793	53.352	0.010	0.071	0.068	70.146.88	7.062	0.957	-9999.990	-9999.990
41.880	57.793	53.352	0.010	0.071	0.068	70.146.88	7.062	0.957	-9999.990	-9999.990
41.940	72.595	54.922	0.010	0.071	0.068	70.146.88	7.062	0.957	-9999.990	-9999.990
42.000	72.595	54.922	0.010	0.070	0.071	71.143.92	7.254	1.005	-9999.990	-9999.990
42.060	47.741	56.229	0.010	0.070	0.071	71.143.92	7.254	1.005	-9999.990	-9999.990
42.120	64.216	57.728	0.010	0.070	0.071	71.143.92	7.249	1.006	-9999.990	-9999.990
42.180	64.216	57.728	0.010	0.070	0.071	71.143.92	7.249	1.006	-9999.990	-9999.990
42.240	75.388	58.747	0.011	0.068	0.072	77.139.94	6.841	1.061	-9999.990	-9999.990
42.300	75.388	58.747	0.011	0.068	0.072	77.139.94	6.841	1.061	-9999.990	-9999.990
42.360	40.200	59.724	0.011	0.068	0.072	77.139.94	6.841	1.061	-9999.990	-9999.990
42.420	36.291	61.289	0.011	0.068	0.072	77.139.94	6.841	1.061	-9999.990	-9999.990
42.480	36.291	61.289	0.011	0.068	0.072	77.139.94	6.841	1.061	-9999.990	-9999.990
42.540	52.766	62.404	0.011	0.066	0.074	83.134.96	6.476	1.123	-9999.990	-9999.990
42.600	52.766	62.404	0.011	0.066	0.074	80.135.97	6.736	1.123	-9999.990	-9999.990
42.660	33.499	64.041	0.011	0.066	0.074	83.134.96	6.477	1.123	-9999.990	-9999.990
42.720	50.252	65.444	0.012	0.065	0.073	85.133.95	6.235	1.124	-9999.990	-9999.990
42.780	50.253	65.444	0.009	0.082	0.050	65.168.61	5.591	0.607	-9999.990	-9999.990
42.840	65.333	67.320	0.009	0.082	0.050	65.168.61	5.594	0.607	-9999.990	-9999.990
42.900	65.333	67.320	0.009	0.082	0.050	67.167.60	5.347	0.608	-9999.990	-9999.990
42.960	61.423	69.221	0.007	0.096	0.029	54.195.30	3.934	0.306	-9999.990	-9999.990
43.020	75.388	71.001	0.007	0.096	0.029	51.196.30	4.166	0.306	-9999.990	-9999.990
43.080	75.388	71.001	0.007	0.096	0.029	51.196.30	4.166	0.306	-9999.990	-9999.990
43.140	47.462	72.944	0.007	0.096	0.029	51.196.30	4.166	0.306	-9999.990	-9999.990
43.200	47.739	72.944	0.007	0.096	0.029	51.196.30	4.164	0.306	-9999.990	-9999.990
43.260	47.739	74.275	0.008	0.093	0.031	59.190.32	3.816	0.332	-9999.990	-9999.990
43.320	57.793	76.073	0.008	0.093	0.031	59.190.32	3.816	0.332	-9999.990	-9999.990
43.380	57.793	76.073	0.008	0.093	0.031	59.190.32	3.816	0.332	-9999.990	-9999.990
43.440	75.388	77.099	0.008	0.093	0.031	59.190.32	3.816	0.332	-9999.990	-9999.990
43.500	45.226	77.099	0.008	0.093	0.031	59.190.32	3.816	0.332	-9999.990	-9999.990
43.560	45.226	78.292	0.007	0.095	0.031	53.193.33	4.256	0.332	-9999.990	-9999.990
43.620	55.279	79.473	0.008	0.093	0.032	59.189.34	3.957	0.347	-9999.990	-9999.990
43.680	55.279	79.473	0.009	0.092	0.032	62.188.34	3.756	0.347	-9999.990	-9999.990
43.740	42.713	80.270	0.009	0.092	0.032	62.188.34	3.756	0.347	-9999.990	-9999.990
43.800	36.291	80.270	0.009	0.092	0.032	62.188.34	3.756	0.347	-9999.990	-9999.990
43.860	36.291	81.199	0.009	0.092	0.032	62.188.34	3.756	0.347	-9999.990	-9999.990
43.920	47.739	81.769	0.009	0.092	0.032	62.188.34	3.756	0.347	-9999.990	-9999.990
43.980	47.739	81.769	0.009	0.092	0.032	62.188.34	3.755	0.347	-9999.990	-9999.990
44.040	58.630	82.440	0.008	0.093	0.032	59.189.34	3.953	0.347	-9999.990	-9999.990
44.100	52.766	82.440	0.009	0.091	0.033	65.185.35	3.694	0.364	-9999.990	-9999.990
44.160	52.766	83.507	0.009	0.091	0.033	62.187.35	3.887	0.363	-9999.990	-9999.990
44.220	22.333	83.843	0.007	0.093	0.034	53.191.37	4.608	0.363	-9999.990	-9999.990
44.280	22.331	83.843	0.007	0.093	0.034	53.191.37	4.608	0.363	-9999.990	-9999.990
44.340	57.793	84.706	0.007	0.094	0.034	50.192.37	4.918	0.363	-9999.990	-9999.990

Boring DD-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
44.400	61.423	84.706	0.006	0.096	0.033	45.196.36	5.396	0.347	-9999.990	-9999.990
44.460	61.423	85.624	0.005	0.098	0.033	39.200.34	5.983	0.332	-9999.990	-9999.990
44.520	37.687	86.109	0.009	0.080	0.055	62.164.69	6.460	0.692	-9999.990	-9999.990
44.580	37.687	86.109	0.009	0.080	0.055	62.164.69	6.460	0.692	-9999.990	-9999.990
44.640	44.667	87.224	0.009	0.080	0.055	65.162.68	6.130	0.692	-9999.990	-9999.990
44.700	62.820	87.224	0.009	0.080	0.055	65.162.68	6.130	0.692	-9999.990	-9999.990
44.760	62.820	87.512	0.009	0.079	0.055	68.161.68	5.835	0.693	-9999.990	-9999.990
44.820	55.838	88.483	0.009	0.078	0.057	68.159.71	6.024	0.730	-9999.990	-9999.990
44.880	55.838	88.483	0.009	0.078	0.057	65.160.71	6.344	0.729	-9999.990	-9999.990
44.940	30.149	88.969	0.010	0.075	0.058	75.154.73	5.644	0.771	-9999.990	-9999.990
45.000	35.174	88.969	0.011	0.075	0.058	78.153.72	5.396	0.771	-9999.990	-9999.990
45.060	35.174	90.162	0.013	0.056	0.085	98.114.112	6.267	1.517	-9999.990	-9999.990
45.120	47.460	-9999.990	0.013	0.059	0.083	91.120.110	6.597	1.411	-9999.990	-9999.990
45.180	47.460	-9999.990	0.015	0.053	0.087	106.107.116	5.959	1.645	-9999.990	-9999.990
45.240	17.586	-9999.990	0.015	0.053	0.087	106.107.116	5.959	1.645	-9999.990	-9999.990
45.300	55.838	-9999.990	0.013	0.054	0.089	97.110.119	6.663	1.642	-9999.990	-9999.990
45.360	55.838	-9999.990	0.013	0.054	0.089	97.110.119	6.663	1.642	-9999.990	-9999.990
45.420	40.200	-9999.990	0.012	0.057	0.087	90.116.116	7.040	1.518	-9999.990	-9999.990
45.480	40.200	-9999.990	0.013	0.057	0.086	93.115.115	6.760	1.519	-9999.990	-9999.990
45.540	39.083	-9999.990	0.013	0.057	0.086	93.115.115	6.760	1.519	-9999.990	-9999.990
45.600	60.306	-9999.990	0.013	0.054	0.089	97.110.119	6.661	1.643	-9999.990	-9999.990
45.660	60.306	-9999.990	0.013	0.054	0.089	97.110.119	6.661	1.643	-9999.990	-9999.990
45.720	50.253	-9999.990	0.013	0.054	0.089	94.111.120	6.935	1.642	-9999.990	-9999.990
45.780	50.253	-9999.990	0.013	0.054	0.089	94.111.120	6.935	1.642	-9999.990	-9999.990
45.840	52.766	-9999.990	0.013	0.054	0.089	94.111.120	6.934	1.642	-9999.990	-9999.990
45.900	47.460	-9999.990	0.014	0.051	0.092	102.105.123	6.571	1.787	-9999.990	-9999.990
45.960	47.460	-9999.990	0.016	0.045	0.097	115.91.131	6.158	2.170	-9999.990	-9999.990
46.020	25.123	-9999.990	0.016	0.045	0.097	115.91.131	6.158	2.170	-9999.990	-9999.990
46.080	25.123	-9999.990	0.016	0.045	0.097	115.91.131	6.158	2.170	-9999.990	-9999.990
46.140	50.253	-9999.990	0.016	0.045	0.097	115.91.131	6.157	2.170	-9999.990	-9999.990
46.200	44.668	-9999.990	0.016	0.045	0.097	115.91.131	6.150	2.170	-9999.990	-9999.990
46.260	44.668	-9999.990	0.013	0.055	0.090	91.112.121	7.214	1.644	-9999.990	-9999.990
46.320	27.637	-9999.990	0.014	0.052	0.092	99.105.124	6.816	1.791	-9999.990	-9999.990
46.380	27.636	-9999.990	0.013	0.056	0.085	96.114.114	6.488	1.525	-9999.990	-9999.990
46.440	55.838	-9999.990	0.013	0.056	0.085	96.114.114	6.489	1.524	-9999.990	-9999.990
46.500	45.227	-9999.990	0.014	0.055	0.084	101.112.112	6.032	1.526	-9999.990	-9999.990
46.560	45.226	-9999.990	0.015	0.054	0.083	107.111.110	5.635	1.528	-9999.990	-9999.990
46.620	42.713	-9999.990	0.014	0.055	0.083	104.111.111	5.826	1.527	-9999.990	-9999.990
46.680	42.713	-9999.990	0.016	0.051	0.084	117.103.112	5.222	1.655	-9999.990	-9999.990
46.740	44.668	-9999.990	0.015	0.053	0.082	113.109.108	5.277	1.532	-9999.990	-9999.990
46.800	42.713	-9999.990	0.014	0.058	0.077	104.118.101	5.392	1.332	-9999.990	-9999.990
46.860	42.713	-9999.990	0.014	0.058	0.077	104.118.101	5.392	1.332	-9999.990	-9999.990
46.920	44.668	-9999.990	0.014	0.058	0.078	102.118.102	5.552	1.339	0.929	0.252
46.980	44.668	-9999.990	0.014	0.059	0.078	99.119.103	5.744	1.339	-9999.990	-9999.990
47.040	52.766	-9999.990	0.014	0.059	0.078	99.119.103	5.744	1.339	-9999.990	-9999.990
47.100	78.182	-9999.990	0.014	0.058	0.078	102.118.102	5.554	1.339	-9999.990	-9999.990
47.160	78.182	-9999.990	0.015	0.055	0.080	109.113.105	5.315	1.437	-9999.990	-9999.990
47.220	50.254	-9999.990	0.015	0.056	0.080	106.114.106	5.490	1.437	-9999.990	-9999.990
47.280	50.253	-9999.990	0.016	0.052	0.081	116.107.108	5.098	1.550	-9999.990	-9999.990
47.340	25.124	-9999.990	0.016	0.052	0.081	119.106.107	4.949	1.551	-9999.990	-9999.990
47.400	50.253	-9999.990	0.017	0.052	0.080	121.105.106	4.808	1.552	-9999.990	-9999.990
47.460	50.253	-9999.990	0.017	0.052	0.080	121.105.106	4.808	1.552	-9999.990	-9999.990
47.520	45.226	-9999.990	0.017	0.052	0.080	121.105.106	4.810	1.552	-9999.990	-9999.990
47.580	45.226	-9999.990	0.017	0.052	0.080	121.105.106	4.810	1.552	-9999.990	-9999.990
47.640	55.838	-9999.990	0.017	0.052	0.080	121.105.106	4.810	1.552	-9999.990	-9999.990
47.700	50.253	-9999.990	0.017	0.052	0.080	121.105.106	4.810	1.552	-9999.990	-9999.990
47.760	50.253	-9999.990	0.017	0.052	0.080	121.105.106	4.810	1.552	-9999.990	-9999.990
47.820	67.008	-9999.990	0.016	0.052	0.081	119.106.107	4.951	1.551	-9999.990	-9999.990
47.880	67.009	-9999.990	0.016	0.052	0.081	119.106.107	4.951	1.551	-9999.990	-9999.990
47.940	50.253	-9999.990	0.018	0.046	0.084	134.94.112	4.598	1.829	-9999.990	-9999.990
48.000	60.306	-9999.990	0.015	0.066	0.059	107.135.74	4.031	0.891	-9999.990	-9999.990
48.060	60.306	-9999.990	0.015	0.066	0.059	107.135.74	4.028	0.891	-9999.990	-9999.990
48.120	60.306	-9999.990	0.015	0.066	0.059	107.135.74	4.028	0.891	-9999.990	-9999.990
48.180	60.306	-9999.990	0.014	0.068	0.060	99.138.76	4.448	0.889	-9999.990	-9999.990
48.240	53.045	-9999.990	0.014	0.066	0.062	103.134.79	4.396	0.948	-9999.990	-9999.990
48.300	85.444	-9999.990	0.014	0.066	0.062	103.134.79	4.396	0.948	-9999.990	-9999.990
48.360	85.444	-9999.990	0.014	0.066	0.062	103.134.79	4.396	0.948	-9999.990	-9999.990
48.420	75.388	-9999.990	0.014	0.068	0.060	99.138.76	4.447	0.890	-9999.990	-9999.990
48.480	75.388	-9999.990	0.013	0.068	0.061	96.139.77	4.608	0.889	-9999.990	-9999.990
48.540	72.595	-9999.990	0.014	0.066	0.062	103.134.79	4.392	0.948	-9999.990	-9999.990
48.600	77.902	-9999.990	0.014	0.066	0.062	103.134.79	4.392	0.948	-9999.990	-9999.990
48.660	77.902	-9999.990	0.014	0.066	0.062	103.134.79	4.392	0.948	-9999.990	-9999.990
48.720	72.595	-9999.990	0.011	0.085	0.037	79.173.41	3.366	0.433	-9999.990	-9999.990
48.780	72.595	-9999.990	0.011	0.085	0.037	79.173.41	3.369	0.433	-9999.990	-9999.990

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Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
48.840	75.388	-9999.990	0.012	0.083	0.038	86.168.42	3.189	0.457	-9999.990	-9999.990
48.900	69.802	-9999.990	0.012	0.083	0.038	86.169.42	3.193	0.457	-9999.990	-9999.990
48.960	69.802	-9999.990	0.012	0.082	0.038	86.168.42	3.192	0.457	-9999.990	-9999.990
49.020	70.361	-9999.990	0.012	0.082	0.037	89.167.42	3.072	0.457	-9999.990	-9999.990
49.080	70.361	-9999.990	0.011	0.084	0.037	82.172.40	3.235	0.434	-9999.990	-9999.990
49.140	83.768	-9999.990	0.011	0.084	0.037	82.172.40	3.235	0.434	-9999.990	-9999.990
49.200	82.930	-9999.990	0.013	0.080	0.039	93.164.44	3.036	0.484	-9999.990	-9999.990
49.260	82.930	-9999.990	0.013	0.079	0.038	96.162.43	2.922	0.484	-9999.990	-9999.990
49.320	75.389	-9999.990	0.017	0.057	0.067	127.116.86	3.861	1.183	-9999.990	-9999.990
49.380	75.388	-9999.990	0.018	0.054	0.069	132.110.90	3.824	1.287	-9999.990	-9999.990
49.440	90.473	-9999.990	0.019	0.051	0.071	141.103.93	3.676	1.411	-9999.990	-9999.990
49.500	86.562	-9999.990	0.022	0.030	0.102	160.62.138	4.627	3.356	-9999.990	-9999.990
49.560	86.562	-9999.990	0.023	0.026	0.105	168.54.144	4.586	3.995	-9999.990	-9999.990
49.620	100.530	-9999.990	0.023	0.026	0.104	170.53.142	4.470	4.001	-9999.990	-9999.990
49.680	100.530	-9999.990	0.022	0.030	0.102	160.61.138	4.632	3.372	-9999.990	-9999.990
49.740	86.562	-9999.990	0.022	0.030	0.102	160.61.138	4.632	3.372	-9999.990	-9999.990
49.800	98.016	-9999.990	0.022	0.030	0.101	163.61.137	4.510	3.376	-9999.990	-9999.990
49.860	98.016	-9999.990	0.022	0.030	0.101	163.61.137	4.510	3.376	-9999.990	-9999.990
49.920	97.736	-9999.990	0.024	0.026	0.104	173.52.141	4.360	4.020	-9999.990	-9999.990
49.980	115.618	-9999.990	0.022	0.030	0.101	163.61.137	4.512	3.371	-9999.990	-9999.990
50.040	115.618	-9999.990	0.022	0.030	0.102	160.61.138	4.632	3.367	-9999.990	-9999.990
50.100	97.736	-9999.990	0.022	0.030	0.102	160.61.138	4.632	3.367	-9999.990	-9999.990
50.160	97.736	-9999.990	0.021	0.034	0.099	150.70.134	4.805	2.896	-9999.990	-9999.990
50.220	92.987	143.897	0.019	0.038	0.097	138.78.132	5.144	2.535	-9999.990	-9999.990
50.280	55.279	143.897	0.019	0.039	0.098	135.79.133	5.304	2.533	-9999.990	-9999.990
50.340	55.279	141.181	0.020	0.035	0.101	144.71.137	5.095	2.881	-9999.990	-9999.990
50.400	75.388	137.746	0.020	0.035	0.101	144.71.137	5.093	2.881	-9999.990	-9999.990
50.460	75.388	137.746	0.020	0.035	0.101	144.71.137	5.093	2.881	-9999.990	-9999.990
50.520	100.529	134.886	0.018	0.039	0.099	132.80.134	5.473	2.526	-9999.990	-9999.990
50.580	65.333	134.886	0.019	0.039	0.098	135.79.133	5.303	2.528	-9999.990	-9999.990
50.640	65.333	132.404	0.019	0.039	0.098	135.79.133	5.303	2.528	-9999.990	-9999.990
50.700	69.802	129.491	0.019	0.039	0.098	135.79.133	5.303	2.528	-9999.990	-9999.990
50.760	69.802	129.491	0.017	0.043	0.096	126.87.129	5.532	2.252	-9999.990	-9999.990
50.820	45.228	127.548	0.017	0.043	0.096	126.87.129	5.532	2.252	-9999.990	-9999.990
50.880	72.874	127.548	0.019	0.038	0.097	138.78.132	5.146	2.531	-9999.990	-9999.990
50.940	72.874	125.606	0.020	0.035	0.100	147.70.135	4.947	2.885	-9999.990	-9999.990
51.000	58.631	124.335	0.020	0.035	0.100	147.70.135	4.947	2.885	-9999.990	-9999.990
51.060	58.630	124.335	0.019	0.038	0.097	138.78.132	5.140	2.540	-9999.990	-9999.990
51.120	67.847	123.286	0.019	0.039	0.098	135.79.133	5.296	2.538	-9999.990	-9999.990
51.180	42.714	123.286	0.017	0.042	0.096	126.86.129	5.523	2.262	-9999.990	-9999.990
51.240	42.713	121.697	0.019	0.038	0.097	138.78.132	5.136	2.546	-9999.990	-9999.990
51.300	58.630	120.696	0.018	0.039	0.099	132.79.134	5.462	2.541	-9999.990	-9999.990
51.360	58.630	120.696	0.018	0.039	0.099	132.79.134	5.462	2.541	-9999.990	-9999.990
51.420	41.875	119.293	0.018	0.039	0.099	132.79.134	5.462	2.541	-9999.990	-9999.990
51.480	60.306	119.293	0.018	0.039	0.099	132.79.134	5.462	2.541	-9999.990	-9999.990
51.540	60.306	118.699	0.018	0.039	0.099	132.79.134	5.462	2.541	-9999.990	-9999.990
51.600	47.460	118.214	0.017	0.040	0.102	123.82.139	6.045	2.534	-9999.990	-9999.990
51.660	47.460	118.214	0.016	0.044	0.099	114.90.135	6.349	2.257	-9999.990	-9999.990
51.720	50.253	117.728	0.015	0.047	0.096	109.96.130	6.435	2.036	-9999.990	-9999.990
51.780	41.875	117.728	0.015	0.047	0.096	109.96.130	6.435	2.036	-9999.990	-9999.990
51.840	41.875	118.399	0.014	0.050	0.093	104.102.125	6.524	1.852	-9999.990	-9999.990
51.900	47.739	118.375	0.015	0.047	0.095	112.95.128	6.201	2.038	-9999.990	-9999.990
51.960	47.739	118.375	0.015	0.047	0.095	112.95.128	6.201	2.038	-9999.990	-9999.990
52.020	72.594	119.455	0.016	0.046	0.094	118.93.126	5.777	2.041	-9999.990	-9999.990
52.080	50.253	119.455	0.018	0.029	0.119	132.60.164	6.550	4.041	-9999.990	-9999.990
52.140	50.253	120.138	0.018	0.029	0.119	132.60.164	6.550	4.041	-9999.990	-9999.990
52.200	53.045	121.289	0.017	0.033	0.116	124.67.159	6.835	3.498	-9999.990	-9999.990
52.260	53.045	121.289	0.019	0.029	0.118	135.59.162	6.362	4.038	-9999.990	-9999.990
52.320	70.361	123.124	0.019	0.029	0.117	138.59.161	6.185	4.043	-9999.990	-9999.990
52.380	67.847	123.124	0.019	0.029	0.117	138.59.161	6.185	4.043	-9999.990	-9999.990
52.440	67.847	124.515	0.018	0.032	0.113	132.66.155	6.252	3.490	-9999.990	-9999.990
52.500	77.901	126.469	0.017	0.036	0.110	123.73.151	6.511	3.074	-9999.990	-9999.990
52.560	77.902	126.469	0.017	0.036	0.110	123.73.151	6.511	3.074	-9999.990	-9999.990
52.620	100.530	127.980	0.017	0.036	0.110	123.73.151	6.511	3.074	-9999.990	-9999.990
52.680	103.045	127.980	0.017	0.036	0.109	126.72.150	6.318	3.077	-9999.990	-9999.990
52.740	103.045	129.850	0.017	0.036	0.110	124.73.151	6.509	3.074	-9999.990	-9999.990
52.800	72.595	131.889	0.017	0.036	0.111	121.74.152	6.713	3.071	-9999.990	-9999.990
52.860	72.595	131.889	0.017	0.036	0.111	121.74.152	6.713	3.071	-9999.990	-9999.990
52.920	82.930	132.998	0.017	0.036	0.110	123.73.151	6.518	3.074	-9999.990	-9999.990
52.980	75.388	132.998	0.017	0.036	0.110	123.73.151	6.526	3.074	-9999.990	-9999.990
53.040	75.388	134.227	0.017	0.036	0.110	123.73.151	6.533	3.074	-9999.990	-9999.990
53.100	53.045	135.696	0.017	0.036	0.110	126.72.150	6.347	3.076	-9999.990	-9999.990
53.160	53.045	135.696	0.018	0.035	0.109	128.72.149	6.171	3.079	-9999.990	-9999.990
53.220	75.388	136.505	0.018	0.035	0.108	131.71.148	6.004	3.082	-9999.990	-9999.990

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53.280	72.595	136.505	0.019	0.031	0.110	142.64.150	5.640	3.499	-9999.990	-9999.990
53.340	72.595	137.368	0.019	0.031	0.110	142.64.150	5.640	3.499	-9999.990	-9999.990
53.400	70.361	137.422	0.018	0.035	0.107	134.70.147	5.837	3.101	-9999.990	-9999.990
53.460	70.361	137.422	0.018	0.035	0.107	134.70.147	5.837	3.101	-9999.990	-9999.990
53.520	86.562	137.884	0.019	0.034	0.106	136.70.145	5.689	3.104	1.557	0.134
53.580	103.045	137.884	0.019	0.034	0.106	139.69.144	5.548	3.106	-9999.990	-9999.990
53.640	103.045	138.825	0.019	0.034	0.106	139.69.144	5.548	3.106	-9999.990	-9999.990
53.700	78.184	139.850	0.019	0.034	0.105	141.69.143	5.414	3.109	-9999.990	-9999.990
53.760	78.182	139.850	0.019	0.034	0.105	141.69.143	5.414	3.109	-9999.990	-9999.990
53.820	82.930	142.116	0.019	0.034	0.105	141.69.143	5.419	3.109	-9999.990	-9999.990
53.880	69.803	142.116	0.020	0.033	0.104	144.68.142	5.289	3.112	-9999.990	-9999.990
53.940	69.802	144.479	0.020	0.033	0.104	144.68.142	5.289	3.112	-9999.990	-9999.990
54.000	65.333	147.836	0.020	0.033	0.103	146.68.141	5.165	3.114	-9999.990	-9999.990
54.060	65.333	147.836	0.019	0.036	0.101	138.74.138	5.336	2.794	-9999.990	-9999.990
54.120	100.530	151.397	0.019	0.036	0.101	138.74.138	5.336	2.794	-9999.990	-9999.990
54.180	83.768	151.397	0.019	0.036	0.101	141.73.137	5.213	2.796	-9999.990	-9999.990
54.240	83.768	155.510	0.019	0.036	0.101	141.73.137	5.213	2.796	-9999.990	-9999.990
54.300	60.306	160.084	0.021	0.033	0.102	151.66.139	4.938	3.133	-9999.990	-9999.990
54.360	60.306	160.084	0.021	0.033	0.102	151.66.139	4.938	3.133	-9999.990	-9999.990
54.420	72.874	164.239	0.021	0.033	0.102	151.66.139	4.938	3.133	-9999.990	-9999.990
54.480	70.361	164.239	0.021	0.032	0.101	155.65.137	4.730	3.138	-9999.990	-9999.990
54.540	70.361	168.639	0.023	0.029	0.102	165.58.139	4.504	3.569	-9999.990	-9999.990
54.600	82.930	170.606	0.024	0.025	0.104	174.51.142	4.384	4.127	-9999.990	-9999.990
54.660	82.930	170.606	0.020	0.046	0.078	147.93.102	3.849	1.705	-9999.990	-9999.990
54.720	100.528	171.697	0.019	0.049	0.077	135.100.102	4.160	1.570	-9999.990	-9999.990
54.780	70.361	170.929	0.018	0.052	0.076	128.106.99	4.302	1.455	-9999.990	-9999.990
54.840	70.361	170.929	0.017	0.052	0.076	126.107.100	4.415	1.454	-9999.990	-9999.990
54.900	100.530	168.339	0.018	0.052	0.076	128.106.99	4.305	1.454	-9999.990	-9999.990
54.960	100.530	168.339	0.018	0.052	0.076	128.106.99	4.305	1.454	-9999.990	-9999.990
55.020	80.416	165.881	0.017	0.052	0.076	126.107.100	4.417	1.454	-9999.990	-9999.990
55.080	90.473	162.296	0.017	0.053	0.077	123.108.101	4.535	1.453	-9999.990	-9999.990
55.140	90.473	162.296	0.017	0.053	0.077	123.108.101	4.535	1.453	-9999.990	-9999.990
55.200	95.501	159.347	0.013	0.073	0.052	95.149.63	3.981	0.709	-9999.990	-9999.990
55.260	95.501	159.347	0.014	0.070	0.053	103.144.65	3.706	0.747	-9999.990	-9999.990
55.320	85.444	156.739	0.014	0.072	0.051	100.147.62	3.740	0.711	1.324	1.650
55.380	75.389	153.609	0.012	0.077	0.047	90.156.57	3.845	0.618	-9999.990	-9999.990
55.440	75.388	153.609	0.013	0.076	0.047	92.156.56	3.733	0.618	-9999.990	-9999.990
55.500	72.874	151.553	0.013	0.074	0.048	97.151.58	3.588	0.648	-9999.990	-9999.990
55.560	72.874	151.553	0.012	0.077	0.047	90.156.57	3.844	0.620	-9999.990	-9999.990
55.620	50.253	149.293	0.013	0.076	0.047	94.154.56	3.624	0.620	-9999.990	-9999.990
55.680	62.820	148.214	0.014	0.075	0.046	99.153.55	3.421	0.621	-9999.990	-9999.990
55.740	62.820	148.214	0.014	0.075	0.046	99.153.55	3.421	0.621	-9999.990	-9999.990
55.800	77.901	146.487	0.013	0.077	0.045	93.156.54	3.548	0.594	-9999.990	-9999.990
55.860	77.902	146.487	0.012	0.078	0.045	88.160.53	3.690	0.569	-9999.990	-9999.990
55.920	80.975	145.570	0.012	0.078	0.045	88.160.53	3.690	0.569	-9999.990	-9999.990
55.980	62.820	143.789	0.014	0.064	0.065	104.131.83	4.524	1.012	-9999.990	-9999.990
56.040	62.820	143.789	0.014	0.064	0.065	104.131.83	4.524	1.012	-9999.990	-9999.990
56.100	72.595	142.926	0.014	0.066	0.064	99.135.81	4.689	0.962	-9999.990	-9999.990
56.160	72.595	142.926	0.014	0.066	0.063	101.134.80	4.563	0.963	-9999.990	-9999.990
56.220	65.333	141.469	0.013	0.068	0.062	93.139.79	4.875	0.917	-9999.990	-9999.990
56.280	52.766	140.606	0.012	0.071	0.062	86.144.78	5.238	0.875	-9999.990	-9999.990
56.340	52.766	140.606	0.015	0.063	0.064	107.129.82	4.401	1.017	-9999.990	-9999.990
56.400	65.333	139.149	0.014	0.066	0.063	101.134.81	4.556	0.967	-9999.990	-9999.990
56.460	65.333	139.149	0.015	0.062	0.067	106.127.86	4.600	1.074	-9999.990	-9999.990
56.520	52.767	138.339	0.014	0.063	0.067	104.128.87	4.728	1.075	-9999.990	-9999.990
56.580	60.306	137.045	0.014	0.064	0.068	99.130.88	5.011	1.074	-9999.990	-9999.990
56.640	60.306	137.045	0.014	0.064	0.068	99.130.88	5.011	1.074	-9999.990	-9999.990
56.700	52.766	136.445	0.014	0.064	0.068	99.130.88	5.014	1.074	-9999.990	-9999.990
56.760	52.766	136.445	0.014	0.063	0.067	104.128.87	4.733	1.075	-9999.990	-9999.990
56.820	45.226	136.289	0.013	0.066	0.067	93.134.86	5.234	1.017	-9999.990	-9999.990
56.880	72.595	135.857	0.012	0.066	0.067	91.135.87	5.398	1.018	-9999.990	-9999.990
56.940	72.595	135.857	0.012	0.066	0.069	88.135.89	5.667	1.038	-9999.990	-9999.990
57.000	37.687	136.559	0.015	0.060	0.070	110.122.90	4.634	1.162	-9999.990	-9999.990
57.060	52.764	136.559	0.015	0.062	0.068	108.126.87	4.550	1.098	-9999.990	-9999.990
57.120	52.766	136.991	0.013	0.066	0.065	97.134.83	4.902	0.988	-9999.990	-9999.990
57.180	67.845	138.603	0.012	0.068	0.064	89.140.82	5.264	0.940	-9999.990	-9999.990
57.240	67.847	138.603	0.012	0.068	0.064	89.140.82	5.264	0.940	-9999.990	-9999.990
57.300	45.226	139.850	0.013	0.068	0.064	91.139.82	5.106	0.940	-9999.990	-9999.990
57.360	80.416	139.850	0.013	0.068	0.064	93.138.81	4.967	0.940	-9999.990	-9999.990
57.420	80.416	142.260	0.013	0.068	0.064	93.138.81	4.967	0.940	-9999.990	-9999.990
57.480	87.959	145.354	0.013	0.068	0.064	93.138.81	4.971	0.940	-9999.990	-9999.990
57.540	87.959	145.354	0.012	0.070	0.063	86.143.80	5.344	0.897	-9999.990	-9999.990
57.600	47.460	148.268	0.012	0.070	0.063	86.143.80	5.344	0.897	-9999.990	-9999.990
57.660	60.306	148.268	0.010	0.074	0.061	75.151.77	5.849	0.821	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
57.720	60.306	152.368	0.011	0.073	0.060	80.149.76	5.464	0.821	-9999.990	-9999.990
57.780	60.306	156.415	0.013	0.059	0.080	95.120.106	6.132	1.369	-9999.990	-9999.990
57.840	60.306	156.415	0.013	0.059	0.080	95.120.106	6.132	1.369	-9999.990	-9999.990
57.900	75.388	161.055	0.013	0.058	0.080	97.119.105	5.962	1.369	-9999.990	-9999.990
57.960	55.838	161.055	0.013	0.060	0.078	96.122.102	5.858	1.299	-9999.990	-9999.990
58.020	55.838	165.911	0.013	0.060	0.078	96.122.102	5.858	1.299	-9999.990	-9999.990
58.080	72.874	174.437	0.013	0.060	0.078	96.122.102	5.858	1.299	-9999.990	-9999.990
58.140	72.874	174.437	0.013	0.060	0.078	96.122.102	5.858	1.299	-9999.990	-9999.990
58.200	80.416	183.663	0.013	0.060	0.078	94.123.103	6.029	1.299	-9999.990	-9999.990
58.260	78.182	183.663	0.013	0.060	0.078	94.123.103	6.029	1.299	-9999.990	-9999.990
58.320	78.182	195.264	0.013	0.060	0.078	96.122.102	5.864	1.299	-9999.990	-9999.990
58.380	103.042	206.349	0.013	0.061	0.076	93.125.99	5.922	1.236	-9999.990	-9999.990
58.440	103.045	206.349	0.013	0.061	0.076	93.125.99	5.922	1.236	-9999.990	-9999.990
58.500	98.016	219.922	0.012	0.064	0.075	86.130.98	6.338	1.178	-9999.990	-9999.990
58.560	118.819	219.922	0.012	0.063	0.075	88.129.98	6.157	1.178	-9999.990	-9999.990
58.620	118.819	229.041	0.013	0.061	0.076	93.125.100	5.923	1.238	-9999.990	-9999.990
58.680	90.473	230.282	0.013	0.061	0.076	93.125.100	5.923	1.238	-9999.990	-9999.990
58.740	90.473	230.282	0.013	0.061	0.076	93.125.100	5.923	1.238	-9999.990	-9999.990
58.800	100.530	236.379	0.013	0.061	0.076	95.124.99	5.765	1.238	-9999.990	-9999.990
58.860	103.045	236.379	0.013	0.061	0.076	93.125.100	5.928	1.238	-9999.990	-9999.990
58.920	103.045	247.062	0.013	0.061	0.076	93.125.100	5.928	1.238	-9999.990	-9999.990
58.980	67.847	252.782	0.013	0.061	0.076	93.125.100	5.928	1.238	-9999.990	-9999.990
59.040	67.847	252.782	0.013	0.062	0.076	91.126.100	6.099	1.237	-9999.990	-9999.990
59.100	98.016	259.311	0.014	0.059	0.077	99.121.102	5.703	1.304	-9999.990	-9999.990
59.160	80.418	259.311	0.013	0.060	0.078	94.122.103	6.028	1.303	-9999.990	-9999.990
59.220	80.416	261.745	0.014	0.058	0.080	100.118.105	5.802	1.376	-9999.990	-9999.990
59.280	132.538	262.872	0.014	0.058	0.080	100.118.105	5.802	1.376	-9999.990	-9999.990
59.340	132.538	262.872	0.014	0.058	0.080	100.118.105	5.808	1.376	-9999.990	-9999.990
59.400	78.182	266.919	0.011	0.075	0.058	77.153.73	5.527	0.780	-9999.990	-9999.990
59.460	98.244	266.919	0.011	0.075	0.058	77.153.73	5.527	0.780	-9999.990	-9999.990
59.520	98.244	268.939	0.011	0.075	0.058	77.153.73	5.527	0.780	-9999.990	-9999.990
59.580	82.930	272.574	0.009	0.086	0.040	67.176.46	4.379	0.468	-9999.990	-9999.990
59.640	82.930	272.574	0.009	0.086	0.040	67.176.46	4.379	0.468	-9999.990	-9999.990
59.700	105.559	276.847	0.009	0.086	0.040	67.176.46	4.379	0.468	-9999.990	-9999.990
59.760	87.959	276.847	0.008	0.089	0.039	58.183.44	4.863	0.436	-9999.990	-9999.990
59.820	87.959	280.678	0.009	0.088	0.040	62.180.45	4.611	0.452	-9999.990	-9999.990
59.880	62.822	280.300	0.008	0.089	0.039	60.182.44	4.671	0.437	-9999.990	-9999.990
59.940	62.820	280.300	0.007	0.091	0.038	54.186.43	5.161	0.422	-9999.990	-9999.990
60.000	108.074	279.598	0.007	0.091	0.038	54.186.43	5.161	0.422	-9999.990	-9999.990
60.060	113.103	279.598	0.010	0.078	0.056	69.159.69	5.840	0.714	-9999.990	-9999.990
60.120	113.104	274.472	0.010	0.078	0.056	69.159.69	5.840	0.714	-9999.990	-9999.990
60.180	114.501	269.484	0.009	0.079	0.055	67.162.67	5.915	0.688	-9999.990	-9999.990
60.240	114.501	269.484	0.009	0.079	0.055	67.162.68	5.903	0.689	-9999.990	-9999.990
60.300	105.559	261.361	0.009	0.079	0.055	67.162.68	5.893	0.690	-9999.990	-9999.990
60.360	103.045	261.361	0.011	0.068	0.072	79.138.93	6.635	1.062	-9999.990	-9999.990
60.420	103.045	250.624	0.011	0.068	0.072	79.138.93	6.635	1.062	-9999.990	-9999.990
60.480	94.943	236.919	0.011	0.067	0.071	81.137.93	6.430	1.063	-9999.990	-9999.990
60.540	94.943	236.919	0.011	0.068	0.072	78.138.93	6.642	1.062	-9999.990	-9999.990
60.600	103.045	229.634	0.010	0.069	0.071	74.142.92	6.944	1.018	-9999.990	-9999.990
60.660	100.530	229.634	0.011	0.067	0.072	79.138.93	6.633	1.064	-9999.990	-9999.990
60.720	100.530	228.609	0.011	0.067	0.072	79.138.93	6.639	1.064	-9999.990	-9999.990
60.780	72.874	218.568	0.011	0.067	0.072	79.138.93	6.639	1.064	-9999.990	-9999.990
60.840	72.874	218.568	0.011	0.066	0.073	83.134.95	6.357	1.114	-9999.990	-9999.990
60.900	77.902	205.785	0.011	0.066	0.073	83.134.95	6.357	1.114	-9999.990	-9999.990
60.960	87.959	205.785	0.011	0.068	0.072	76.138.94	6.857	1.064	-9999.990	-9999.990
61.020	87.959	191.703	0.011	0.068	0.072	76.138.94	6.857	1.064	-9999.990	-9999.990
61.080	85.444	179.562	0.011	0.068	0.072	76.138.94	6.857	1.064	-9999.990	-9999.990
61.140	85.444	179.562	0.011	0.068	0.072	76.138.94	6.857	1.064	-9999.990	-9999.990
61.200	87.958	169.796	0.011	0.066	0.073	83.134.95	6.362	1.113	-9999.990	-9999.990
61.260	65.333	169.796	0.011	0.066	0.073	83.134.95	6.362	1.113	-9999.990	-9999.990
61.320	65.333	163.537	0.013	0.063	0.073	92.128.96	5.774	1.168	-9999.990	-9999.990
61.380	67.009	158.196	0.012	0.063	0.074	90.129.96	5.939	1.167	-9999.990	-9999.990
61.440	67.009	158.196	0.012	0.065	0.073	85.133.95	6.176	1.114	-9999.990	-9999.990
61.500	42.713	153.987	0.012	0.065	0.073	85.133.95	6.176	1.114	-9999.990	-9999.990
61.560	82.930	149.814	0.012	0.065	0.072	88.132.94	6.000	1.115	-9999.990	-9999.990
61.620	82.930	149.814	0.011	0.067	0.071	83.136.92	6.246	1.065	-9999.990	-9999.990
61.680	65.333	146.433	0.012	0.066	0.071	85.135.92	6.065	1.066	-9999.990	-9999.990
61.740	65.333	146.433	0.012	0.064	0.072	90.131.93	5.830	1.116	-9999.990	-9999.990
61.800	50.253	143.142	0.013	0.063	0.073	93.128.96	5.772	1.170	-9999.990	-9999.990
61.860	47.460	141.415	0.012	0.064	0.072	90.131.93	5.829	1.117	-9999.990	-9999.990
61.920	47.460	141.415	0.012	0.064	0.072	90.131.93	5.829	1.117	-9999.990	-9999.990
61.980	47.739	139.563	0.013	0.063	0.074	93.128.96	5.770	1.171	-9999.990	-9999.990
62.040	47.739	139.563	0.015	0.050	0.091	107.102.122	6.201	1.813	-9999.990	-9999.990
62.100	42.713	138.467	0.015	0.050	0.090	109.102.121	6.056	1.813	-9999.990	-9999.990

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
62.160	65.333	137.524	0.014	0.051	0.092	105.103.123	6.370	1.812	-9999.990	-9999.990
62.220	65.333	137.524	0.014	0.061	0.074	99.124.96	5.416	1.215	-9999.990	-9999.990
62.280	80.416	136.937	0.015	0.058	0.075	107.119.98	5.100	1.281	-9999.990	-9999.990
62.340	80.416	136.937	0.017	0.044	0.095	123.89.129	5.645	2.190	-9999.990	-9999.990
62.400	75.388	137.045	0.017	0.044	0.096	121.89.129	5.772	2.189	-9999.990	-9999.990
62.460	72.874	136.667	0.017	0.044	0.096	121.89.129	5.772	2.189	-9999.990	-9999.990
62.520	72.874	136.667	0.016	0.044	0.097	119.90.131	5.901	2.199	-9999.990	-9999.990
62.580	70.361	136.883	0.016	0.044	0.097	120.89.131	5.890	2.208	-9999.990	-9999.990
62.640	70.361	136.883	0.016	0.044	0.097	120.89.131	5.890	2.208	-9999.990	-9999.990
62.700	45.226	135.804	0.016	0.046	0.095	116.93.127	5.938	2.062	-9999.990	-9999.990
62.760	52.766	134.994	0.015	0.048	0.093	111.98.125	6.129	1.933	-9999.990	-9999.990
62.820	52.766	134.994	0.014	0.051	0.092	103.103.124	6.503	1.817	-9999.990	-9999.990
62.880	44.668	133.483	0.014	0.051	0.092	103.103.124	6.503	1.817	-9999.990	-9999.990
62.940	44.668	133.483	0.013	0.053	0.091	98.108.121	6.740	1.713	-9999.990	-9999.990
63.000	70.361	132.350	0.013	0.053	0.091	96.108.122	6.920	1.713	-9999.990	-9999.990
63.060	57.794	130.462	0.013	0.053	0.092	94.109.123	7.113	1.712	-9999.990	-9999.990
63.120	57.793	130.462	0.013	0.054	0.092	92.110.124	7.314	1.711	-9999.990	-9999.990
63.180	60.306	129.005	0.012	0.054	0.093	89.110.124	7.529	1.710	-9999.990	-9999.990
63.240	60.306	129.005	0.012	0.054	0.093	87.111.125	7.757	1.710	-9999.990	-9999.990
63.300	60.306	126.853	0.012	0.055	0.094	85.112.126	8.001	1.709	-9999.990	-9999.990
63.360	41.875	125.012	0.012	0.055	0.094	85.112.126	7.996	1.709	-9999.990	-9999.990
63.420	41.875	125.012	0.012	0.055	0.094	85.112.126	7.996	1.709	0.947	3.821
63.480	57.791	123.124	0.012	0.055	0.094	85.112.126	7.996	1.709	-9999.990	-9999.990
63.540	57.793	123.124	0.012	0.053	0.095	90.107.128	7.670	1.809	-9999.990	-9999.990
63.600	37.687	122.530	0.015	0.036	0.117	109.74.162	7.821	3.228	-9999.990	-9999.990
63.660	55.279	121.451	0.014	0.039	0.116	101.80.160	8.333	2.962	-9999.990	-9999.990
63.720	55.279	121.451	0.014	0.039	0.117	99.80.161	8.568	2.960	-9999.990	-9999.990
63.780	52.766	121.217	0.013	0.042	0.115	91.86.159	9.184	2.737	-9999.990	-9999.990
63.840	45.227	121.217	0.013	0.042	0.115	91.86.159	9.184	2.737	-9999.990	-9999.990
63.900	45.226	121.343	0.012	0.042	0.116	89.86.160	9.471	2.736	-9999.990	-9999.990
63.960	60.306	121.181	0.012	0.042	0.116	89.86.160	9.473	2.736	-9999.990	-9999.990
64.020	60.306	121.181	0.012	0.042	0.116	89.86.160	9.473	2.736	-9999.990	-9999.990
64.080	67.847	121.613	0.011	0.045	0.115	82.92.158	10.242	2.544	-9999.990	-9999.990
64.140	47.462	121.613	0.012	0.043	0.117	84.88.162	10.110	2.730	-9999.990	-9999.990
64.200	47.460	121.289	0.012	0.043	0.117	84.88.162	10.110	2.730	-9999.990	-9999.990
64.260	72.874	121.289	0.012	0.043	0.117	84.88.162	10.110	2.730	-9999.990	-9999.990
64.320	72.874	121.289	0.010	0.048	0.114	74.97.156	11.142	2.374	-9999.990	-9999.990
64.380	70.361	120.318	0.011	0.048	0.113	76.97.155	10.744	2.375	-9999.990	-9999.990
64.440	67.009	120.318	0.011	0.048	0.113	76.97.155	10.743	2.375	-9999.990	-9999.990
64.500	67.009	120.078	0.011	0.048	0.113	76.97.155	10.743	2.375	-9999.990	-9999.990
64.560	52.767	119.023	0.010	0.048	0.114	72.98.157	11.557	2.372	-9999.990	-9999.990
64.620	52.766	119.023	0.010	0.048	0.115	69.99.158	12.016	2.371	-9999.990	-9999.990
64.680	72.874	118.861	0.010	0.048	0.115	69.99.158	12.016	2.371	-9999.990	-9999.990
64.740	77.902	118.861	0.009	0.049	0.116	67.99.159	12.529	2.370	-9999.990	-9999.990
64.800	77.902	117.944	0.010	0.046	0.117	75.94.161	11.379	2.541	-9999.990	-9999.990
64.860	61.423	117.512	0.011	0.043	0.119	80.88.164	10.788	2.740	-9999.990	-9999.990
64.920	61.423	117.512	0.011	0.043	0.119	80.88.164	10.788	2.740	-9999.990	-9999.990
64.980	55.279	116.703	0.011	0.043	0.118	83.88.163	10.412	2.742	-9999.990	-9999.990
65.040	70.361	116.703	0.011	0.043	0.119	80.88.164	10.785	2.740	-9999.990	-9999.990
65.100	70.361	116.649	0.011	0.043	0.119	80.88.164	10.785	2.740	-9999.990	-9999.990
65.160	55.281	116.055	0.011	0.043	0.118	83.88.163	10.408	2.742	-9999.990	-9999.990
65.220	55.279	116.055	0.012	0.043	0.118	85.87.162	10.059	2.744	-9999.990	-9999.990
65.280	55.279	116.271	0.015	0.022	0.145	112.44.204	9.482	6.718	-9999.990	-9999.990
65.340	95.501	116.271	0.014	0.025	0.144	103.51.201	10.155	5.759	-9999.990	-9999.990
65.400	95.501	115.786	0.015	0.022	0.147	107.45.206	10.044	6.621	-9999.990	-9999.990
65.460	45.231	115.947	0.016	0.016	0.156	113.32.220	10.035	9.804	-9999.990	-9999.990
65.520	45.226	115.947	0.015	0.016	0.156	113.32.220	10.090	9.801	-9999.990	-9999.990
65.580	57.793	115.702	0.015	0.018	0.154	108.37.216	10.405	8.358	-9999.990	-9999.990
65.640	60.306	115.702	0.014	0.020	0.153	105.40.215	10.593	7.715	-9999.990	-9999.990
65.700	60.306	115.570	0.014	0.020	0.153	105.40.215	10.593	7.714	-9999.990	-9999.990
65.760	55.838	115.839	0.014	0.020	0.154	102.40.217	11.044	7.700	-9999.990	-9999.990
65.820	55.838	115.839	0.013	0.022	0.155	94.44.218	12.025	7.138	0.866	2.206
65.880	45.227	115.516	0.013	0.022	0.154	93.45.217	12.005	6.903	-9999.990	-9999.990
65.940	62.820	115.516	0.014	0.019	0.156	102.38.219	11.106	8.213	-9999.990	-9999.990
66.000	62.820	115.941	0.015	0.015	0.158	111.31.222	10.326	10.193	-9999.990	-9999.990
66.060	65.333	115.624	0.012	0.035	0.131	90.71.182	10.623	3.754	-9999.990	-9999.990
66.120	65.333	115.624	0.013	0.035	0.130	92.70.181	10.269	3.756	-9999.990	-9999.990
66.180	42.713	116.217	0.013	0.032	0.132	98.65.184	9.818	4.171	-9999.990	-9999.990
66.240	53.045	116.217	0.013	0.032	0.133	96.65.186	10.141	4.167	-9999.990	-9999.990
66.300	53.045	116.055	0.015	0.029	0.134	107.58.187	9.118	4.697	-9999.990	-9999.990
66.360	52.766	116.757	0.015	0.028	0.133	110.58.185	8.856	4.702	-9999.990	-9999.990
66.420	52.766	116.757	0.015	0.028	0.133	110.58.185	8.856	4.702	-9999.990	-9999.990
66.480	67.847	116.757	0.014	0.032	0.132	98.65.184	9.813	4.173	-9999.990	-9999.990
66.540	47.739	116.757	0.015	0.029	0.134	107.58.187	9.128	4.690	-9999.990	-9999.990

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Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
66.600	47.739	117.134	0.014	0.032	0.132	101.64.183	9.523	4.162	-9999.990	-9999.990
66.660	64.216	116.811	0.014	0.032	0.132	101.64.183	9.518	4.168	-9999.990	-9999.990
66.720	64.216	116.811	0.014	0.031	0.130	105.63.180	8.960	4.175	-9999.990	-9999.990
66.780	50.254	117.242	0.012	0.037	0.127	89.76.176	10.414	3.407	-9999.990	-9999.990
66.840	62.818	117.242	0.011	0.038	0.128	84.77.178	11.178	3.402	-9999.990	-9999.990
66.900	62.820	117.188	0.013	0.037	0.126	91.75.175	10.063	3.411	-9999.990	-9999.990
66.960	82.930	117.620	0.013	0.034	0.128	97.70.178	9.629	3.752	-9999.990	-9999.990
67.020	82.930	117.620	0.015	0.029	0.132	107.60.184	8.991	4.488	-9999.990	-9999.990
67.080	58.630	117.560	0.014	0.030	0.135	100.61.188	9.855	4.476	-9999.990	-9999.990
67.140	40.202	117.560	0.014	0.027	0.140	101.56.195	10.052	5.078	-9999.990	-9999.990
67.200	40.200	117.350	0.014	0.027	0.140	101.56.195	10.052	5.079	-9999.990	-9999.990
67.260	55.278	117.674	0.016	0.021	0.143	120.42.200	8.693	6.977	-9999.990	-9999.990
67.320	55.279	117.674	0.017	0.017	0.146	127.34.205	8.369	8.553	-9999.990	-9999.990
67.380	62.820	117.566	0.017	0.017	0.146	127.34.205	8.369	8.553	-9999.990	-9999.990
67.440	77.902	117.566	0.017	0.017	0.146	127.34.205	8.361	8.554	-9999.990	-9999.990
67.500	77.902	118.106	0.016	0.021	0.145	115.42.203	9.204	6.914	-9999.990	-9999.990
67.560	45.226	117.674	0.015	0.021	0.146	112.43.205	9.486	6.905	-9999.990	-9999.990
67.620	45.226	117.674	0.015	0.021	0.146	112.43.204	9.502	6.854	-9999.990	-9999.990
67.680	67.847	117.740	0.016	0.021	0.145	114.43.203	9.215	6.863	-9999.990	-9999.990
67.740	40.203	117.740	0.017	0.018	0.148	121.36.207	8.857	8.309	-9999.990	-9999.990
67.800	40.200	116.541	0.016	0.018	0.150	116.37.210	9.397	8.282	-9999.990	-9999.990
67.860	47.460	115.839	0.011	0.044	0.116	82.91.159	10.193	2.601	-9999.990	-9999.990
67.920	47.460	115.839	0.011	0.044	0.116	82.91.159	10.193	2.601	-9999.990	-9999.990
67.980	75.388	114.760	0.011	0.047	0.113	76.96.156	10.780	2.401	-9999.990	-9999.990
68.040	52.766	114.760	0.009	0.050	0.112	68.102.154	11.967	2.228	-9999.990	-9999.990
68.100	52.766	114.491	0.009	0.051	0.113	65.103.155	12.541	2.227	-9999.990	-9999.990
68.160	40.201	113.963	0.009	0.051	0.113	65.103.155	12.541	2.227	-9999.990	-9999.990
68.220	40.200	113.963	0.009	0.050	0.112	68.102.154	11.973	2.229	-9999.990	-9999.990
68.280	50.253	113.951	0.011	0.035	0.135	82.70.189	11.949	3.918	-9999.990	-9999.990
68.340	72.874	114.545	0.011	0.037	0.131	82.75.182	11.680	3.554	-9999.990	-9999.990
68.400	72.874	114.545	0.012	0.037	0.130	84.75.181	11.260	3.556	-9999.990	-9999.990
68.460	55.281	114.868	0.011	0.037	0.131	82.75.183	11.673	3.562	-9999.990	-9999.990
68.520	55.279	114.868	0.011	0.037	0.131	82.75.183	11.673	3.562	-9999.990	-9999.990
68.580	39.083	116.541	0.013	0.031	0.136	94.63.190	10.550	4.409	-9999.990	-9999.990
68.640	50.253	118.052	0.013	0.031	0.136	94.63.190	10.546	4.409	-9999.990	-9999.990
68.700	50.253	118.052	0.013	0.031	0.136	94.63.190	10.546	4.409	-9999.990	-9999.990
68.760	30.149	120.480	0.013	0.031	0.137	91.63.192	10.920	4.405	-9999.990	-9999.990
68.820	30.149	120.480	0.013	0.031	0.137	91.63.192	10.920	4.405	-9999.990	-9999.990
68.880	58.630	122.476	0.013	0.031	0.137	91.63.192	10.920	4.405	-9999.990	-9999.990
68.940	65.333	125.012	0.011	0.035	0.137	80.71.190	12.435	3.927	-9999.990	-9999.990
69.000	65.333	125.012	0.011	0.035	0.136	82.70.189	11.954	3.930	-9999.990	-9999.990
69.060	70.361	126.955	0.011	0.035	0.136	82.70.189	11.954	3.930	-9999.990	-9999.990
69.120	70.361	126.955	0.011	0.035	0.136	82.70.189	11.954	3.930	-9999.990	-9999.990
69.180	69.802	129.491	0.011	0.035	0.137	80.71.190	12.456	3.927	-9999.990	-9999.990
69.240	65.334	130.786	0.011	0.035	0.137	80.71.190	12.456	3.927	-9999.990	-9999.990
69.300	65.333	130.786	0.011	0.035	0.137	80.71.190	12.456	3.927	-9999.990	-9999.990
69.360	52.766	132.512	0.011	0.035	0.136	82.70.189	11.968	3.930	-9999.990	-9999.990
69.420	52.766	132.512	0.011	0.035	0.136	82.70.189	11.968	3.930	-9999.990	-9999.990
69.480	77.902	132.836	0.011	0.035	0.137	80.71.190	12.449	3.927	-9999.990	-9999.990
69.540	92.987	133.375	0.011	0.035	0.137	80.71.190	12.463	3.919	-9999.990	-9999.990
69.600	92.987	133.375	0.011	0.035	0.136	82.70.189	11.966	3.922	-9999.990	-9999.990
69.660	77.902	132.836	0.012	0.034	0.135	85.70.187	11.512	3.925	-9999.990	-9999.990
69.720	77.902	132.836	0.011	0.038	0.133	76.76.185	12.652	3.545	-9999.990	-9999.990
69.780	77.902	132.782	0.010	0.040	0.130	73.81.180	12.865	3.239	-9999.990	-9999.990
69.840	65.335	132.134	0.011	0.035	0.135	82.70.189	11.968	3.913	-9999.990	-9999.990
69.900	65.333	132.134	0.011	0.035	0.136	80.71.190	12.446	3.910	-9999.990	-9999.990
69.960	103.041	132.404	0.011	0.032	0.140	83.65.195	12.252	4.351	-9999.990	-9999.990
70.020	103.045	132.404	0.012	0.029	0.143	89.59.200	11.612	4.916	-9999.990	-9999.990
70.080	95.501	131.595	0.011	0.032	0.140	83.65.195	12.259	4.345	-9999.990	-9999.990
70.140	80.418	130.810	0.009	0.048	0.116	68.99.159	12.342	2.392	-9999.990	-9999.990
70.200	80.416	130.810	0.009	0.048	0.116	68.99.159	12.342	2.391	-9999.990	-9999.990
70.260	92.987	130.030	0.009	0.048	0.116	68.99.159	12.342	2.391	-9999.990	-9999.990
70.320	92.987	130.030	0.009	0.049	0.117	65.99.160	12.951	2.390	-9999.990	-9999.990
70.380	114.501	127.764	0.010	0.046	0.119	71.94.164	12.114	2.586	-9999.990	-9999.990
70.440	103.045	125.498	0.010	0.046	0.119	71.94.164	12.103	2.589	-9999.990	-9999.990
70.500	103.045	125.498	0.007	0.064	0.093	51.131.125	13.223	1.450	-9999.990	-9999.990
70.560	77.905	122.260	0.007	0.065	0.094	48.132.126	14.095	1.449	-9999.990	-9999.990
70.620	100.530	122.260	0.007	0.065	0.094	48.132.126	14.095	1.449	-9999.990	-9999.990
70.680	100.530	119.299	0.007	0.062	0.096	54.127.129	12.904	1.537	-9999.990	-9999.990
70.740	75.391	115.084	0.007	0.062	0.096	54.127.129	12.904	1.537	-9999.990	-9999.990
70.800	75.388	115.084	0.007	0.063	0.096	51.128.130	13.737	1.536	-9999.990	-9999.990
70.860	75.388	110.983	0.006	0.065	0.094	45.133.127	15.110	1.448	-9999.990	-9999.990
70.920	77.902	110.983	0.006	0.065	0.094	45.133.127	15.110	1.448	-9999.990	-9999.990
70.980	77.902	106.397	0.006	0.065	0.094	45.133.127	15.110	1.448	-9999.990	-9999.990

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71.040	67.847	102.512	0.006	0.065	0.094	45.133.127	15.110	1.448	-9999.990	-9999.990
71.100	67.847	102.512	0.007	0.062	0.096	54.127.129	12.910	1.538	-9999.990	-9999.990
71.160	80.975	98.735	0.007	0.062	0.096	54.127.129	12.910	1.538	-9999.990	-9999.990
71.220	92.987	98.735	0.007	0.062	0.096	54.127.129	12.910	1.538	-9999.990	-9999.990
71.280	92.987	95.822	0.007	0.063	0.096	51.128.130	13.740	1.537	-9999.990	-9999.990
71.340	77.902	92.476	0.007	0.063	0.096	51.128.130	13.740	1.537	-9999.990	-9999.990
71.400	77.902	92.476	0.005	0.066	0.096	39.135.129	17.562	1.448	-9999.990	-9999.990
71.460	90.471	90.102	0.005	0.066	0.096	39.135.129	17.562	1.448	-9999.990	-9999.990
71.520	57.796	90.102	0.006	0.064	0.098	45.130.132	15.744	1.535	-9999.990	-9999.990
71.580	57.793	87.296	0.005	0.066	0.096	39.135.129	17.577	1.447	-9999.990	-9999.990
71.640	72.874	85.462	0.005	0.066	0.096	39.135.129	17.553	1.447	-9999.990	-9999.990
71.700	72.874	85.462	0.005	0.066	0.096	39.135.129	17.553	1.447	-9999.990	-9999.990
71.760	52.766	82.764	0.006	0.064	0.098	45.130.132	15.720	1.535	-9999.990	-9999.990
71.820	62.820	82.764	0.006	0.064	0.098	45.130.132	15.698	1.535	-9999.990	-9999.990
71.880	62.820	80.876	0.007	0.063	0.097	48.129.131	14.618	1.536	-9999.990	-9999.990
71.940	47.741	78.591	0.007	0.063	0.097	48.129.131	14.618	1.536	-9999.990	-9999.990
72.000	47.739	78.591	0.006	0.064	0.098	45.130.132	15.701	1.535	-9999.990	-9999.990
72.060	42.713	76.451	0.007	0.063	0.097	48.129.131	14.614	1.535	-9999.990	-9999.990
72.120	22.331	76.451	0.004	0.080	0.073	29.164.95	17.955	0.904	-9999.990	-9999.990
72.180	22.331	74.563	0.004	0.081	0.073	26.166.96	20.067	0.904	-9999.990	-9999.990
72.240	20.098	72.081	0.004	0.081	0.073	26.166.96	20.067	0.904	-9999.990	-9999.990
72.300	20.098	72.081	0.002	0.084	0.073	15.172.95	33.903	0.863	-9999.990	-9999.990
72.360	40.200	70.570	0.002	0.085	0.073	12.173.96	42.500	0.863	-9999.990	-9999.990
72.420	25.125	70.570	0.000	0.100	0.050	0.204.61	-9999.990	0.501	-9999.990	-9999.990
72.480	25.123	68.879	0.000	0.100	0.050	0.204.61	-9999.990	0.501	-9999.990	-9999.990
72.540	35.174	67.602	0.000	0.100	0.050	0.204.61	-9999.990	0.501	-9999.990	-9999.990
72.600	35.174	67.602	0.000	0.100	0.050	0.204.61	-9999.990	0.501	-9999.990	-9999.990
72.660	32.661	65.606	0.000	0.100	0.050	0.204.61	-9999.990	0.501	-9999.990	-9999.990
72.720	30.149	65.606	0.001	0.098	0.051	6.200.62	61.389	0.521	-9999.990	-9999.990
72.780	30.149	64.311	0.001	0.097	0.052	7.198.64	50.401	0.542	-9999.990	-9999.990
72.840	40.199	62.206	0.002	0.094	0.053	15.192.65	25.236	0.564	-9999.990	-9999.990
72.900	40.200	62.206	0.003	0.092	0.054	20.189.67	19.548	0.589	-9999.990	-9999.990
72.960	41.875	61.127	0.003	0.092	0.054	20.189.67	19.548	0.589	-9999.990	-9999.990
73.020	30.149	61.127	0.003	0.092	0.054	20.188.67	19.444	0.589	-9999.990	-9999.990
73.080	30.149	59.023	0.003	0.092	0.054	20.188.67	19.444	0.589	-9999.990	-9999.990
73.140	27.915	58.591	0.003	0.092	0.054	20.188.67	19.444	0.589	-9999.990	-9999.990
73.200	27.915	58.591	0.003	0.092	0.054	20.188.67	19.444	0.589	-9999.990	-9999.990
73.260	50.253	57.350	0.003	0.092	0.054	20.188.67	19.444	0.589	-9999.990	-9999.990
73.320	35.174	57.350	0.003	0.092	0.054	23.187.67	16.794	0.589	-9999.990	-9999.990
73.380	35.174	56.649	0.004	0.091	0.054	26.186.66	14.762	0.590	-9999.990	-9999.990
73.440	27.636	55.516	0.004	0.091	0.054	26.186.66	14.762	0.590	-9999.990	-9999.990
73.500	27.636	55.516	0.003	0.092	0.054	23.187.67	16.796	0.589	-9999.990	-9999.990
73.560	35.173	54.850	0.003	0.093	0.052	21.190.64	17.819	0.565	-9999.990	-9999.990
73.620	30.707	54.850	0.003	0.093	0.052	21.190.64	17.819	0.565	-9999.990	-9999.990
73.680	30.707	54.437	0.001	0.108	0.031	4.222.32	52.355	0.284	-9999.990	-9999.990
73.740	40.200	53.735	0.001	0.107	0.031	8.218.33	26.123	0.295	-9999.990	-9999.990
73.800	40.200	53.735	0.001	0.107	0.031	8.218.33	26.123	0.295	-9999.990	-9999.990
73.860	54.822	53.735	0.002	0.105	0.032	13.215.34	17.572	0.306	-9999.990	-9999.990
73.920	36.293	53.735	0.002	0.104	0.032	16.214.34	14.245	0.306	-9999.990	-9999.990
73.980	36.291	53.088	0.002	0.104	0.032	16.214.34	14.245	0.306	-9999.990	-9999.990
74.040	25.123	52.926	0.003	0.104	0.032	19.212.33	11.976	0.307	-9999.990	-9999.990
74.100	25.123	52.926	0.002	0.104	0.032	16.213.34	14.198	0.306	-9999.990	-9999.990
74.160	35.174	51.685	0.002	0.104	0.032	16.213.34	14.198	0.306	-9999.990	-9999.990
74.220	40.200	51.685	0.002	0.104	0.032	16.214.34	14.221	0.306	-9999.990	-9999.990
74.280	40.200	51.373	0.002	0.104	0.032	16.214.34	14.221	0.306	-9999.990	-9999.990
74.340	17.586	52.117	0.002	0.104	0.032	16.214.34	14.221	0.306	-9999.990	-9999.990
74.400	17.586	52.117	0.004	0.101	0.034	26.206.36	9.362	0.332	-9999.990	-9999.990
74.460	42.711	52.764	0.003	0.103	0.033	21.210.35	11.274	0.319	-9999.990	-9999.990
74.520	55.278	52.764	0.001	0.107	0.031	8.218.33	26.012	0.295	-9999.990	-9999.990
74.580	55.279	52.063	0.002	0.106	0.031	11.217.33	19.378	0.295	-9999.990	-9999.990
74.640	35.176	52.632	0.002	0.106	0.031	11.217.33	19.378	0.295	-9999.990	-9999.990
74.700	35.174	52.632	0.002	0.106	0.031	11.217.33	19.378	0.295	-9999.990	-9999.990
74.760	32.661	52.926	0.001	0.108	0.031	7.220.32	30.521	0.284	-9999.990	-9999.990
74.820	52.766	52.926	0.001	0.108	0.031	7.220.32	30.521	0.284	-9999.990	-9999.990
74.880	52.766	52.278	0.001	0.108	0.031	7.220.32	30.521	0.284	0.218	1.312
74.940	47.460	52.278	0.001	0.108	0.031	4.222.32	51.633	0.284	-9999.990	-9999.990
75.000	47.460	52.278	0.001	0.108	0.031	4.222.32	51.633	0.284	-9999.990	-9999.990
75.060	72.874	51.631	0.000	0.110	0.030	0.225.31	-9999.990	0.273	-9999.990	-9999.990
75.120	62.820	51.631	0.000	0.109	0.030	2.223.31	75.380	0.273	-9999.990	-9999.990
75.180	62.820	51.253	0.000	0.109	0.030	2.223.31	75.380	0.273	-9999.990	-9999.990
75.240	83.766	50.390	0.000	0.110	0.030	0.225.31	-9999.990	0.273	-9999.990	-9999.990
75.300	83.768	50.390	0.000	0.110	0.030	0.225.31	-9999.990	0.273	-9999.990	-9999.990
75.360	50.253	50.444	0.000	0.120	0.009	0.246.0	-9999.990	0.076	-9999.990	-9999.990
75.420	42.714	48.879	0.000	0.120	0.010	0.246.0	-9999.990	0.080	-9999.990	-9999.990

Boring DD-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
75.480	42.713	48.879	0.000	0.120	0.010	0.246.0	-9999.990	0.080	-9999.990	-9999.990
75.540	60.306	49.311	0.000	0.120	0.010	0.246.0	-9999.990	0.080	-9999.990	-9999.990
75.600	60.306	49.311	0.000	0.120	0.010	0.245.1	-9999.990	0.083	-9999.990	-9999.990
75.660	52.766	49.419	0.000	0.120	0.010	0.245.1	-9999.990	0.083	-9999.990	-9999.990
75.720	47.739	49.796	0.000	0.120	0.010	0.245.1	-9999.990	0.086	-9999.990	-9999.990
75.780	47.739	49.796	0.001	0.119	0.011	3.242.2	20.913	0.092	-9999.990	-9999.990
75.840	47.739	49.095	0.001	0.118	0.011	5.242.2	15.681	0.092	-9999.990	-9999.990
75.900	47.739	49.095	0.001	0.118	0.011	6.240.2	11.607	0.094	-9999.990	-9999.990
75.960	36.292	50.012	0.000	0.119	0.010	2.244.1	34.378	0.087	-9999.990	-9999.990
76.020	32.661	50.654	0.000	0.120	0.010	0.245.1	-9999.990	0.087	-9999.990	-9999.990
76.080	32.661	50.654	0.000	0.120	0.010	0.245.1	-9999.990	0.087	-9999.990	-9999.990
76.140	20.099	51.199	0.000	0.120	0.010	0.245.1	-9999.990	0.087	-9999.990	-9999.990
76.200	20.098	51.199	0.000	0.120	0.010	0.245.1	-9999.990	0.087	-9999.990	-9999.990
76.260	25.123	50.983	0.000	0.120	0.010	0.245.1	-9999.990	0.087	-9999.990	-9999.990
76.320	35.174	51.847	0.000	0.120	0.010	0.245.1	-9999.990	0.087	-9999.990	-9999.990
76.380	35.174	51.847	0.000	0.120	0.010	0.245.1	-9999.990	0.087	-9999.990	-9999.990
76.440	30.149	51.199	0.000	0.120	0.010	0.245.1	-9999.990	0.087	-9999.990	-9999.990
76.500	30.149	51.199	0.000	0.120	0.011	0.244.2	-9999.990	0.092	-9999.990	-9999.990
76.560	30.149	51.739	0.000	0.119	0.011	0.244.3	-9999.990	0.096	-9999.990	-9999.990
76.620	27.636	51.253	0.000	0.119	0.011	0.244.3	-9999.990	0.096	-9999.990	-9999.990
76.680	27.636	51.253	0.000	0.119	0.012	0.243.4	-9999.990	0.101	-9999.990	-9999.990
76.740	33.499	50.876	0.000	0.118	0.013	1.242.5	52.995	0.106	-9999.990	-9999.990
76.800	33.499	50.876	0.000	0.119	0.012	0.243.4	-9999.990	0.101	-9999.990	-9999.990
76.860	30.149	50.174	0.003	0.101	0.037	22.206.40	11.888	0.363	-9999.990	-9999.990
76.920	30.149	50.066	0.002	0.103	0.036	17.209.39	15.214	0.347	-9999.990	-9999.990
76.980	30.149	50.066	0.002	0.103	0.036	17.209.39	15.214	0.347	-9999.990	-9999.990
77.040	32.661	49.041	0.001	0.105	0.036	6.214.40	39.501	0.347	-9999.990	-9999.990
77.100	32.661	49.041	0.000	0.107	0.036	1.218.39	157.238	0.332	-9999.990	-9999.990
77.160	40.200	46.937	0.000	0.108	0.034	0.220.37	2510.950	0.319	-9999.990	-9999.990
77.220	40.200	45.965	0.000	0.107	0.034	3.219.37	74.406	0.319	-9999.990	-9999.990
77.280	40.200	45.965	0.000	0.108	0.033	1.221.35	134.107	0.306	-9999.990	-9999.990
77.340	40.200	44.563	0.000	0.110	0.031	0.224.32	-9999.990	0.282	-9999.990	-9999.990
77.400	36.291	44.563	0.000	0.110	0.030	0.225.31	-9999.990	0.271	-9999.990	-9999.990
77.460	36.291	45.588	0.001	0.096	0.053	8.197.65	45.903	0.550	-9999.990	-9999.990
77.520	45.225	44.347	0.002	0.096	0.053	11.195.65	34.037	0.550	-9999.990	-9999.990
77.580	45.226	44.347	0.003	0.093	0.053	19.190.66	20.075	0.575	-9999.990	-9999.990
77.640	30.149	45.372	0.003	0.093	0.053	19.190.66	20.075	0.575	-9999.990	-9999.990
77.700	40.200	45.372	0.003	0.093	0.053	19.190.66	20.075	0.575	-9999.990	-9999.990
77.760	40.200	45.264	0.003	0.091	0.055	24.186.68	16.113	0.602	-9999.990	-9999.990
77.820	27.915	45.912	0.003	0.091	0.055	24.186.68	16.214	0.602	-9999.990	-9999.990
77.880	27.915	45.912	0.003	0.092	0.055	21.187.68	18.793	0.602	-9999.990	-9999.990
77.940	17.587	47.716	0.003	0.092	0.055	21.187.68	18.793	0.602	-9999.990	-9999.990
78.000	47.739	47.716	0.006	0.072	0.081	45.147.108	12.986	1.133	-9999.990	-9999.990
78.060	47.739	49.742	0.008	0.069	0.083	55.140.109	10.916	1.203	-9999.990	-9999.990
78.120	30.149	49.850	0.008	0.066	0.084	61.134.112	10.012	1.281	-9999.990	-9999.990
78.180	30.149	49.850	0.008	0.067	0.085	58.136.113	10.703	1.274	-9999.990	-9999.990
78.240	30.149	51.145	0.012	0.044	0.115	86.89.158	9.711	2.617	-9999.990	-9999.990
78.300	34.260	51.145	0.010	0.048	0.113	75.97.155	10.896	2.367	-9999.990	-9999.990
78.360	34.260	52.224	0.009	0.065	0.086	62.133.114	10.035	1.318	-9999.990	-9999.990
78.420	32.661	54.599	0.009	0.063	0.088	65.128.118	9.825	1.407	-9999.990	-9999.990
78.480	32.661	54.599	0.009	0.063	0.088	65.128.118	9.825	1.407	-9999.990	-9999.990
78.540	33.499	55.192	0.009	0.063	0.089	62.129.119	10.426	1.406	-9999.990	-9999.990
78.600	50.251	55.192	0.009	0.062	0.088	68.127.117	9.348	1.413	-9999.990	-9999.990
78.660	50.253	57.782	0.009	0.065	0.086	62.132.115	10.033	1.329	-9999.990	-9999.990
78.720	65.333	59.527	0.011	0.046	0.112	83.94.153	9.752	2.426	-9999.990	-9999.990
78.780	65.333	59.527	0.009	0.055	0.106	62.112.145	12.454	1.932	-9999.990	-9999.990
78.840	32.661	61.962	0.008	0.058	0.103	58.117.140	12.779	1.786	-9999.990	-9999.990
78.900	52.766	61.962	0.008	0.059	0.101	57.120.138	12.934	1.726	-9999.990	-9999.990
78.960	52.766	64.455	0.008	0.058	0.102	57.118.139	12.955	1.765	-9999.990	-9999.990
79.020	50.253	66.968	0.009	0.055	0.105	64.112.143	11.941	1.897	-9999.990	-9999.990
79.080	50.253	66.968	0.008	0.056	0.105	61.113.144	12.631	1.896	-9999.990	-9999.990
79.140	40.201	69.503	0.008	0.056	0.105	61.113.144	12.631	1.896	-9999.990	-9999.990
79.200	60.304	69.503	0.008	0.056	0.105	61.113.144	12.631	1.896	-9999.990	-9999.990
79.260	60.306	72.532	0.008	0.056	0.105	61.113.144	12.631	1.896	-9999.990	-9999.990
79.320	50.253	76.478	0.008	0.056	0.105	61.113.144	12.631	1.896	-9999.990	-9999.990
79.380	50.253	76.478	0.008	0.056	0.105	61.113.144	12.631	1.896	-9999.990	-9999.990
79.440	60.306	81.679	0.008	0.056	0.105	61.113.144	12.631	1.896	-9999.990	-9999.990
79.500	33.499	81.679	0.008	0.056	0.106	57.114.145	13.414	1.895	-9999.990	-9999.990
79.560	33.499	87.785	0.008	0.056	0.106	57.114.145	13.414	1.895	-9999.990	-9999.990
79.620	70.357	95.048	0.009	0.053	0.109	64.108.149	12.331	2.046	-9999.990	-9999.990
79.680	70.361	95.048	0.008	0.054	0.109	61.109.150	13.088	2.045	-9999.990	-9999.990
79.740	60.306	103.471	0.008	0.054	0.110	57.110.151	13.935	2.044	-9999.990	-9999.990
79.800	85.444	103.471	0.009	0.051	0.113	64.104.155	12.779	2.219	-9999.990	-9999.990
79.860	85.444	111.844	0.009	0.048	0.116	68.98.160	12.487	2.422	-9999.990	-9999.990

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
79.920	72.876	120.159	0.009	0.048	0.116	68.98.160	12.487	2.422	-9999.990	-9999.990
79.980	72.874	120.159	0.009	0.048	0.116	68.98.160	12.487	2.422	-9999.990	-9999.990
80.040	106.118	128.861	0.009	0.049	0.117	64.99.162	13.238	2.420	-9999.990	-9999.990
80.100	90.474	128.861	0.009	0.049	0.117	64.99.162	13.238	2.420	-9999.990	-9999.990
80.160	90.473	136.759	0.009	0.049	0.117	64.99.162	13.238	2.420	-9999.990	-9999.990
80.220	118.133	144.186	0.010	0.045	0.120	72.92.166	12.205	2.665	-9999.990	-9999.990
80.280	118.133	144.186	0.010	0.045	0.120	72.92.166	12.205	2.665	-9999.990	-9999.990
80.340	138.255	151.454	0.010	0.045	0.120	72.92.166	12.205	2.665	-9999.990	-9999.990
80.400	98.016	151.454	0.011	0.042	0.123	79.85.170	11.328	2.961	-9999.990	-9999.990
80.460	98.016	158.298	0.011	0.042	0.123	79.85.170	11.328	2.961	-9999.990	-9999.990
80.520	105.558	165.896	0.012	0.038	0.126	87.77.175	10.577	3.328	-9999.990	-9999.990
80.580	105.559	165.896	0.013	0.034	0.130	95.69.180	9.912	3.805	-9999.990	-9999.990
80.640	95.502	175.957	0.013	0.034	0.130	95.69.180	9.912	3.805	-9999.990	-9999.990
80.700	131.268	175.957	0.013	0.034	0.130	95.69.180	9.912	3.805	-9999.990	-9999.990
80.760	131.268	190.430	0.013	0.034	0.130	95.69.180	9.912	3.805	-9999.990	-9999.990
80.820	92.987	217.535	0.013	0.034	0.130	95.69.180	9.912	3.805	-9999.990	-9999.990
80.880	92.987	217.535	0.013	0.034	0.130	95.69.180	9.912	3.805	-9999.990	-9999.990
80.940	123.163	264.319	0.013	0.034	0.130	95.69.180	9.912	3.805	-9999.990	-9999.990
81.000	118.133	-9999.990	0.014	0.030	0.133	104.61.185	9.326	4.441	-9999.990	-9999.990
81.060	118.133	-9999.990	0.014	0.030	0.133	104.61.185	9.326	4.441	-9999.990	-9999.990
81.120	103.045	-9999.990	0.014	0.030	0.133	104.61.185	9.326	4.441	-9999.990	-9999.990
81.180	103.045	-9999.990	0.014	0.030	0.134	100.61.187	9.731	4.435	-9999.990	-9999.990
81.240	110.588	-9999.990	0.014	0.030	0.134	100.61.187	9.731	4.435	-9999.990	-9999.990
81.300	85.447	-9999.990	0.014	0.030	0.134	100.61.187	9.731	4.435	-9999.990	-9999.990
81.360	85.444	-9999.990	0.014	0.030	0.134	100.61.187	9.731	4.435	-9999.990	-9999.990
81.420	120.090	-9999.990	0.014	0.030	0.134	100.61.187	9.731	4.435	0.693	6.175
81.480	120.090	-9999.990	0.014	0.030	0.134	100.61.187	9.731	4.435	-9999.990	-9999.990
81.540	85.444	-9999.990	0.015	0.026	0.138	110.53.192	9.168	5.315	-9999.990	-9999.990
81.600	90.472	-9999.990	0.015	0.026	0.138	110.53.192	9.168	5.315	-9999.990	-9999.990
81.660	90.473	-9999.990	0.015	0.026	0.138	110.53.192	9.168	5.316	-9999.990	-9999.990
81.720	111.707	-9999.990	0.016	0.021	0.142	119.43.198	8.669	6.626	-9999.990	-9999.990
81.780	111.707	-9999.990	0.016	0.022	0.143	116.44.200	9.025	6.614	-9999.990	-9999.990
81.840	123.163	-9999.990	0.016	0.022	0.143	116.44.200	9.025	6.614	-9999.990	-9999.990
81.900	89.101	-9999.990	0.015	0.022	0.145	112.44.203	9.414	6.601	-9999.990	-9999.990
81.960	89.101	-9999.990	0.015	0.022	0.146	108.45.205	9.835	6.589	-9999.990	-9999.990
82.020	89.101	-9999.990	0.015	0.022	0.146	108.45.205	9.835	6.589	-9999.990	-9999.990
82.080	89.101	-9999.990	0.016	0.017	0.151	118.35.211	9.261	8.726	-9999.990	-9999.990
82.140	117.292	-9999.990	0.016	0.017	0.152	115.35.214	9.669	8.705	-9999.990	-9999.990
82.200	98.437	-9999.990	0.017	0.012	0.159	121.25.223	9.506	12.814	-9999.990	-9999.990
82.260	98.435	-9999.990	0.017	0.012	0.159	121.25.223	9.506	12.814	-9999.990	-9999.990
82.320	82.571	-9999.990	0.017	0.012	0.159	121.25.223	9.506	12.814	-9999.990	-9999.990
82.380	82.571	-9999.990	0.017	0.012	0.159	121.25.223	9.506	12.814	-9999.990	-9999.990
82.440	93.346	-9999.990	0.018	0.007	0.164	133.13.231	8.976	24.075	-9999.990	-9999.990
82.500	84.367	-9999.990	0.018	0.007	0.164	133.13.231	8.976	24.075	-9999.990	-9999.990
82.560	84.367	-9999.990	0.018	0.007	0.164	133.13.231	8.976	24.075	-9999.990	-9999.990
82.620	81.190	-9999.990	0.018	0.007	0.164	133.13.231	8.976	24.075	-9999.990	-9999.990
82.680	81.190	-9999.990	0.018	0.007	0.164	133.13.231	8.976	24.075	-9999.990	-9999.990
82.740	87.959	-9999.990	0.020	0.001	0.169	145.1.239	8.509	177.550	-9999.990	-9999.990
82.800	105.919	-9999.990	0.019	0.001	0.173	137.2.245	9.201	162.132	-9999.990	-9999.990
82.860	105.919	-9999.990	0.019	0.001	0.173	137.2.245	9.201	162.106	-9999.990	-9999.990
82.920	87.960	-9999.990	0.018	0.001	0.175	133.2.248	9.597	155.286	-9999.990	-9999.990
82.980	87.959	-9999.990	0.018	0.001	0.175	133.2.248	9.597	155.286	-9999.990	-9999.990
83.040	108.388	-9999.990	0.018	0.001	0.175	133.2.248	9.597	155.274	-9999.990	-9999.990
83.100	65.966	-9999.990	0.018	0.001	0.175	133.2.248	9.597	155.282	-9999.990	-9999.990
83.160	65.962	-9999.990	0.019	0.000	0.173	139.0.246	9.068	-9999.990	-9999.990	-9999.990
83.220	105.245	-9999.990	0.019	0.000	0.173	139.0.246	9.068	-9999.990	-9999.990	-9999.990
83.280	105.245	-9999.990	0.019	0.000	0.173	139.0.246	9.068	-9999.990	-9999.990	-9999.990
83.340	83.247	-9999.990	0.019	0.000	0.173	139.0.246	9.068	-9999.990	-9999.990	-9999.990
83.400	103.883	-9999.990	0.019	0.000	0.176	135.0.249	9.448	-9999.990	-9999.990	-9999.990
83.460	103.883	-9999.990	0.018	0.000	0.178	131.0.252	9.866	-9999.990	-9999.990	-9999.990
83.520	98.959	-9999.990	0.018	0.000	0.178	131.0.252	9.866	-9999.990	-9999.990	-9999.990

Note:
R.G.B - Red/Green/Blue color values, each between 0 and 255, corresponding to GR_KRAT, GR_URAT and GR_THRAT, respectively
GR_KRAT, GR_URAT, GR_THRAT - Ratios of K, U, and Th to Total Gamma Ray, values used to create color cube values
-9999.99 - no data

Boring DD2-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
0.000	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	0.000	0.000
0.060	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.120	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.180	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.240	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.300	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.360	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.420	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.480	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.540	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.600	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.660	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.720	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.780	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.840	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.900	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
0.960	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.020	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.080	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.140	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.200	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.260	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.320	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.380	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.440	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.500	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.560	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.620	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.680	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.740	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.800	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.860	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.920	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
1.980	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.040	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.100	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.160	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.220	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.280	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.340	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.400	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.460	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.520	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.580	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.640	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.700	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.760	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.820	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.880	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
2.940	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.000	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.060	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.120	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.180	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.240	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.300	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.360	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.420	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.480	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.540	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.600	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.660	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.720	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.780	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.840	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.900	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
3.960	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.020	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.080	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.140	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.200	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
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Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
4.260	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.320	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.380	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.440	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.500	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.560	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.620	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.680	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.740	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.800	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.860	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.920	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
4.980	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.040	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.100	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.160	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.220	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.280	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.340	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.400	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.460	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.520	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.580	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.640	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.700	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.760	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.820	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.880	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
5.940	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
6.000	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
6.060	-9999.990	-9999.990	-9999.990	-9999.990	-9999.990		-9999.990	-9999.990	-9999.990	-9999.990
6.120	71.200	-9999.990	0.020	0.000	0.150	146.0.213	6.390	-9999.990	-9999.990	-9999.990
6.180	73.290	-9999.990	0.020	0.000	0.150	146.0.213	6.450	-9999.990	-9999.990	-9999.990
6.240	73.290	-9999.990	0.020	0.000	0.160	146.0.227	6.790	-9999.990	-9999.990	-9999.990
6.300	83.770	-9999.990	0.020	0.000	0.160	146.0.227	6.790	-9999.990	-9999.990	-9999.990
6.360	83.770	-9999.990	0.020	0.000	0.160	146.0.227	6.890	-9999.990	-9999.990	-9999.990
6.420	52.351	-9999.990	0.020	0.000	0.160	146.0.227	6.550	-9999.990	-9999.990	-9999.990
6.480	75.389	-9999.990	0.020	0.000	0.150	146.0.213	6.390	-9999.990	-9999.990	-9999.990
6.540	75.390	-9999.990	0.020	0.000	0.150	146.0.213	6.250	-9999.990	-9999.990	-9999.990
6.600	81.670	-9999.990	0.020	0.000	0.150	146.0.213	6.250	-9999.990	-9999.990	-9999.990
6.660	81.670	-9999.990	0.020	0.000	0.150	146.0.213	6.450	-9999.990	-9999.990	-9999.990
6.720	60.730	-9999.990	0.020	0.000	0.150	146.0.213	6.450	-9999.990	-9999.990	-9999.990
6.780	64.910	-9999.990	0.020	0.000	0.150	146.0.213	6.450	-9999.990	-9999.990	-9999.990
6.840	64.910	-9999.990	0.020	0.000	0.150	146.0.213	6.300	-9999.990	-9999.990	-9999.990
6.900	79.579	-9999.990	0.020	0.000	0.150	146.0.213	6.300	-9999.990	-9999.990	-9999.990
6.960	79.580	-9999.990	0.020	0.000	0.150	146.0.213	6.440	-9999.990	-9999.990	-9999.990
7.020	48.160	-9999.990	0.020	0.000	0.160	146.0.227	6.630	-9999.990	-9999.990	-9999.990
7.080	62.820	-9999.990	0.020	0.000	0.160	146.0.227	6.680	-9999.990	-9999.990	-9999.990
7.140	62.820	-9999.990	0.020	0.000	0.160	146.0.227	6.740	-9999.990	-9999.990	-9999.990
7.200	56.540	-9999.990	0.020	0.000	0.160	146.0.227	6.960	-9999.990	-9999.990	-9999.990
7.260	56.540	-9999.990	0.020	0.000	0.160	146.0.227	7.420	-9999.990	-9999.990	-9999.990
7.320	67.650	-9999.990	0.020	0.000	0.160	146.0.227	7.580	-9999.990	-9999.990	-9999.990
7.380	64.910	-9999.990	0.020	0.000	0.160	146.0.227	7.580	-9999.990	-9999.990	-9999.990
7.440	64.910	-9999.990	0.020	0.000	0.160	146.0.227	7.580	-9999.990	-9999.990	-9999.990
7.500	54.441	-9999.990	0.020	0.000	0.170	146.0.241	8.120	-9999.990	-9999.990	-9999.990
7.560	54.440	54.221	0.020	0.000	0.170	146.0.241	8.120	-9999.990	-9999.990	-9999.990
7.620	58.630	54.910	0.020	0.000	0.170	146.0.241	8.120	-9999.990	-9999.990	-9999.990
7.680	81.670	56.271	0.020	0.000	0.170	146.0.241	8.120	-9999.990	-9999.990	-9999.990
7.740	81.670	56.271	0.020	0.000	0.170	146.0.241	8.660	-9999.990	-9999.990	-9999.990
7.800	42.712	57.620	0.020	0.000	0.170	146.0.241	8.460	-9999.990	-9999.990	-9999.990
7.860	42.710	57.620	0.020	0.000	0.170	146.0.241	8.260	-9999.990	-9999.990	-9999.990
7.920	67.850	59.347	0.020	0.000	0.170	146.0.241	7.970	-9999.990	-9999.990	-9999.990
7.980	72.600	60.264	0.020	0.000	0.170	146.0.241	8.220	-9999.990	-9999.990	-9999.990
8.040	72.600	60.264	0.020	0.000	0.170	146.0.241	8.220	-9999.990	-9999.990	-9999.990
8.100	80.420	61.865	0.020	0.000	0.170	146.0.241	8.220	-9999.990	-9999.990	-9999.990
8.160	80.420	61.865	0.020	0.000	0.170	146.0.241	8.220	-9999.990	-9999.990	-9999.990
8.220	85.440	63.825	0.020	0.000	0.170	146.0.241	9.080	-9999.990	-9999.990	-9999.990
8.280	80.420	65.582	0.020	0.000	0.170	146.0.241	9.080	-9999.990	-9999.990	-9999.990
8.340	80.420	65.582	0.020	0.000	0.170	146.0.241	8.860	-9999.990	-9999.990	-9999.990
8.400	94.940	67.710	0.020	0.000	0.170	146.0.241	8.640	-9999.990	-9999.990	-9999.990
8.460	94.940	67.710	0.020	0.000	0.170	146.0.241	8.640	-9999.990	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
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Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
8.520	87.960	69.284	0.020	0.000	0.170	146.0.241	8.720	-9999.990	-9999.990	-9999.990
8.580	98.019	70.858	0.020	0.000	0.170	146.0.241	8.720	-9999.990	-9999.990	-9999.990
8.640	98.020	70.858	0.020	0.000	0.170	146.0.241	8.720	-9999.990	-9999.990	-9999.990
8.700	103.050	72.404	0.020	0.000	0.170	146.0.241	8.540	-9999.990	-9999.990	-9999.990
8.760	103.050	72.404	0.020	0.000	0.170	146.0.241	8.540	-9999.990	-9999.990	-9999.990
8.820	120.649	73.316	0.020	0.000	0.170	146.0.241	8.400	-9999.990	-9999.990	-9999.990
8.880	121.110	74.563	0.020	0.000	0.170	146.0.241	8.400	-9999.990	-9999.990	-9999.990
8.940	121.110	74.563	0.020	0.000	0.170	146.0.241	8.240	-9999.990	-9999.990	-9999.990
9.000	95.500	75.054	0.020	0.000	0.170	146.0.241	8.240	-9999.990	-9999.990	-9999.990
9.060	108.070	75.054	0.020	0.000	0.170	146.0.241	8.090	-9999.990	-9999.990	-9999.990
9.120	108.070	75.696	0.020	0.000	0.170	146.0.241	8.150	-9999.990	-9999.990	-9999.990
9.180	103.050	76.373	0.020	0.000	0.170	146.0.241	8.000	-9999.990	-9999.990	-9999.990
9.240	103.050	76.373	0.020	0.000	0.170	146.0.241	8.060	-9999.990	-9999.990	-9999.990
9.300	120.650	76.397	0.020	0.000	0.170	146.0.241	8.060	-9999.990	-9999.990	-9999.990
9.360	85.440	76.397	0.020	0.000	0.170	146.0.241	8.260	-9999.990	-9999.990	-9999.990
9.420	85.440	76.613	0.020	0.000	0.170	146.0.241	8.310	-9999.990	-9999.990	-9999.990
9.480	103.049	76.721	0.020	0.000	0.170	146.0.241	8.310	-9999.990	-9999.990	-9999.990
9.540	103.050	76.721	0.020	0.000	0.170	146.0.241	8.310	-9999.990	-9999.990	-9999.990
9.600	125.680	75.912	0.020	0.000	0.170	146.0.241	8.310	-9999.990	-9999.990	-9999.990
9.660	87.960	75.912	0.020	0.000	0.170	146.0.241	8.170	-9999.990	-9999.990	-9999.990
9.720	87.960	75.474	0.020	0.000	0.170	146.0.241	8.170	-9999.990	-9999.990	-9999.990
9.780	100.530	73.429	0.020	0.000	0.170	146.0.241	8.170	-9999.990	-9999.990	-9999.990
9.840	100.530	73.429	0.020	0.000	0.170	146.0.241	8.170	-9999.990	-9999.990	-9999.990
9.900	143.287	71.649	0.020	0.000	0.170	146.0.241	8.170	-9999.990	-9999.990	-9999.990
9.960	120.090	71.649	0.020	0.000	0.170	146.0.241	7.980	-9999.990	-9999.990	-9999.990
10.020	120.090	68.627	0.020	0.000	0.170	146.0.241	7.980	-9999.990	-9999.990	-9999.990
10.080	103.320	66.001	0.020	0.000	0.170	146.0.241	7.980	-9999.990	-9999.990	-9999.990
10.140	103.320	66.001	0.020	0.000	0.170	146.0.241	7.980	-9999.990	-9999.990	-9999.990
10.200	95.500	63.609	0.020	0.000	0.170	146.0.241	7.860	-9999.990	-9999.990	-9999.990
10.260	97.740	63.609	0.020	0.000	0.170	146.0.241	7.860	-9999.990	-9999.990	-9999.990
10.320	97.740	60.696	0.020	0.000	0.170	146.0.241	8.020	-9999.990	-9999.990	-9999.990
10.380	97.740	58.537	0.020	0.000	0.170	146.0.241	8.020	-9999.990	-9999.990	-9999.990
10.440	97.740	58.537	0.020	0.000	0.170	146.0.241	7.900	-9999.990	-9999.990	-9999.990
10.500	87.961	56.055	0.020	0.000	0.170	146.0.241	7.790	-9999.990	-9999.990	-9999.990
10.560	89.360	56.055	0.020	0.000	0.170	146.0.241	7.790	-9999.990	-9999.990	-9999.990
10.620	89.360	54.599	0.020	0.000	0.160	146.0.227	7.680	-9999.990	1.257	1.946
10.680	67.010	52.764	0.020	0.000	0.160	146.0.227	7.470	-9999.990	-9999.990	-9999.990
10.740	67.010	52.764	0.020	0.000	0.160	146.0.227	7.470	-9999.990	-9999.990	-9999.990
10.800	100.529	51.673	0.020	0.000	0.160	146.0.227	7.470	-9999.990	-9999.990	-9999.990
10.860	47.743	50.336	0.020	0.000	0.160	146.0.227	7.470	-9999.990	-9999.990	-9999.990
10.920	47.740	50.336	0.020	0.000	0.160	146.0.227	7.620	-9999.990	-9999.990	-9999.990
10.980	72.600	49.041	0.020	0.000	0.160	146.0.227	7.620	-9999.990	-9999.990	-9999.990
11.040	72.600	49.041	0.020	0.000	0.160	146.0.227	7.620	-9999.990	-9999.990	-9999.990
11.100	40.200	47.099	0.020	0.000	0.160	146.0.227	7.620	-9999.990	-9999.990	-9999.990
11.160	72.599	45.378	0.020	0.000	0.160	146.0.227	7.510	-9999.990	-9999.990	-9999.990
11.220	72.600	45.378	0.020	0.000	0.160	146.0.227	7.590	-9999.990	-9999.990	-9999.990
11.280	82.930	43.483	0.020	0.000	0.170	146.0.241	7.860	-9999.990	-9999.990	-9999.990
11.340	82.930	43.483	0.020	0.000	0.170	146.0.241	8.050	-9999.990	0.907	2.403
11.400	61.420	40.894	0.020	0.000	0.170	146.0.241	8.050	-9999.990	-9999.990	-9999.990
11.460	70.360	38.244	0.020	0.000	0.170	146.0.241	8.000	-9999.990	-9999.990	-9999.990
11.520	70.360	38.244	0.020	0.000	0.170	146.0.241	7.770	-9999.990	-9999.990	-9999.990
11.580	44.672	34.317	0.020	0.000	0.170	146.0.241	7.880	-9999.990	-9999.990	-9999.990
11.640	44.670	34.317	0.020	0.000	0.160	146.0.227	7.760	-9999.990	-9999.990	-9999.990
11.700	57.790	30.390	0.020	0.000	0.160	146.0.227	7.720	-9999.990	-9999.990	-9999.990
11.760	50.250	30.210	0.020	0.000	0.160	146.0.227	7.640	-9999.990	-9999.990	-9999.990
11.820	50.250	30.210	0.020	0.000	0.160	146.0.227	7.640	-9999.990	-9999.990	-9999.990
11.880	67.849	29.940	0.020	0.000	0.160	146.0.227	7.640	-9999.990	-9999.990	-9999.990
11.940	67.850	29.940	0.020	0.000	0.160	146.0.227	7.640	-9999.990	-9999.990	-9999.990
12.000	53.050	30.048	0.020	0.000	0.160	146.0.227	7.640	-9999.990	-9999.990	-9999.990
12.060	42.710	28.531	0.020	0.000	0.160	146.0.227	7.710	-9999.990	-9999.990	-9999.990
12.120	42.710	28.531	0.020	0.000	0.170	146.0.241	7.940	-9999.990	-9999.990	-9999.990
12.180	58.629	27.728	0.020	0.000	0.170	146.0.241	8.070	-9999.990	-9999.990	-9999.990
12.240	58.630	27.728	0.020	0.000	0.170	146.0.241	7.900	-9999.990	-9999.990	-9999.990
12.300	50.250	26.595	0.020	0.000	0.170	146.0.241	7.820	-9999.990	-9999.990	-9999.990
12.360	62.820	25.894	0.020	0.000	0.160	146.0.227	7.720	-9999.990	-9999.990	-9999.990
12.420	62.820	25.894	0.020	0.000	0.170	146.0.241	7.890	-9999.990	-9999.990	-9999.990
12.480	27.921	25.192	0.020	0.000	0.170	146.0.241	7.880	-9999.990	-9999.990	-9999.990
12.540	27.920	25.192	0.020	0.000	0.160	146.0.227	7.330	-9999.990	-9999.990	-9999.990
12.600	47.459	24.635	0.020	0.000	0.160	146.0.227	7.330	-9999.990	-9999.990	-9999.990
12.660	50.250	24.113	0.020	0.000	0.160	146.0.227	7.380	-9999.990	-9999.990	-9999.990
12.720	50.250	24.113	0.020	0.000	0.160	146.0.227	7.190	-9999.990	-9999.990	-9999.990

Boring DD2-BK
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ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
12.780	61.420	23.088	0.020	0.000	0.160	146.0.227	7.330	-9999.990	-9999.990	-9999.990
12.840	61.420	23.088	0.020	0.000	0.160	146.0.227	7.330	-9999.990	-9999.990	-9999.990
12.900	47.461	22.818	0.020	0.000	0.160	146.0.227	7.470	-9999.990	-9999.990	-9999.990
12.960	58.630	22.224	0.020	0.000	0.160	146.0.227	7.330	-9999.990	-9999.990	-9999.990
13.020	58.630	22.224	0.020	0.000	0.160	146.0.227	7.330	-9999.990	-9999.990	-9999.990
13.080	47.740	21.877	0.020	0.000	0.160	146.0.227	7.520	-9999.990	-9999.990	-9999.990
13.140	47.740	21.877	0.020	0.000	0.160	146.0.227	7.520	-9999.990	-9999.990	-9999.990
13.200	27.921	21.145	0.020	0.000	0.160	146.0.227	7.670	-9999.990	-9999.990	-9999.990
13.260	40.199	21.307	0.020	0.000	0.160	146.0.227	7.760	-9999.990	-9999.990	-9999.990
13.320	40.200	21.307	0.020	0.000	0.160	146.0.227	7.760	-9999.990	-9999.990	-9999.990
13.380	64.220	20.390	0.020	0.000	0.160	146.0.227	7.760	-9999.990	-9999.990	-9999.990
13.440	64.220	20.390	0.020	0.000	0.170	146.0.241	7.970	-9999.990	-9999.990	-9999.990
13.500	67.850	20.318	0.020	0.000	0.170	146.0.241	8.120	-9999.990	-9999.990	-9999.990
13.560	36.292	20.660	0.020	0.000	0.170	146.0.241	7.910	-9999.990	-9999.990	-9999.990
13.620	36.290	20.660	0.020	0.000	0.170	146.0.241	7.910	-9999.990	-9999.990	-9999.990
13.680	45.230	20.066	0.020	0.000	0.170	146.0.241	7.910	-9999.990	-9999.990	-9999.990
13.740	45.230	20.066	0.020	0.000	0.170	146.0.241	7.910	-9999.990	-9999.990	-9999.990
13.800	52.770	19.179	0.020	0.000	0.170	146.0.241	7.910	-9999.990	-9999.990	-9999.990
13.860	50.250	18.717	0.020	0.000	0.170	146.0.241	7.970	-9999.990	-9999.990	-9999.990
13.920	50.250	18.717	0.020	0.000	0.170	146.0.241	7.970	-9999.990	-9999.990	-9999.990
13.980	45.230	18.100	0.020	0.000	0.170	146.0.241	7.970	-9999.990	-9999.990	-9999.990
14.040	45.230	18.100	0.020	0.000	0.170	146.0.241	8.130	-9999.990	-9999.990	-9999.990
14.100	30.710	18.070	0.020	0.000	0.170	146.0.241	7.960	-9999.990	-9999.990	-9999.990
14.160	50.250	17.962	0.020	0.000	0.170	146.0.241	7.960	-9999.990	-9999.990	-9999.990
14.220	50.250	17.962	0.020	0.000	0.170	146.0.241	7.970	-9999.990	-9999.990	-9999.990
14.280	52.770	17.207	0.020	0.000	0.170	146.0.241	7.970	-9999.990	-9999.990	-9999.990
14.340	52.770	17.207	0.020	0.000	0.170	146.0.241	7.810	-9999.990	-9999.990	-9999.990
14.400	33.500	16.301	0.020	0.000	0.160	146.0.227	7.750	-9999.990	-9999.990	-9999.990
14.460	60.309	16.019	0.020	0.000	0.160	146.0.227	7.750	-9999.990	-9999.990	-9999.990
14.520	60.310	16.019	0.020	0.000	0.160	146.0.227	7.700	-9999.990	-9999.990	-9999.990
14.580	50.251	15.588	0.020	0.000	0.160	146.0.227	7.500	-9999.990	-9999.990	-9999.990
14.640	50.250	15.588	0.020	0.000	0.160	146.0.227	7.310	-9999.990	-9999.990	-9999.990
14.700	39.080	16.127	0.020	0.000	0.160	146.0.227	7.180	-9999.990	-9999.990	-9999.990
14.760	57.790	15.702	0.020	0.000	0.160	146.0.227	7.180	-9999.990	-9999.990	-9999.990
14.820	57.790	15.702	0.020	0.000	0.160	146.0.227	7.310	-9999.990	-9999.990	-9999.990
14.880	67.010	15.642	0.020	0.000	0.160	146.0.227	7.310	-9999.990	-9999.990	-9999.990
14.940	67.010	15.642	0.020	0.000	0.160	146.0.227	7.310	-9999.990	-9999.990	-9999.990
15.000	50.250	15.642	0.020	0.000	0.160	146.0.227	7.450	-9999.990	-9999.990	-9999.990
15.060	55.840	15.588	0.020	0.000	0.160	146.0.227	7.590	-9999.990	-9999.990	-9999.990
15.120	55.840	15.588	0.020	0.000	0.160	146.0.227	7.450	-9999.990	-9999.990	-9999.990
15.180	42.710	15.534	0.020	0.000	0.160	146.0.227	7.450	-9999.990	-9999.990	-9999.990
15.240	42.710	15.534	0.020	0.000	0.160	146.0.227	7.450	-9999.990	-9999.990	-9999.990
15.300	41.880	15.642	0.020	0.000	0.160	146.0.227	7.260	-9999.990	-9999.990	-9999.990
15.360	55.280	15.522	0.020	0.000	0.160	146.0.227	7.090	-9999.990	-9999.990	-9999.990
15.420	55.280	15.522	0.020	0.000	0.160	146.0.227	7.090	-9999.990	-9999.990	-9999.990
15.480	55.840	16.181	0.020	0.000	0.160	146.0.227	7.400	-9999.990	-9999.990	-9999.990
15.540	55.840	16.181	0.020	0.000	0.160	146.0.227	7.390	-9999.990	-9999.990	-9999.990
15.600	30.151	20.138	0.020	0.000	0.160	146.0.227	7.080	-9999.990	-9999.990	-9999.990
15.660	44.670	21.097	0.020	0.000	0.160	146.0.227	7.080	-9999.990	-9999.990	-9999.990
15.720	44.670	21.097	0.020	0.000	0.160	146.0.227	7.080	-9999.990	-9999.990	-9999.990
15.780	25.121	20.552	0.020	0.000	0.160	146.0.227	6.730	-9999.990	-9999.990	-9999.990
15.840	45.230	20.552	0.020	0.000	0.150	146.0.213	6.440	-9999.990	-9999.990	-9999.990
15.900	45.230	21.217	0.020	0.000	0.150	146.0.213	6.290	-9999.990	-9999.990	-9999.990
15.960	50.250	20.918	0.020	0.000	0.160	146.0.227	6.640	-9999.990	-9999.990	-9999.990
16.020	50.250	20.918	0.020	0.000	0.160	146.0.227	6.890	-9999.990	-9999.990	-9999.990
16.080	50.250	20.678	0.020	0.000	0.160	146.0.227	6.760	-9999.990	-9999.990	-9999.990
16.140	53.050	20.678	0.020	0.000	0.160	146.0.227	6.590	-9999.990	-9999.990	-9999.990
16.200	53.050	21.199	0.020	0.000	0.150	146.0.213	6.430	-9999.990	-9999.990	-9999.990
16.260	42.711	21.337	0.020	0.000	0.150	146.0.213	6.390	-9999.990	-9999.990	-9999.990
16.320	42.710	21.337	0.020	0.000	0.150	146.0.213	6.200	-9999.990	-9999.990	-9999.990
16.380	53.050	21.157	0.020	0.000	0.150	146.0.213	6.200	-9999.990	-9999.990	-9999.990
16.440	57.790	21.157	0.020	0.000	0.150	146.0.213	6.200	-9999.990	-9999.990	-9999.990
16.500	57.790	20.930	0.020	0.000	0.150	146.0.213	6.060	-9999.990	-9999.990	-9999.990
16.560	44.671	20.558	0.020	0.000	0.150	146.0.213	6.480	-9999.990	-9999.990	-9999.990
16.620	44.670	20.558	0.020	0.000	0.160	146.0.227	6.610	-9999.990	-9999.990	-9999.990
16.680	57.790	20.822	0.020	0.000	0.160	146.0.227	6.750	-9999.990	-9999.990	-9999.990
16.740	47.460	20.822	0.020	0.000	0.160	146.0.227	6.560	-9999.990	-9999.990	-9999.990
16.800	47.460	21.157	0.020	0.000	0.160	146.0.227	6.560	-9999.990	-9999.990	-9999.990
16.860	36.290	21.037	0.020	0.000	0.160	146.0.227	6.560	-9999.990	-9999.990	-9999.990
16.920	36.290	21.037	0.020	0.000	0.160	146.0.227	6.700	-9999.990	-9999.990	-9999.990
16.980	47.459	20.498	0.020	0.000	0.160	146.0.227	6.700	-9999.990	-9999.990	-9999.990

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Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
17.040	32.660	20.498	0.020	0.000	0.160	146.0.227	6.600	-9999.990	-9999.990	-9999.990
17.100	32.660	21.457	0.020	0.000	0.150	146.0.213	6.230	-9999.990	-9999.990	-9999.990
17.160	36.290	21.307	0.020	0.000	0.150	146.0.213	6.230	-9999.990	-9999.990	-9999.990
17.220	36.290	21.307	0.030	0.000	0.150	219.0.213	5.910	-9999.990	-9999.990	-9999.990
17.280	33.500	21.577	0.030	0.000	0.150	219.0.213	5.730	-9999.990	-9999.990	-9999.990
17.340	39.080	21.577	0.030	0.000	0.150	219.0.213	5.560	-9999.990	-9999.990	-9999.990
17.400	39.080	22.063	0.030	0.000	0.140	219.0.199	5.270	-9999.990	-9999.990	-9999.990
17.460	35.170	21.997	0.030	0.000	0.130	219.0.184	4.650	-9999.990	-9999.990	-9999.990
17.520	35.170	21.997	0.030	0.000	0.130	219.0.184	4.550	-9999.990	-9999.990	-9999.990
17.580	55.839	22.296	0.030	0.000	0.140	219.0.199	4.740	-9999.990	-9999.990	-9999.990
17.640	35.172	22.296	0.030	0.000	0.130	219.0.184	4.660	-9999.990	-9999.990	-9999.990
17.700	35.170	22.386	0.030	0.000	0.130	219.0.184	4.580	-9999.990	-9999.990	-9999.990
17.760	44.670	22.177	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
17.820	44.670	22.177	0.030	0.000	0.130	219.0.184	4.250	-9999.990	-9999.990	-9999.990
17.880	42.710	22.386	0.030	0.000	0.130	219.0.184	4.250	-9999.990	-9999.990	-9999.990
17.940	47.460	22.177	0.030	0.000	0.130	219.0.184	4.410	-9999.990	-9999.990	-9999.990
18.000	47.460	22.177	0.030	0.000	0.130	219.0.184	4.480	-9999.990	-9999.990	-9999.990
18.060	45.230	22.177	0.030	0.000	0.130	219.0.184	4.600	-9999.990	-9999.990	-9999.990
18.120	45.230	22.177	0.030	0.000	0.130	219.0.184	4.500	-9999.990	-9999.990	-9999.990
18.180	30.711	22.057	0.030	0.000	0.130	219.0.184	4.500	-9999.990	-9999.990	-9999.990
18.240	47.739	22.332	0.030	0.000	0.130	219.0.184	4.500	-9999.990	-9999.990	-9999.990
18.300	47.740	22.332	0.030	0.000	0.130	219.0.184	4.320	-9999.990	-9999.990	-9999.990
18.360	30.710	22.416	0.030	0.000	0.130	219.0.184	4.320	-9999.990	-9999.990	-9999.990
18.420	30.710	22.416	0.030	0.000	0.130	219.0.184	4.390	-9999.990	-9999.990	-9999.990
18.480	25.120	23.495	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
18.540	55.839	24.215	0.030	0.000	0.130	219.0.184	4.460	-9999.990	-9999.990	-9999.990
18.600	55.840	24.215	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
18.660	64.219	23.412	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
18.720	64.220	23.412	0.030	0.000	0.130	219.0.184	4.430	-9999.990	-9999.990	-9999.990
18.780	32.660	23.376	0.030	0.000	0.130	219.0.184	4.360	-9999.990	-9999.990	-9999.990
18.840	50.249	23.088	0.030	0.000	0.120	219.0.170	3.890	-9999.990	-9999.990	-9999.990
18.900	50.250	23.088	0.030	0.000	0.120	219.0.170	3.890	-9999.990	-9999.990	-9999.990
18.960	36.291	22.836	0.030	0.000	0.120	219.0.170	3.550	-9999.990	-9999.990	-9999.990
19.020	36.290	22.836	0.030	0.000	0.120	219.0.170	3.620	-9999.990	-9999.990	-9999.990
19.080	37.690	22.872	0.030	0.000	0.120	219.0.170	3.620	-9999.990	-9999.990	-9999.990
19.140	39.080	22.536	0.030	0.000	0.120	219.0.170	3.700	-9999.990	-9999.990	-9999.990
19.200	39.080	22.536	0.030	0.000	0.120	219.0.170	3.670	-9999.990	-9999.990	-9999.990
19.260	69.798	22.596	0.030	0.000	0.120	219.0.170	3.750	-9999.990	-9999.990	-9999.990
19.320	69.800	22.596	0.030	0.000	0.120	219.0.170	3.730	-9999.990	-9999.990	-9999.990
19.380	42.710	22.872	0.030	0.000	0.120	219.0.170	3.730	-9999.990	-9999.990	-9999.990
19.440	50.250	22.596	0.030	0.000	0.120	219.0.170	3.830	-9999.990	-9999.990	-9999.990
19.500	50.250	22.596	0.030	0.000	0.120	219.0.170	3.650	-9999.990	-9999.990	-9999.990
19.560	41.880	22.278	0.040	0.000	0.110	255.0.156	2.950	-9999.990	-9999.990	-9999.990
19.620	41.880	22.278	0.040	0.000	0.110	255.0.156	2.950	-9999.990	-9999.990	-9999.990
19.680	37.690	22.536	0.040	0.000	0.110	255.0.156	2.950	-9999.990	-9999.990	-9999.990
19.740	33.500	22.138	0.040	0.000	0.110	255.0.156	2.960	-9999.990	-9999.990	-9999.990
19.800	33.500	22.138	0.040	0.000	0.110	255.0.156	2.970	-9999.990	-9999.990	-9999.990
19.860	35.170	21.739	0.040	0.000	0.110	255.0.156	2.970	-9999.990	-9999.990	-9999.990
19.920	35.170	21.739	0.040	0.000	0.110	255.0.156	2.970	-9999.990	-9999.990	-9999.990
19.980	33.500	22.117	0.040	0.000	0.110	255.0.156	2.970	-9999.990	-9999.990	-9999.990
20.040	47.740	21.817	0.040	0.000	0.110	255.0.156	3.130	-9999.990	-9999.990	-9999.990
20.100	47.740	21.817	0.040	0.000	0.110	255.0.156	3.130	-9999.990	-9999.990	-9999.990
20.160	58.630	21.307	0.040	0.000	0.110	255.0.156	3.130	-9999.990	-9999.990	-9999.990
20.220	58.630	21.307	0.040	0.000	0.110	255.0.156	3.130	-9999.990	-9999.990	-9999.990
20.280	35.171	21.337	0.040	0.000	0.110	255.0.156	3.130	-9999.990	-9999.990	-9999.990
20.340	55.838	21.037	0.030	0.000	0.110	219.0.156	3.300	82.570	-9999.990	-9999.990
20.400	55.840	21.037	0.030	0.000	0.110	219.0.156	3.300	82.570	-9999.990	-9999.990
20.460	42.710	20.498	0.030	0.000	0.110	219.0.156	3.200	-9999.990	-9999.990	-9999.990
20.520	42.710	20.498	0.030	0.000	0.110	219.0.156	3.280	-9999.990	-9999.990	-9999.990
20.580	33.501	20.606	0.030	0.000	0.110	219.0.156	3.360	-9999.990	-9999.990	-9999.990
20.640	37.690	20.558	0.030	0.000	0.110	219.0.156	3.390	71.490	-9999.990	-9999.990
20.700	37.690	20.558	0.030	0.000	0.110	219.0.156	3.480	69.270	-9999.990	-9999.990
20.760	39.080	20.174	0.030	0.020	0.110	219.40.156	3.950	7.192	-9999.990	-9999.990
20.820	39.080	20.174	0.030	0.020	0.110	219.40.156	3.950	7.190	-9999.990	-9999.990
20.880	30.710	20.258	0.030	0.020	0.110	219.40.156	3.950	7.190	-9999.990	-9999.990
20.940	55.279	19.718	0.030	0.020	0.110	219.40.156	3.950	7.190	-9999.990	-9999.990
21.000	55.280	19.718	0.030	0.010	0.110	219.20.156	3.840	7.220	-9999.990	-9999.990
21.060	64.220	19.473	0.030	0.010	0.110	219.20.156	3.600	13.020	-9999.990	-9999.990
21.120	64.220	19.473	0.030	0.010	0.110	219.20.156	3.600	13.020	-9999.990	-9999.990
21.180	45.231	19.539	0.030	0.010	0.110	219.20.156	3.600	13.020	-9999.990	-9999.990
21.240	27.921	19.100	0.030	0.010	0.110	219.20.156	3.600	13.020	-9999.990	-9999.990

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Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
21.300	27.920	19.100	0.030	0.010	0.110	219.20.156	3.600	13.020	-9999.990	-9999.990
21.360	33.500	18.639	0.030	0.010	0.110	219.20.156	3.730	7.250	-9999.990	-9999.990
21.420	33.500	18.639	0.030	0.010	0.110	219.20.156	3.730	7.250	-9999.990	-9999.990
21.480	39.080	18.999	0.030	0.010	0.110	219.20.156	3.730	7.250	-9999.990	-9999.990
21.540	47.740	18.663	0.030	0.010	0.110	219.20.156	3.730	7.250	-9999.990	-9999.990
21.600	47.740	18.663	0.030	0.020	0.110	219.40.156	3.960	7.200	-9999.990	-9999.990
21.660	41.881	18.759	0.030	0.020	0.110	219.40.156	3.960	7.200	-9999.990	-9999.990
21.720	41.880	18.759	0.030	0.010	0.110	219.20.156	3.850	7.230	-9999.990	-9999.990
21.780	33.500	18.663	0.030	0.020	0.110	219.40.156	3.960	7.200	-9999.990	-9999.990
21.840	-9999.990	17.021	0.030	0.010	0.110	219.20.156	3.850	7.230	-9999.990	-9999.990
21.900	-9999.990	17.021	0.030	0.010	0.110	219.20.156	3.850	7.230	-9999.990	-9999.990
21.960	-9999.990	16.541	0.030	0.010	0.110	219.20.156	3.740	7.250	-9999.990	-9999.990
22.020	-9999.990	16.541	0.030	0.010	0.100	219.20.142	3.520	7.310	-9999.990	-9999.990
22.080	44.670	16.775	0.030	0.010	0.100	219.20.142	3.610	7.280	-9999.990	-9999.990
22.140	47.740	16.601	0.030	0.010	0.100	219.20.142	3.390	7.340	-9999.990	-9999.990
22.200	47.740	16.601	0.030	0.010	0.100	219.20.142	3.300	7.370	-9999.990	-9999.990
22.260	44.670	16.451	0.030	0.010	0.100	219.20.142	3.300	7.370	-9999.990	-9999.990
22.320	44.670	16.451	0.030	0.010	0.100	219.20.142	3.300	7.370	-9999.990	-9999.990
22.380	35.170	15.102	0.030	0.010	0.100	219.20.142	3.300	7.370	-9999.990	-9999.990
22.440	36.290	12.105	0.030	0.010	0.100	219.20.142	3.300	7.370	-9999.990	-9999.990
22.500	36.290	12.105	0.030	0.010	0.100	219.20.142	3.210	7.400	-9999.990	-9999.990
22.560	22.610	10.126	0.030	0.010	0.100	219.20.142	3.290	7.370	-9999.990	-9999.990
22.620	33.499	10.126	0.030	0.010	0.110	219.20.156	3.260	13.220	-9999.990	-9999.990
22.680	33.500	10.006	0.030	0.010	0.110	219.20.156	3.340	13.140	-9999.990	-9999.990
22.740	27.640	9.113	0.030	0.000	0.110	219.0.156	3.320	61.520	-9999.990	-9999.990
22.800	27.640	9.113	0.030	0.000	0.110	219.0.156	3.300	-9999.990	-9999.990	-9999.990
22.860	44.670	9.826	0.030	0.000	0.110	219.0.156	3.300	-9999.990	-9999.990	-9999.990
22.920	32.661	9.826	0.030	0.000	0.110	219.0.156	3.300	-9999.990	-9999.990	-9999.990
22.980	32.660	9.826	0.030	0.000	0.110	219.0.156	3.300	-9999.990	-9999.990	-9999.990
23.040	50.250	8.681	0.030	0.000	0.110	219.0.156	3.380	-9999.990	-9999.990	-9999.990
23.100	50.250	8.681	0.030	0.000	0.110	219.0.156	3.380	-9999.990	-9999.990	-9999.990
23.160	27.921	8.747	0.030	0.000	0.110	219.0.156	3.380	-9999.990	-9999.990	-9999.990
23.220	40.200	8.747	0.040	0.000	0.110	255.0.156	3.110	-9999.990	-9999.990	-9999.990
23.280	40.200	8.867	0.040	0.000	0.110	255.0.156	3.110	-9999.990	-9999.990	-9999.990
23.340	53.049	8.412	0.040	0.000	0.110	255.0.156	3.110	-9999.990	-9999.990	-9999.990
23.400	53.050	8.412	0.030	0.030	0.070	219.61.99	2.310	2.670	-9999.990	-9999.990
23.460	40.200	8.447	0.030	0.030	0.070	219.61.99	2.390	2.080	-9999.990	-9999.990
23.520	19.541	8.447	0.030	0.030	0.070	219.61.99	2.470	2.040	-9999.990	-9999.990
23.580	19.540	8.681	0.030	0.040	0.070	219.81.99	2.570	1.680	-9999.990	-9999.990
23.640	22.610	8.088	0.030	0.040	0.070	219.81.99	2.570	1.680	-9999.990	-9999.990
23.700	22.610	8.088	0.030	0.040	0.070	219.81.99	2.570	1.680	-9999.990	-9999.990
23.760	50.250	8.088	0.030	0.040	0.070	219.81.99	2.570	1.680	-9999.990	-9999.990
23.820	25.121	8.088	0.030	0.040	0.070	219.81.99	2.570	1.680	-9999.990	-9999.990
23.880	25.120	8.328	0.020	0.040	0.060	146.81.85	2.590	1.420	-9999.990	-9999.990
23.940	39.080	8.388	0.020	0.040	0.060	146.81.85	2.590	1.420	-9999.990	-9999.990
24.000	39.080	8.388	0.030	0.040	0.070	219.81.99	2.570	1.650	-9999.990	-9999.990
24.060	50.250	8.735	0.030	0.040	0.070	219.81.99	2.480	1.660	-9999.990	-9999.990
24.120	67.850	8.735	0.030	0.040	0.060	219.81.85	2.400	1.660	-9999.990	-9999.990
24.180	67.850	8.328	0.030	0.040	0.060	219.81.85	2.400	1.660	-9999.990	-9999.990
24.240	25.122	8.987	0.030	0.040	0.070	219.81.99	2.470	1.660	-9999.990	-9999.990
24.300	25.120	8.987	0.030	0.030	0.070	219.61.99	2.390	1.980	-9999.990	-9999.990
24.360	40.199	9.113	0.030	0.030	0.070	219.61.99	2.390	1.980	-9999.990	-9999.990
24.420	35.170	9.113	0.030	0.030	0.070	219.61.99	2.460	1.970	-9999.990	-9999.990
24.480	35.170	9.170	0.030	0.030	0.070	219.61.99	2.460	1.970	-9999.990	-9999.990
24.540	50.250	9.227	0.030	0.030	0.070	219.61.99	2.460	1.970	-9999.990	-9999.990
24.600	50.250	9.227	0.030	0.030	0.070	219.61.99	2.460	1.970	-9999.990	-9999.990
24.660	37.691	9.706	0.030	0.030	0.070	219.61.99	2.460	1.970	-9999.990	-9999.990
24.720	33.500	9.227	0.030	0.030	0.070	219.61.99	2.460	1.970	-9999.990	-9999.990
24.780	33.500	9.227	0.030	0.030	0.070	219.61.99	2.310	1.980	-9999.990	-9999.990
24.840	57.789	9.587	0.030	0.030	0.070	219.61.99	2.370	1.980	-9999.990	-9999.990
24.900	57.790	9.587	0.030	0.040	0.060	219.81.85	2.460	1.630	-9999.990	-9999.990
24.960	22.612	9.599	0.030	0.040	0.070	219.81.99	2.540	1.630	-9999.990	-9999.990
25.020	70.355	9.047	0.030	0.040	0.060	219.81.85	2.380	1.630	-9999.990	-9999.990
25.080	70.360	9.047	0.030	0.040	0.060	219.81.85	2.380	1.630	-9999.990	-9999.990
25.140	47.460	9.047	0.030	0.040	0.060	219.81.85	2.380	1.630	-9999.990	-9999.990
25.200	47.460	9.047	0.030	0.040	0.060	219.81.85	2.450	1.630	-9999.990	-9999.990
25.260	37.691	9.599	0.030	0.040	0.060	219.81.85	2.450	1.630	0.780	2.396
25.320	36.290	9.167	0.030	0.040	0.060	219.81.85	2.380	1.630	-9999.990	-9999.990
25.380	36.290	9.167	0.030	0.040	0.060	219.81.85	2.390	1.390	-9999.990	-9999.990
25.440	40.200	9.107	0.030	0.040	0.060	219.81.85	2.390	1.390	-9999.990	-9999.990
25.500	40.200	9.107	0.030	0.040	0.060	219.81.85	2.450	1.390	-9999.990	-9999.990

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25.560	72.869	9.221	0.030	0.040	0.060	219.81.85	2.450	1.390	-9999.990	-9999.990
25.620	44.672	8.388	0.030	0.040	0.060	219.81.85	2.370	1.610	-9999.990	-9999.990
25.680	44.670	8.388	0.020	0.050	0.060	146.102.85	2.530	1.370	-9999.990	-9999.990
25.740	55.280	8.987	0.020	0.050	0.060	146.102.85	2.610	1.370	-9999.990	-9999.990
25.800	55.280	8.987	0.020	0.050	0.060	146.102.85	2.700	1.370	-9999.990	-9999.990
25.860	41.880	9.491	0.020	0.050	0.060	146.102.85	2.700	1.370	-9999.990	-9999.990
25.920	39.080	8.867	0.020	0.050	0.060	146.102.85	2.790	1.370	-9999.990	-9999.990
25.980	39.080	8.867	0.020	0.050	0.060	146.102.85	2.790	1.370	-9999.990	-9999.990
26.040	65.328	8.627	0.020	0.050	0.060	146.102.85	2.790	1.370	-9999.990	-9999.990
26.100	65.330	8.627	0.020	0.050	0.060	146.102.85	2.690	1.370	-9999.990	-9999.990
26.160	44.671	8.747	0.020	0.050	0.060	146.102.85	2.690	1.370	-9999.990	-9999.990
26.220	32.660	8.897	0.020	0.050	0.060	146.102.85	2.780	1.370	-9999.990	-9999.990
26.280	32.660	8.897	0.020	0.050	0.060	146.102.85	2.910	1.190	-9999.990	-9999.990
26.340	50.248	9.527	0.020	0.060	0.060	146.122.85	3.060	1.050	-9999.990	-9999.990
26.400	50.250	9.527	0.020	0.060	0.060	146.122.85	2.940	1.050	-9999.990	-9999.990
26.460	53.050	10.666	0.020	0.060	0.060	146.122.85	2.940	1.050	-9999.990	-9999.990
26.520	35.171	10.678	0.020	0.060	0.060	146.122.85	3.090	0.940	-9999.990	-9999.990
26.580	35.170	10.678	0.020	0.060	0.060	146.122.85	2.860	0.940	-9999.990	-9999.990
26.640	40.200	11.265	0.020	0.060	0.050	146.122.71	2.880	0.930	-9999.990	-9999.990
26.700	40.200	11.265	0.020	0.070	0.050	146.143.71	3.190	0.760	-9999.990	-9999.990
26.760	30.150	11.445	0.020	0.070	0.050	146.143.71	3.190	0.760	-9999.990	-9999.990
26.820	64.220	11.055	0.020	0.070	0.050	146.143.71	3.190	0.760	-9999.990	-9999.990
26.880	64.220	11.055	0.020	0.070	0.050	146.143.71	3.190	0.760	-9999.990	-9999.990
26.940	25.122	11.625	0.020	0.070	0.050	146.143.71	3.190	0.760	-9999.990	-9999.990
27.000	25.120	11.625	0.020	0.070	0.050	146.143.71	3.190	0.760	-9999.990	-9999.990
27.060	62.820	12.105	0.020	0.070	0.050	146.143.71	3.190	0.760	-9999.990	-9999.990
27.120	33.500	11.505	0.020	0.070	0.050	146.143.71	3.190	0.760	-9999.990	-9999.990
27.180	33.500	11.505	0.010	0.070	0.050	73.143.71	3.380	0.700	-9999.990	-9999.990
27.240	37.690	11.925	0.010	0.070	0.050	73.143.71	3.570	0.640	-9999.990	-9999.990
27.300	37.690	11.925	0.010	0.070	0.050	73.143.71	3.710	0.640	-9999.990	-9999.990
27.360	32.660	12.620	0.010	0.080	0.050	73.163.71	4.180	0.600	-9999.990	-9999.990
27.420	41.880	12.863	0.010	0.080	0.050	73.163.71	4.180	0.600	-9999.990	-9999.990
27.480	41.880	12.863	0.010	0.080	0.050	73.163.71	4.180	0.600	-9999.990	-9999.990
27.540	52.770	13.106	0.010	0.080	0.050	73.163.71	4.670	0.600	-9999.990	-9999.990
27.600	52.770	13.106	0.010	0.080	0.050	73.163.71	4.970	0.590	-9999.990	-9999.990
27.660	50.250	13.543	0.010	0.080	0.050	73.163.71	4.970	0.590	-9999.990	-9999.990
27.720	35.171	13.184	0.010	0.100	0.020	73.204.28	2.980	0.190	-9999.990	-9999.990
27.780	35.170	13.184	0.010	0.100	0.020	73.204.28	2.960	0.190	-9999.990	-9999.990
27.840	33.500	13.160	0.010	0.100	0.020	73.204.28	3.250	0.190	-9999.990	-9999.990
27.900	33.500	13.160	0.000	0.100	0.020	0.204.28	4.030	0.190	-9999.990	-9999.990
27.960	32.660	13.603	0.000	0.100	0.020	0.204.28	4.030	0.190	-9999.990	-9999.990
28.020	58.627	13.376	0.010	0.100	0.020	73.204.28	3.490	0.200	-9999.990	-9999.990
28.080	58.630	13.376	0.010	0.100	0.020	73.204.28	3.490	0.200	-9999.990	-9999.990
28.140	55.280	13.364	0.010	0.100	0.020	73.204.28	3.490	0.200	-9999.990	-9999.990
28.200	55.280	13.364	0.010	0.100	0.020	73.204.28	3.490	0.200	-9999.990	-9999.990
28.260	33.501	13.483	0.010	0.100	0.020	73.204.28	3.140	0.200	-9999.990	-9999.990
28.320	47.739	13.364	0.010	0.100	0.020	73.204.28	3.140	0.200	-9999.990	-9999.990
28.380	47.740	13.364	0.010	0.100	0.020	73.204.28	2.810	0.220	-9999.990	-9999.990
28.440	19.540	13.304	0.010	0.100	0.020	73.204.28	2.810	0.220	-9999.990	-9999.990
28.500	19.540	13.304	0.010	0.100	0.020	73.204.28	2.810	0.220	-9999.990	-9999.990
28.560	37.689	13.591	0.010	0.100	0.020	73.204.28	3.670	0.190	-9999.990	-9999.990
28.620	55.279	13.963	0.000	0.110	0.020	0.225.28	4.340	0.180	-9999.990	-9999.990
28.680	55.280	13.963	0.010	0.080	0.050	73.163.71	6.460	0.590	-9999.990	-9999.990
28.740	27.920	14.083	0.010	0.090	0.050	73.184.71	6.670	0.550	-9999.990	-9999.990
28.800	27.920	14.083	0.010	0.090	0.050	73.184.71	6.130	0.550	-9999.990	-9999.990
28.860	45.230	15.048	0.010	0.090	0.050	73.184.71	6.070	0.550	-9999.990	-9999.990
28.920	45.230	15.342	0.010	0.090	0.050	73.184.71	7.110	0.550	-9999.990	-9999.990
28.980	45.230	15.342	0.010	0.090	0.050	73.184.71	7.370	0.510	-9999.990	-9999.990
29.040	30.711	15.882	0.010	0.090	0.050	73.184.71	6.040	0.550	-9999.990	-9999.990
29.100	30.710	15.882	0.010	0.090	0.050	73.184.71	6.040	0.550	-9999.990	-9999.990
29.160	45.230	17.021	0.010	0.090	0.050	73.184.71	6.040	0.550	-9999.990	-9999.990
29.220	58.630	17.908	0.010	0.090	0.050	73.184.71	6.040	0.550	-9999.990	-9999.990
29.280	58.630	17.908	0.010	0.090	0.050	73.184.71	5.590	0.550	-9999.990	-9999.990
29.340	65.330	19.059	0.010	0.090	0.050	73.184.71	5.590	0.550	-9999.990	-9999.990
29.400	65.330	19.059	0.010	0.080	0.050	73.163.71	4.860	0.550	-9999.990	-9999.990
29.460	40.200	20.498	0.010	0.090	0.040	73.184.56	5.460	0.480	-9999.990	-9999.990
29.520	67.849	21.307	0.010	0.080	0.040	73.163.56	4.180	0.510	-9999.990	-9999.990
29.580	67.850	21.307	0.010	0.080	0.040	73.163.56	4.400	0.510	-9999.990	-9999.990
29.640	55.841	23.076	0.010	0.080	0.040	73.163.56	4.650	0.510	-9999.990	-9999.990
29.700	45.231	23.076	0.010	0.090	0.040	73.184.56	5.060	0.480	-9999.990	-9999.990
29.760	45.230	24.814	0.010	0.090	0.040	73.184.56	5.060	0.480	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
29.820	53.050	26.865	0.010	0.090	0.040	73.184.56	5.390	0.480	0.986	2.332
29.880	53.050	26.865	0.010	0.090	0.040	73.184.56	4.930	0.510	-9999.990	-9999.990
29.940	62.820	27.572	0.010	0.090	0.040	73.184.56	4.930	0.510	-9999.990	-9999.990
30.000	47.461	27.572	0.010	0.090	0.040	73.184.56	4.930	0.510	-9999.990	-9999.990
30.060	47.460	28.052	0.010	0.090	0.040	73.184.56	4.930	0.510	-9999.990	-9999.990
30.120	55.280	28.412	0.010	0.090	0.040	73.184.56	5.410	0.480	-9999.990	-9999.990
30.180	55.280	28.412	0.010	0.110	0.020	73.225.28	3.190	0.160	-9999.990	-9999.990
30.240	53.050	28.699	0.000	0.110	0.020	0.225.28	3.660	0.150	-9999.990	-9999.990
30.300	45.230	28.699	0.000	0.110	0.020	0.225.28	3.660	0.150	-9999.990	-9999.990
30.360	45.230	28.711	0.000	0.110	0.020	0.225.28	4.340	0.140	-9999.990	-9999.990
30.420	65.330	29.131	0.000	0.110	0.020	0.225.28	3.700	0.150	-9999.990	-9999.990
30.480	65.330	29.131	0.010	0.110	0.020	73.225.28	2.980	0.150	-9999.990	-9999.990
30.540	61.420	30.156	0.000	0.110	0.020	0.225.28	3.420	0.140	-9999.990	-9999.990
30.600	47.461	30.156	0.000	0.110	0.020	0.225.28	3.420	0.140	-9999.990	-9999.990
30.660	47.460	30.870	0.000	0.110	0.020	0.225.28	3.420	0.140	-9999.990	-9999.990
30.720	50.250	31.883	0.000	0.110	0.020	0.225.28	3.420	0.140	-9999.990	-9999.990
30.780	50.250	31.883	0.000	0.110	0.020	0.225.28	3.310	0.150	-9999.990	-9999.990
30.840	55.280	33.567	0.010	0.110	0.020	73.225.28	2.990	0.150	-9999.990	-9999.990
30.900	40.201	33.567	0.010	0.100	0.020	73.204.28	2.280	0.160	-9999.990	-9999.990
30.960	40.200	34.826	0.010	0.100	0.020	73.204.28	2.120	0.160	-9999.990	-9999.990
31.020	69.797	-9999.990	0.010	0.100	0.020	73.204.28	2.120	0.160	-9999.990	-9999.990
31.080	69.800	-9999.990	0.010	0.100	0.020	73.204.28	1.970	0.160	-9999.990	-9999.990
31.140	65.330	-9999.990	0.010	0.100	0.020	73.204.28	1.840	0.160	-9999.990	-9999.990
31.200	70.360	-9999.990	0.010	0.100	0.020	73.204.28	1.840	0.160	-9999.990	-9999.990
31.260	70.360	-9999.990	0.010	0.100	0.020	73.204.28	1.490	0.160	-9999.990	-9999.990
31.320	94.939	-9999.990	0.010	0.100	0.020	73.204.28	1.420	0.160	-9999.990	-9999.990
31.380	94.940	-9999.990	0.010	0.090	0.020	73.184.28	1.300	0.160	-9999.990	-9999.990
31.440	105.560	-9999.990	0.010	0.090	0.020	73.184.28	1.300	0.160	-9999.990	-9999.990
31.500	57.790	-9999.990	0.010	0.090	0.020	73.184.28	1.260	0.170	-9999.990	-9999.990
31.560	57.790	-9999.990	0.010	0.090	0.020	73.184.28	1.310	0.160	-9999.990	-9999.990
31.620	103.318	-9999.990	0.010	0.090	0.020	73.184.28	1.310	0.160	-9999.990	-9999.990
31.680	103.320	-9999.990	0.010	0.100	0.010	73.204.14	1.370	0.150	-9999.990	-9999.990
31.740	72.873	-9999.990	0.010	0.100	0.010	73.204.14	1.370	0.150	-9999.990	-9999.990
31.800	47.460	-9999.990	0.010	0.100	0.010	73.204.14	1.430	0.150	-9999.990	-9999.990
31.860	47.460	-9999.990	0.010	0.100	0.010	73.204.14	1.360	0.150	-9999.990	-9999.990
31.920	87.958	-9999.990	0.010	0.100	0.010	73.204.14	1.360	0.140	-9999.990	-9999.990
31.980	87.960	-9999.990	0.010	0.100	0.010	73.204.14	1.360	0.140	-9999.990	-9999.990
32.040	98.019	-9999.990	0.010	0.100	0.010	73.204.14	1.360	0.140	-9999.990	-9999.990
32.100	75.390	-9999.990	0.010	0.100	0.010	73.204.14	1.500	0.130	-9999.990	-9999.990
32.160	75.390	-9999.990	0.010	0.100	0.010	73.204.14	1.500	0.130	-9999.990	-9999.990
32.220	52.771	-9999.990	0.010	0.100	0.010	73.204.14	1.500	0.130	-9999.990	-9999.990
32.280	52.770	-9999.990	0.010	0.100	0.010	73.204.14	1.690	0.130	-9999.990	-9999.990
32.340	69.799	-9999.990	0.010	0.110	0.010	73.225.14	2.090	0.120	-9999.990	-9999.990
32.400	82.929	-9999.990	0.010	0.110	0.010	73.225.14	2.120	0.110	-9999.990	-9999.990
32.460	82.930	-9999.990	0.010	0.110	0.010	73.225.14	2.120	0.110	-9999.990	-9999.990
32.520	72.601	-9999.990	0.010	0.110	0.010	73.225.14	2.120	0.110	-9999.990	-9999.990
32.580	72.600	-9999.990	0.010	0.090	0.030	73.184.42	4.260	0.370	-9999.990	-9999.990
32.640	52.771	-9999.990	0.010	0.090	0.030	73.184.42	4.260	0.370	-9999.990	-9999.990
32.700	53.050	-9999.990	0.010	0.090	0.030	73.184.42	4.260	0.370	-9999.990	-9999.990
32.760	53.050	-9999.990	0.010	0.100	0.030	73.204.42	4.700	0.340	-9999.990	-9999.990
32.820	47.740	-9999.990	0.010	0.100	0.030	73.204.42	4.810	0.320	-9999.990	-9999.990
32.880	47.740	-9999.990	0.010	0.100	0.030	73.204.42	4.810	0.320	-9999.990	-9999.990
32.940	61.420	-9999.990	0.010	0.100	0.030	73.204.42	4.810	0.320	-9999.990	-9999.990
33.000	62.820	-9999.990	0.010	0.100	0.030	73.204.42	4.520	0.320	-9999.990	-9999.990
33.060	62.820	-9999.990	0.010	0.100	0.030	73.204.42	4.520	0.320	-9999.990	-9999.990
33.120	60.310	-9999.990	0.010	0.100	0.030	73.204.42	4.920	0.310	-9999.990	-9999.990
33.180	60.310	-9999.990	0.010	0.100	0.030	73.204.42	5.420	0.300	-9999.990	-9999.990
33.240	94.940	-9999.990	0.010	0.100	0.030	73.204.42	5.040	0.300	-9999.990	-9999.990
33.300	92.990	-9999.990	0.010	0.100	0.030	73.204.42	5.840	0.300	-9999.990	-9999.990
33.360	92.990	-9999.990	0.010	0.100	0.030	73.204.42	5.840	0.300	-9999.990	-9999.990
33.420	82.931	-9999.990	0.010	0.100	0.030	73.204.42	5.400	0.300	-9999.990	-9999.990
33.480	82.930	-9999.990	0.010	0.100	0.030	73.204.42	5.020	0.300	-9999.990	-9999.990
33.540	97.739	-9999.990	0.010	0.100	0.030	73.204.42	4.590	0.310	-9999.990	-9999.990
33.600	62.820	-9999.990	0.010	0.090	0.030	73.184.42	4.010	0.320	-9999.990	-9999.990
33.660	62.820	-9999.990	0.010	0.090	0.030	73.184.42	4.020	0.320	-9999.990	-9999.990
33.720	-9999.990	-9999.990	0.010	0.090	0.030	73.184.42	4.020	0.320	-9999.990	-9999.990
33.780	-9999.990	-9999.990	0.010	0.090	0.030	73.184.42	4.020	0.320	-9999.990	-9999.990
33.840	114.500	-9999.990	0.010	0.090	0.030	73.184.42	4.020	0.320	-9999.990	-9999.990
33.900	98.020	-9999.990	0.010	0.090	0.030	73.184.42	4.020	0.320	-9999.990	-9999.990
33.960	98.020	-9999.990	0.010	0.090	0.030	73.184.42	3.810	0.320	-9999.990	-9999.990
34.020	115.619	-9999.990	0.010	0.090	0.030	73.184.42	3.570	0.340	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
34.080	115.620	-9999.990	0.010	0.090	0.030	73.184.42	3.570	0.340	-9999.990	-9999.990
34.140	69.800	-9999.990	0.010	0.090	0.030	73.184.42	3.950	0.340	-9999.990	-9999.990
34.200	105.558	-9999.990	0.010	0.090	0.030	73.184.42	4.170	0.340	-9999.990	-9999.990
34.260	105.560	-9999.990	0.010	0.090	0.030	73.184.42	4.020	0.320	-9999.990	-9999.990
34.320	69.802	-9999.990	0.010	0.100	0.030	73.204.42	4.090	0.310	-9999.990	-9999.990
34.380	69.800	-9999.990	0.010	0.100	0.030	73.204.42	4.090	0.310	-9999.990	-9999.990
34.440	87.959	-9999.990	0.010	0.100	0.030	73.204.42	4.090	0.310	-9999.990	-9999.990
34.500	111.710	-9999.990	0.010	0.100	0.030	73.204.42	4.410	0.300	-9999.990	-9999.990
34.560	111.710	-9999.990	0.010	0.070	0.070	73.143.99	5.900	1.100	-9999.990	-9999.990
34.620	82.932	-9999.990	0.010	0.070	0.070	73.143.99	6.530	0.980	-9999.990	-9999.990
34.680	82.930	-9999.990	0.010	0.070	0.070	73.143.99	6.910	0.940	-9999.990	-9999.990
34.740	80.970	-9999.990	0.010	0.070	0.070	73.143.99	6.910	0.940	-9999.990	-9999.990
34.800	82.930	-9999.990	0.010	0.070	0.070	73.143.99	6.910	0.940	-9999.990	-9999.990
34.860	82.930	-9999.990	0.010	0.070	0.070	73.143.99	7.690	0.890	-9999.990	-9999.990
34.920	97.740	-9999.990	0.010	0.070	0.070	73.143.99	7.350	0.890	-9999.990	-9999.990
34.980	97.740	-9999.990	0.010	0.070	0.070	73.143.99	7.340	0.890	-9999.990	-9999.990
35.040	94.940	-9999.990	0.010	0.070	0.070	73.143.99	7.030	0.890	-9999.990	-9999.990
35.100	98.020	-9999.990	0.010	0.070	0.070	73.143.99	7.020	0.890	-9999.990	-9999.990
35.160	98.020	-9999.990	0.010	0.070	0.070	73.143.99	7.020	0.890	-9999.990	-9999.990
35.220	87.961	-9999.990	0.010	0.070	0.070	73.143.99	7.020	0.890	-9999.990	-9999.990
35.280	87.960	-9999.990	0.010	0.070	0.060	73.143.85	6.460	0.890	-9999.990	-9999.990
35.340	78.181	-9999.990	0.010	0.070	0.060	73.143.85	6.460	0.890	-9999.990	-9999.990
35.400	67.851	-9999.990	0.010	0.070	0.060	73.143.85	6.210	0.890	-9999.990	-9999.990
35.460	67.850	-9999.990	0.010	0.070	0.060	73.143.85	6.460	0.890	-9999.990	-9999.990
35.520	77.900	-9999.990	0.010	0.070	0.070	73.143.99	6.130	0.940	-9999.990	-9999.990
35.580	77.900	-9999.990	0.010	0.070	0.070	73.143.99	6.120	0.940	-9999.990	-9999.990
35.640	90.469	-9999.990	0.010	0.070	0.060	73.143.85	6.300	0.850	-9999.990	-9999.990
35.700	75.392	-9999.990	0.010	0.070	0.060	73.143.85	6.060	0.850	-9999.990	-9999.990
35.760	75.390	-9999.990	0.010	0.070	0.060	73.143.85	5.770	0.890	-9999.990	-9999.990
35.820	77.900	-9999.990	0.010	0.070	0.060	73.143.85	5.770	0.890	-9999.990	-9999.990
35.880	77.900	-9999.990	0.010	0.070	0.060	73.143.85	5.450	0.850	-9999.990	-9999.990
35.940	78.180	-9999.990	0.010	0.070	0.060	73.143.85	5.450	0.850	-9999.990	-9999.990
36.000	55.281	-9999.990	0.010	0.070	0.060	73.143.85	5.450	0.850	-9999.990	-9999.990
36.060	55.280	-9999.990	0.010	0.070	0.060	73.143.85	5.450	0.850	-9999.990	-9999.990
36.120	77.898	-9999.990	0.010	0.070	0.060	73.143.85	5.450	0.850	-9999.990	-9999.990
36.180	77.900	-9999.990	0.010	0.070	0.060	73.143.85	5.280	0.850	-9999.990	-9999.990
36.240	72.600	-9999.990	0.010	0.070	0.060	73.143.85	5.450	0.850	-9999.990	-9999.990
36.300	92.989	-9999.990	0.010	0.070	0.060	73.143.85	5.450	0.850	-9999.990	-9999.990
36.360	92.990	-9999.990	0.010	0.070	0.060	73.143.85	4.960	0.850	1.238	1.236
36.420	64.222	-9999.990	0.010	0.070	0.060	73.143.85	4.960	0.850	-9999.990	-9999.990
36.480	67.850	-9999.990	0.010	0.070	0.060	73.143.85	5.110	0.850	-9999.990	-9999.990
36.540	67.850	-9999.990	0.010	0.070	0.060	73.143.85	4.960	0.850	-9999.990	-9999.990
36.600	64.220	-9999.990	0.010	0.070	0.060	73.143.85	4.760	0.890	-9999.990	-9999.990
36.660	64.220	-9999.990	0.010	0.070	0.060	73.143.85	5.060	0.890	-9999.990	-9999.990
36.720	60.310	-9999.990	0.010	0.070	0.060	73.143.85	5.060	0.890	-9999.990	-9999.990
36.780	89.359	-9999.990	0.010	0.070	0.060	73.143.85	4.860	0.940	-9999.990	-9999.990
36.840	89.360	-9999.990	0.020	0.060	0.060	146.122.85	4.270	1.040	-9999.990	-9999.990
36.900	65.330	-9999.990	0.010	0.060	0.060	73.122.85	4.300	0.990	-9999.990	-9999.990
36.960	65.330	-9999.990	0.010	0.070	0.060	73.143.85	4.230	0.940	-9999.990	-9999.990
37.020	75.390	-9999.990	0.010	0.070	0.060	73.143.85	4.380	0.900	-9999.990	-9999.990
37.080	98.019	-9999.990	0.010	0.070	0.060	73.143.85	4.540	0.860	-9999.990	-9999.990
37.140	98.020	-9999.990	0.010	0.070	0.060	73.143.85	4.410	0.860	-9999.990	-9999.990
37.200	72.601	-9999.990	0.020	0.050	0.080	146.102.113	4.850	1.460	-9999.990	-9999.990
37.260	72.600	-9999.990	0.020	0.050	0.080	146.102.113	4.700	1.560	-9999.990	-9999.990
37.320	85.439	-9999.990	0.020	0.050	0.080	146.102.113	4.670	1.660	-9999.990	-9999.990
37.380	108.068	-9999.990	0.020	0.050	0.080	146.102.113	4.770	1.660	-9999.990	-9999.990
37.440	108.070	-9999.990	0.020	0.050	0.080	146.102.113	4.810	1.560	-9999.990	-9999.990
37.500	117.300	-9999.990	0.020	0.050	0.080	146.102.113	4.810	1.560	-9999.990	-9999.990
37.560	117.300	-9999.990	0.020	0.050	0.080	146.102.113	4.600	1.560	-9999.990	-9999.990
37.620	125.680	-9999.990	0.020	0.050	0.080	146.102.113	4.600	1.560	-9999.990	-9999.990
37.680	70.363	-9999.990	0.020	0.050	0.080	146.102.113	4.640	1.470	-9999.990	-9999.990
37.740	70.360	-9999.990	0.020	0.060	0.080	146.122.113	4.780	1.380	-9999.990	-9999.990
37.800	114.495	-9999.990	0.020	0.060	0.080	146.122.113	4.780	1.380	-9999.990	-9999.990
37.860	114.500	-9999.990	0.020	0.060	0.080	146.122.113	4.780	1.380	-9999.990	-9999.990
37.920	115.620	-9999.990	0.020	0.050	0.080	146.102.113	4.560	1.390	-9999.990	-9999.990
37.980	86.562	-9999.990	0.020	0.050	0.070	146.102.99	4.460	1.390	-9999.990	-9999.990
38.040	86.560	-9999.990	0.020	0.050	0.070	146.102.99	4.460	1.390	-9999.990	-9999.990
38.100	130.708	-9999.990	0.020	0.050	0.070	146.102.99	4.460	1.390	-9999.990	-9999.990
38.160	130.710	-9999.990	0.020	0.050	0.070	146.102.99	4.280	1.390	-9999.990	-9999.990
38.220	125.680	-9999.990	0.020	0.050	0.070	146.102.99	4.280	1.390	-9999.990	-9999.990
38.280	136.860	-9999.990	0.020	0.050	0.070	146.102.99	4.190	1.390	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
38.340	136.860	-9999.990	0.020	0.050	0.070	146.102.99	4.220	1.310	-9999.990	-9999.990
38.400	100.532	-9999.990	0.020	0.060	0.070	146.122.99	4.310	1.310	-9999.990	-9999.990
38.460	100.530	-9999.990	0.020	0.060	0.070	146.122.99	4.310	1.310	-9999.990	-9999.990
38.520	-9999.990	-9999.990	0.020	0.060	0.070	146.122.99	4.310	1.310	-9999.990	-9999.990
38.580	114.500	-9999.990	0.020	0.060	0.070	146.122.99	4.310	1.310	-9999.990	-9999.990
38.640	114.500	-9999.990	0.020	0.050	0.070	146.102.99	4.080	1.470	1.440	4.256
38.700	118.130	-9999.990	0.020	0.050	0.080	146.102.113	3.990	1.560	-9999.990	-9999.990
38.760	118.130	-9999.990	0.020	0.060	0.060	146.122.85	3.430	0.950	-9999.990	-9999.990
38.820	83.770	-9999.990	0.020	0.060	0.060	146.122.85	3.290	0.950	-9999.990	-9999.990
38.880	123.158	-9999.990	0.020	0.060	0.060	146.122.85	3.360	0.950	-9999.990	-9999.990
38.940	123.160	-9999.990	0.020	0.060	0.060	146.122.85	3.430	0.950	-9999.990	-9999.990
39.000	114.500	-9999.990	0.020	0.060	0.060	146.122.85	3.430	0.950	-9999.990	-9999.990
39.060	114.500	-9999.990	0.020	0.060	0.060	146.122.85	3.450	0.900	-9999.990	-9999.990
39.120	77.902	-9999.990	0.020	0.060	0.060	146.122.85	3.380	0.900	-9999.990	-9999.990
39.180	97.740	-9999.990	0.020	0.060	0.060	146.122.85	3.450	0.900	-9999.990	-9999.990
39.240	97.740	-9999.990	0.020	0.060	0.060	146.122.85	3.380	0.900	-9999.990	-9999.990
39.300	92.990	-9999.990	0.020	0.060	0.060	146.122.85	3.380	0.900	-9999.990	-9999.990
39.360	92.990	-9999.990	0.020	0.060	0.060	146.122.85	3.480	0.860	-9999.990	-9999.990
39.420	94.940	-9999.990	0.020	0.060	0.060	146.122.85	3.480	0.860	-9999.990	-9999.990
39.480	90.470	-9999.990	0.020	0.060	0.060	146.122.85	3.480	0.860	-9999.990	-9999.990
39.540	90.470	-9999.990	0.020	0.060	0.060	146.122.85	3.360	0.950	-9999.990	-9999.990
39.600	80.970	-9999.990	0.020	0.060	0.060	146.122.85	3.510	0.950	-9999.990	-9999.990
39.660	80.970	-9999.990	0.020	0.060	0.060	146.122.85	3.510	0.950	-9999.990	-9999.990
39.720	87.959	-9999.990	0.020	0.060	0.060	146.122.85	3.510	0.950	-9999.990	-9999.990
39.780	80.420	-9999.990	0.020	0.060	0.060	146.122.85	3.510	0.950	-9999.990	-9999.990
39.840	80.420	-9999.990	0.020	0.060	0.060	146.122.85	3.340	1.000	-9999.990	-9999.990
39.900	94.940	-9999.990	0.020	0.060	0.060	146.122.85	3.280	1.000	-9999.990	-9999.990
39.960	94.940	-9999.990	0.020	0.060	0.060	146.122.85	3.280	1.000	-9999.990	-9999.990
40.020	80.421	-9999.990	0.020	0.060	0.060	146.122.85	3.280	1.000	-9999.990	-9999.990
40.080	65.331	-9999.990	0.020	0.060	0.060	146.122.85	3.280	1.000	-9999.990	-9999.990
40.140	65.330	-9999.990	0.020	0.060	0.060	146.122.85	3.360	0.950	-9999.990	-9999.990
40.200	64.220	-9999.990	0.020	0.060	0.060	146.122.85	3.360	0.950	-9999.990	-9999.990
40.260	64.220	-9999.990	0.020	0.060	0.060	146.122.85	3.430	0.950	-9999.990	-9999.990
40.320	92.989	-9999.990	0.020	0.060	0.060	146.122.85	3.340	1.000	-9999.990	-9999.990
40.380	98.020	-9999.990	0.020	0.060	0.060	146.122.85	3.530	0.900	-9999.990	-9999.990
40.440	98.020	-9999.990	0.020	0.060	0.060	146.122.85	3.540	0.900	-9999.990	-9999.990
40.500	80.970	-9999.990	0.020	0.060	0.060	146.122.85	3.540	0.900	-9999.990	-9999.990
40.560	80.970	-9999.990	0.020	0.070	0.060	146.143.85	3.640	0.860	-9999.990	-9999.990
40.620	80.420	-9999.990	0.010	0.070	0.060	73.143.85	3.810	0.860	-9999.990	-9999.990
40.680	64.221	-9999.990	0.020	0.060	0.060	146.122.85	3.690	0.900	-9999.990	-9999.990
40.740	64.220	-9999.990	0.020	0.060	0.060	146.122.85	3.690	0.900	-9999.990	-9999.990
40.800	103.046	-9999.990	0.020	0.070	0.060	146.143.85	3.810	0.860	-9999.990	-9999.990
40.860	103.050	-9999.990	0.020	0.070	0.060	146.143.85	3.810	0.860	-9999.990	-9999.990
40.920	69.800	-9999.990	0.010	0.070	0.060	73.143.85	3.900	0.860	-9999.990	-9999.990
40.980	67.850	-9999.990	0.010	0.070	0.060	73.143.85	3.900	0.860	-9999.990	-9999.990
41.040	67.850	-9999.990	0.010	0.070	0.060	73.143.85	3.990	0.860	-9999.990	-9999.990
41.100	75.390	-9999.990	0.010	0.070	0.060	73.143.85	3.990	0.860	-9999.990	-9999.990
41.160	75.390	-9999.990	0.010	0.070	0.060	73.143.85	4.350	0.820	-9999.990	-9999.990
41.220	75.390	-9999.990	0.010	0.070	0.060	73.143.85	4.350	0.820	-9999.990	-9999.990
41.280	100.530	-9999.990	0.010	0.070	0.060	73.143.85	4.350	0.820	-9999.990	-9999.990
41.340	100.530	-9999.990	0.010	0.070	0.060	73.143.85	4.140	0.820	-9999.990	-9999.990
41.400	47.743	-9999.990	0.010	0.070	0.060	73.143.85	4.610	0.820	-9999.990	-9999.990
41.460	47.740	-9999.990	0.010	0.070	0.060	73.143.85	4.750	0.820	-9999.990	-9999.990
41.520	98.020	-9999.990	0.010	0.070	0.060	73.143.85	5.100	0.790	-9999.990	-9999.990
41.580	55.840	-9999.990	0.010	0.060	0.080	73.122.113	5.620	1.300	-9999.990	-9999.990
41.640	55.840	-9999.990	0.020	0.060	0.080	146.122.113	5.160	1.380	-9999.990	-9999.990
41.700	95.498	-9999.990	0.020	0.060	0.080	146.122.113	5.160	1.380	-9999.990	-9999.990
41.760	95.500	-9999.990	0.020	0.050	0.080	146.102.113	5.120	1.460	-9999.990	-9999.990
41.820	86.561	-9999.990	0.020	0.050	0.080	146.102.113	5.120	1.460	-9999.990	-9999.990
41.880	87.960	-9999.990	0.020	0.050	0.080	146.102.113	4.840	1.550	-9999.990	-9999.990
41.940	87.960	-9999.990	0.020	0.050	0.080	146.102.113	4.840	1.550	-9999.990	-9999.990
42.000	61.421	-9999.990	0.020	0.050	0.080	146.102.113	4.840	1.550	-9999.990	-9999.990
42.060	61.420	-9999.990	0.020	0.050	0.080	146.102.113	4.950	1.550	-9999.990	-9999.990
42.120	70.360	-9999.990	0.020	0.050	0.080	146.102.113	4.950	1.550	-9999.990	-9999.990
42.180	92.990	-9999.990	0.020	0.050	0.080	146.102.113	4.840	1.550	-9999.990	-9999.990
42.240	92.990	-9999.990	0.020	0.050	0.080	146.102.113	4.690	1.650	-9999.990	-9999.990
42.300	69.800	-9999.990	0.020	0.050	0.080	146.102.113	4.690	1.650	-9999.990	-9999.990
42.360	69.800	-9999.990	0.020	0.030	0.100	146.61.142	5.140	3.260	-9999.990	-9999.990
42.420	60.311	-9999.990	0.020	0.030	0.110	146.61.156	4.790	4.110	-9999.990	-9999.990
42.480	90.467	-9999.990	0.020	0.020	0.110	146.40.156	4.760	4.710	-9999.990	-9999.990
42.540	90.470	-9999.990	0.020	0.020	0.110	146.40.156	4.760	4.710	-9999.990	-9999.990

Boring DD2-BK
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Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
42.600	72.600	-9999.990	0.020	0.030	0.110	146.61.156	4.880	4.090	-9999.990	-9999.990
42.660	72.600	-9999.990	0.020	0.040	0.090	146.81.128	4.450	1.940	-9999.990	-9999.990
42.720	77.899	-9999.990	0.020	0.040	0.090	146.81.128	4.450	1.940	-9999.990	-9999.990
42.780	67.011	-9999.990	0.020	0.040	0.090	146.81.128	4.450	1.940	-9999.990	-9999.990
42.840	67.010	-9999.990	0.020	0.050	0.080	146.102.113	4.710	1.680	-9999.990	-9999.990
42.900	87.960	-9999.990	0.020	0.040	0.080	146.81.113	4.360	1.930	-9999.990	-9999.990
42.960	87.960	-9999.990	0.020	0.040	0.090	146.81.128	4.330	2.090	-9999.990	-9999.990
43.020	85.440	-9999.990	0.020	0.040	0.080	146.81.113	4.360	1.940	-9999.990	-9999.990
43.080	-9999.990	-9999.990	0.020	0.050	0.080	146.102.113	4.480	1.800	-9999.990	-9999.990
43.140	-9999.990	-9999.990	0.020	0.050	0.080	146.102.113	4.480	1.800	-9999.990	-9999.990
43.200	77.900	-9999.990	0.020	0.050	0.080	146.102.113	4.390	1.800	-9999.990	-9999.990
43.260	97.740	-9999.990	0.020	0.040	0.080	146.81.113	4.270	1.940	-9999.990	-9999.990
43.320	97.740	-9999.990	0.020	0.040	0.080	146.81.113	4.360	1.940	0.448	4.696
43.380	55.284	-9999.990	0.020	0.040	0.080	146.81.113	4.360	1.940	0.448	4.696
43.440	55.280	-9999.990	0.020	0.040	0.080	146.81.113	4.270	1.940	-9999.990	-9999.990
43.500	53.050	-9999.990	0.020	0.040	0.080	146.81.113	4.270	1.940	-9999.990	-9999.990
43.560	57.790	-9999.990	0.020	0.040	0.080	146.81.113	4.360	1.940	-9999.990	-9999.990
43.620	57.790	-9999.990	0.020	0.040	0.090	146.81.128	4.450	1.940	-9999.990	-9999.990
43.680	50.250	-9999.990	0.020	0.040	0.090	146.81.128	4.450	1.940	-9999.990	-9999.990
43.740	50.250	-9999.990	0.020	0.040	0.090	146.81.128	4.550	1.940	-9999.990	-9999.990
43.800	35.171	-9999.990	0.020	0.040	0.090	146.81.128	4.420	2.100	-9999.990	-9999.990
43.860	30.710	-9999.990	0.020	0.040	0.090	146.81.128	4.420	2.100	-9999.990	-9999.990
43.920	30.710	-9999.990	0.020	0.040	0.090	146.81.128	4.420	2.100	-9999.990	-9999.990
43.980	65.328	-9999.990	0.020	0.040	0.090	146.81.128	4.420	2.100	-9999.990	-9999.990
44.040	65.330	-9999.990	0.020	0.040	0.090	146.81.128	4.420	2.100	-9999.990	-9999.990
44.100	55.841	-9999.990	0.020	0.040	0.090	146.81.128	4.650	1.940	-9999.990	-9999.990
44.160	57.790	-9999.990	0.020	0.030	0.110	146.61.156	5.080	4.150	-9999.990	-9999.990
44.220	57.790	-9999.990	0.020	0.030	0.110	146.61.156	5.080	4.150	-9999.990	-9999.990
44.280	87.960	-9999.990	0.020	0.030	0.110	146.61.156	5.080	4.150	-9999.990	-9999.990
44.340	87.960	-9999.990	0.020	0.030	0.110	146.61.156	4.980	4.150	-9999.990	-9999.990
44.400	41.882	-9999.990	0.020	0.020	0.110	146.40.156	5.040	4.750	-9999.990	-9999.990
44.460	50.250	-9999.990	0.020	0.020	0.120	146.40.170	5.010	5.560	-9999.990	-9999.990
44.520	50.250	-9999.990	0.020	0.020	0.120	146.40.170	5.010	5.560	-9999.990	-9999.990
44.580	42.710	-9999.990	0.020	0.020	0.120	146.40.170	4.800	6.730	-9999.990	-9999.990
44.640	42.710	-9999.990	0.020	0.040	0.090	146.81.128	4.380	2.580	-9999.990	-9999.990
44.700	44.670	-9999.990	0.020	0.030	0.100	146.61.142	4.160	3.210	-9999.990	-9999.990
44.760	57.789	-9999.990	0.020	0.030	0.100	146.61.142	4.060	3.650	-9999.990	-9999.990
44.820	57.790	-9999.990	0.020	0.030	0.100	146.61.142	4.060	3.650	-9999.990	-9999.990
44.880	65.330	-9999.990	0.020	0.030	0.100	146.61.142	4.060	3.650	-9999.990	-9999.990
44.940	65.330	-9999.990	0.030	0.020	0.100	219.40.142	3.890	4.240	-9999.990	-9999.990
45.000	53.051	-9999.990	0.030	0.020	0.100	219.40.142	3.890	4.240	-9999.990	-9999.990
45.060	45.231	-9999.990	0.030	0.020	0.100	219.40.142	3.960	4.230	-9999.990	-9999.990
45.120	45.230	-9999.990	0.030	0.020	0.100	219.40.142	3.800	5.040	-9999.990	-9999.990
45.180	50.250	-9999.990	0.030	0.020	0.100	219.40.142	3.800	5.040	-9999.990	-9999.990
45.240	50.250	-9999.990	0.030	0.020	0.100	219.40.142	3.870	5.040	-9999.990	-9999.990
45.300	47.740	-9999.990	0.030	0.020	0.100	219.40.142	3.870	5.040	-9999.990	-9999.990
45.360	53.050	-9999.990	0.030	0.020	0.100	219.40.142	4.020	5.020	-9999.990	-9999.990
45.420	53.050	-9999.990	0.030	0.020	0.100	219.40.142	3.940	5.030	-9999.990	-9999.990
45.480	65.329	-9999.990	0.030	0.020	0.100	219.40.142	4.020	5.020	-9999.990	-9999.990
45.540	65.330	-9999.990	0.030	0.020	0.100	219.40.142	3.950	5.030	-9999.990	-9999.990
45.600	67.010	-9999.990	0.020	0.020	0.100	146.40.142	4.120	4.230	-9999.990	-9999.990
45.660	30.152	-9999.990	0.020	0.020	0.100	146.40.142	4.120	4.230	-9999.990	-9999.990
45.720	30.150	-9999.990	0.030	0.020	0.110	219.40.156	4.170	5.030	-9999.990	-9999.990
45.780	33.500	-9999.990	0.030	0.020	0.110	219.40.156	4.170	5.030	-9999.990	-9999.990
45.840	33.500	-9999.990	0.030	0.020	0.110	219.40.156	4.250	5.020	-9999.990	-9999.990
45.900	47.740	-9999.990	0.030	0.020	0.110	219.40.156	4.250	5.020	-9999.990	-9999.990
45.960	64.220	-9999.990	0.020	0.020	0.100	146.40.142	4.360	4.250	-9999.990	-9999.990
46.020	64.220	-9999.990	0.020	0.020	0.110	146.40.156	4.510	5.050	-9999.990	-9999.990
46.080	47.741	-9999.990	0.020	0.020	0.110	146.40.156	4.420	5.050	-9999.990	-9999.990
46.140	47.740	-9999.990	0.020	0.020	0.110	146.40.156	4.420	5.050	-9999.990	-9999.990
46.200	39.080	-9999.990	0.020	0.020	0.110	146.40.156	4.330	5.060	-9999.990	-9999.990
46.260	45.230	-9999.990	0.020	0.020	0.110	146.40.156	4.420	5.050	-9999.990	-9999.990
46.320	45.230	-9999.990	0.030	0.020	0.110	219.40.156	4.250	5.070	-9999.990	-9999.990
46.380	53.050	-9999.990	0.030	0.020	0.110	219.40.156	4.170	5.080	-9999.990	-9999.990
46.440	53.050	-9999.990	0.020	0.020	0.110	146.40.156	4.330	5.050	-9999.990	-9999.990
46.500	32.662	-9999.990	0.020	0.020	0.110	146.40.156	4.330	5.050	-9999.990	-9999.990
46.560	62.818	-9999.990	0.020	0.020	0.110	146.40.156	4.330	5.040	-9999.990	-9999.990
46.620	62.820	-9999.990	0.020	0.020	0.110	146.40.156	4.330	5.040	-9999.990	-9999.990
46.680	50.251	-9999.990	0.020	0.030	0.100	146.61.142	4.670	3.640	-9999.990	-9999.990
46.740	50.250	-9999.990	0.020	0.030	0.100	146.61.142	4.670	3.640	-9999.990	-9999.990
46.800	32.661	-9999.990	0.020	0.030	0.100	146.61.142	4.420	3.200	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
46.860	57.787	-9999.990	0.020	0.030	0.100	146.61.142	4.330	3.200	-9999.990	-9999.990
46.920	57.790	-9999.990	0.020	0.030	0.100	146.61.142	4.320	3.200	-9999.990	-9999.990
46.980	19.542	-9999.990	0.020	0.030	0.100	146.61.142	4.290	3.640	1.141	0.000
47.040	19.540	-9999.990	0.020	0.020	0.100	146.40.142	4.350	4.200	1.141	0.000
47.100	35.169	-9999.990	0.030	0.020	0.110	219.40.156	4.240	4.980	-9999.990	-9999.990
47.160	75.386	-9999.990	0.030	0.020	0.110	219.40.156	4.140	6.100	-9999.990	-9999.990
47.220	75.390	-9999.990	0.030	0.020	0.110	219.40.156	4.060	6.110	-9999.990	-9999.990
47.280	47.460	-9999.990	0.030	0.020	0.110	219.40.156	4.060	6.110	-9999.990	-9999.990
47.340	47.460	-9999.990	0.020	0.040	0.080	146.81.113	3.550	2.100	-9999.990	-9999.990
47.400	52.770	-9999.990	0.020	0.040	0.080	146.81.113	3.550	2.100	-9999.990	-9999.990
47.460	39.081	-9999.990	0.020	0.040	0.080	146.81.113	3.550	2.100	-9999.990	-9999.990
47.520	39.080	-9999.990	0.020	0.040	0.080	146.81.113	3.550	2.100	-9999.990	-9999.990
47.580	37.690	-9999.990	0.020	0.030	0.090	146.61.128	3.430	2.620	-9999.990	-9999.990
47.640	37.690	-9999.990	0.020	0.030	0.090	146.61.128	3.570	2.610	-9999.990	-9999.990
47.700	27.921	-9999.990	0.020	0.040	0.080	146.81.113	3.670	2.330	-9999.990	-9999.990
47.760	60.308	-9999.990	0.020	0.030	0.090	146.61.127	3.640	2.620	-9999.990	-9999.990
47.820	60.310	-9999.990	0.030	0.030	0.090	219.61.128	3.550	3.000	-9999.990	-9999.990
47.880	25.122	-9999.990	0.030	0.030	0.090	219.61.128	3.550	3.000	-9999.990	-9999.990
47.940	25.120	-9999.990	0.020	0.030	0.090	146.61.128	3.620	2.990	-9999.990	-9999.990
48.000	27.640	-9999.990	0.020	0.030	0.090	146.61.128	3.620	2.990	-9999.990	-9999.990
48.060	39.079	-9999.990	0.020	0.030	0.090	146.61.128	3.780	2.990	-9999.990	-9999.990
48.120	39.080	-9999.990	0.020	0.030	0.090	146.61.128	3.980	2.620	-9999.990	-9999.990
48.180	35.170	-9999.990	0.020	0.040	0.090	146.81.128	4.110	2.320	-9999.990	-9999.990
48.240	35.170	-9999.990	0.030	0.010	0.120	219.20.170	4.630	7.960	-9999.990	-9999.990
48.300	47.460	-9999.990	0.030	0.000	0.140	219.0.199	5.400	-9999.990	-9999.990	-9999.990
48.360	65.329	-9999.990	0.030	0.000	0.150	219.0.213	5.550	-9999.990	-9999.990	-9999.990
48.420	65.330	-9999.990	0.030	0.000	0.140	219.0.199	5.510	-9999.990	-9999.990	-9999.990
48.480	58.630	-9999.990	0.030	0.000	0.140	219.0.199	5.510	-9999.990	-9999.990	-9999.990
48.540	58.630	-9999.990	0.030	0.000	0.150	219.0.213	5.550	-9999.990	-9999.990	-9999.990
48.600	47.741	-9999.990	0.030	0.000	0.150	219.0.213	5.550	-9999.990	-9999.990	-9999.990
48.660	47.740	-9999.990	0.030	0.000	0.150	219.0.213	5.550	-9999.990	-9999.990	-9999.990
48.720	47.740	-9999.990	0.030	0.000	0.150	219.0.213	5.550	-9999.990	-9999.990	-9999.990
48.780	75.389	-9999.990	0.030	0.000	0.150	219.0.213	5.550	-9999.990	-9999.990	-9999.990
48.840	75.390	-9999.990	0.030	0.000	0.140	219.0.199	5.440	-9999.990	-9999.990	-9999.990
48.900	65.330	-9999.990	0.030	0.000	0.140	219.0.199	5.440	-9999.990	-9999.990	-9999.990
48.960	55.281	-9999.990	0.030	0.000	0.150	219.0.213	5.620	-9999.990	-9999.990	-9999.990
49.020	55.280	-9999.990	0.030	0.000	0.150	219.0.213	5.620	-9999.990	-9999.990	-9999.990
49.080	78.179	-9999.990	0.030	0.000	0.150	219.0.213	5.660	-9999.990	-9999.990	-9999.990
49.140	78.180	-9999.990	0.030	0.000	0.150	219.0.213	5.620	-9999.990	-9999.990	-9999.990
49.200	55.281	-9999.990	0.030	0.000	0.150	219.0.213	5.870	-9999.990	-9999.990	-9999.990
49.260	75.389	-9999.990	0.030	0.000	0.150	219.0.213	5.620	-9999.990	-9999.990	-9999.990
49.320	75.390	-9999.990	0.030	0.000	0.150	219.0.213	5.780	-9999.990	-9999.990	-9999.990
49.380	61.421	-9999.990	0.030	0.000	0.150	219.0.213	5.780	-9999.990	-9999.990	-9999.990
49.440	61.420	-9999.990	0.030	0.000	0.150	219.0.213	5.740	-9999.990	-9999.990	-9999.990
49.500	55.280	-9999.990	0.030	0.000	0.150	219.0.213	5.740	-9999.990	-9999.990	-9999.990
49.560	89.356	-9999.990	0.030	0.000	0.150	219.0.213	5.620	-9999.990	-9999.990	-9999.990
49.620	89.360	-9999.990	0.020	0.000	0.150	146.0.213	6.050	-9999.990	-9999.990	-9999.990
49.680	85.440	-9999.990	0.020	0.000	0.150	146.0.213	6.050	-9999.990	-9999.990	-9999.990
49.740	85.440	-9999.990	0.020	0.000	0.150	146.0.213	6.190	-9999.990	-9999.990	-9999.990
49.800	83.770	-9999.990	0.020	0.000	0.150	146.0.213	6.190	-9999.990	-9999.990	-9999.990
49.860	72.871	-9999.990	0.020	0.000	0.150	146.0.213	6.050	-9999.990	-9999.990	-9999.990
49.920	72.870	-9999.990	0.020	0.000	0.150	146.0.213	6.190	-9999.990	-9999.990	-9999.990
49.980	64.220	-9999.990	0.020	0.000	0.150	146.0.213	6.340	-9999.990	1.165	1.668
50.040	70.360	-9999.990	0.020	0.000	0.150	146.0.213	6.340	-9999.990	-9999.990	-9999.990
50.100	70.360	-9999.990	0.020	0.000	0.150	146.0.213	6.390	45.560	-9999.990	-9999.990
50.160	67.010	-9999.990	0.020	0.000	0.150	146.0.213	6.390	45.560	-9999.990	-9999.990
50.220	67.010	-9999.990	0.020	0.000	0.150	146.0.213	6.340	-9999.990	-9999.990	-9999.990
50.280	50.251	-9999.990	0.020	0.000	0.150	146.0.213	6.340	-9999.990	-9999.990	-9999.990
50.340	53.050	-9999.990	0.030	0.000	0.150	219.0.213	5.940	-9999.990	-9999.990	-9999.990
50.400	53.050	-9999.990	0.020	0.000	0.150	146.0.213	6.090	-9999.990	-9999.990	-9999.990
50.460	67.849	-9999.990	0.030	0.000	0.150	219.0.213	5.980	-9999.990	-9999.990	-9999.990
50.520	67.850	-9999.990	0.030	0.000	0.150	219.0.213	5.680	-9999.990	-9999.990	-9999.990
50.580	50.251	-9999.990	0.030	0.000	0.140	219.0.199	5.450	-9999.990	-9999.990	-9999.990
50.640	50.250	-9999.990	0.030	0.000	0.140	219.0.199	5.320	-9999.990	-9999.990	-9999.990
50.700	50.250	-9999.990	0.030	0.000	0.140	219.0.199	5.450	-9999.990	-9999.990	-9999.990
50.760	52.770	-9999.990	0.030	0.000	0.140	219.0.199	5.450	-9999.990	-9999.990	-9999.990
50.820	52.770	-9999.990	0.030	0.000	0.140	219.0.199	5.450	-9999.990	-9999.990	-9999.990
50.880	53.050	-9999.990	0.030	0.000	0.140	219.0.199	5.330	-9999.990	-9999.990	-9999.990
50.940	55.280	-9999.990	0.030	0.000	0.140	219.0.199	5.450	-9999.990	-9999.990	-9999.990
51.000	55.280	-9999.990	0.030	0.000	0.140	219.0.199	5.360	-9999.990	-9999.990	-9999.990
51.060	69.799	-9999.990	0.030	0.000	0.140	219.0.199	5.360	-9999.990	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
51.120	69.800	-9999.990	0.030	0.000	0.140	219.0.199	5.480	-9999.990	-9999.990	-9999.990
51.180	57.791	-9999.990	0.030	0.000	0.140	219.0.199	5.480	-9999.990	-9999.990	-9999.990
51.240	62.820	-9999.990	0.030	0.000	0.150	219.0.213	5.620	-9999.990	-9999.990	-9999.990
51.300	62.820	-9999.990	0.030	0.000	0.140	219.0.199	5.390	-9999.990	-9999.990	-9999.990
51.360	50.251	-9999.990	0.030	0.000	0.150	219.0.213	5.720	-9999.990	1.036	1.761
51.420	50.250	-9999.990	0.020	0.000	0.150	146.0.213	6.100	-9999.990	-9999.990	-9999.990
51.480	60.310	-9999.990	0.020	0.000	0.150	146.0.213	6.270	-9999.990	-9999.990	-9999.990
51.540	55.280	-9999.990	0.020	0.000	0.150	146.0.213	6.020	-9999.990	-9999.990	-9999.990
51.600	55.280	-9999.990	0.030	0.000	0.150	219.0.213	5.980	-9999.990	-9999.990	-9999.990
51.660	55.840	-9999.990	0.030	0.000	0.150	219.0.213	5.670	-9999.990	-9999.990	-9999.990
51.720	55.840	-9999.990	0.030	0.000	0.150	219.0.213	5.920	-9999.990	-9999.990	-9999.990
51.780	52.770	-9999.990	0.030	0.000	0.150	219.0.213	5.920	-9999.990	-9999.990	-9999.990
51.840	77.899	-9999.990	0.030	0.000	0.150	219.0.213	5.670	-9999.990	-9999.990	-9999.990
51.900	77.900	-9999.990	0.030	0.000	0.150	219.0.213	5.670	-9999.990	-9999.990	-9999.990
51.960	55.841	-9999.990	0.030	0.000	0.150	219.0.213	5.560	-9999.990	-9999.990	-9999.990
52.020	55.840	-9999.990	0.020	0.000	0.140	146.0.199	5.840	45.880	-9999.990	-9999.990
52.080	55.280	-9999.990	0.020	0.000	0.140	146.0.199	5.840	45.870	-9999.990	-9999.990
52.140	44.671	-9999.990	0.030	0.000	0.150	219.0.213	5.680	-9999.990	-9999.990	-9999.990
52.200	44.670	-9999.990	0.020	0.000	0.140	146.0.199	5.840	47.280	-9999.990	-9999.990
52.260	52.770	-9999.990	0.020	0.000	0.150	146.0.213	6.110	46.270	-9999.990	-9999.990
52.320	52.770	-9999.990	0.020	0.000	0.150	146.0.213	6.260	45.790	-9999.990	-9999.990
52.380	61.420	-9999.990	0.020	0.000	0.150	146.0.213	6.110	46.260	-9999.990	-9999.990
52.440	30.712	-9999.990	0.020	0.030	0.110	146.61.156	5.730	4.062	-9999.990	-9999.990
52.500	30.710	-9999.990	0.020	0.030	0.120	146.61.170	5.890	4.050	-9999.990	-9999.990
52.560	42.709	-9999.990	0.020	0.030	0.120	146.61.170	5.890	4.050	-9999.990	-9999.990
52.620	42.710	-9999.990	0.020	0.030	0.120	146.61.170	5.890	4.050	-9999.990	-9999.990
52.680	55.840	-9999.990	0.020	0.030	0.110	146.61.156	5.850	3.110	-9999.990	-9999.990
52.740	47.740	-9999.990	0.020	0.030	0.110	146.61.156	5.640	3.530	-9999.990	-9999.990
52.800	47.740	-9999.990	0.020	0.030	0.110	146.61.156	5.640	3.530	-9999.990	-9999.990
52.860	25.120	-9999.990	0.020	0.030	0.110	146.61.156	5.640	3.530	-9999.990	-9999.990
52.920	25.120	-9999.990	0.020	0.020	0.110	146.40.156	5.150	4.810	-9999.990	-9999.990
52.980	70.360	-9999.990	0.020	0.020	0.110	146.40.156	5.030	4.820	-9999.990	-9999.990
53.040	47.742	-9999.990	0.020	0.020	0.110	146.40.156	5.030	4.820	-9999.990	-9999.990
53.100	47.740	-9999.990	0.020	0.020	0.120	146.40.170	4.990	5.860	-9999.990	-9999.990
53.160	53.049	-9999.990	0.020	0.020	0.110	146.40.156	5.270	4.790	-9999.990	-9999.990
53.220	53.050	-9999.990	0.020	0.030	0.110	146.61.156	5.310	4.060	-9999.990	-9999.990
53.280	55.280	-9999.990	0.020	0.030	0.110	146.61.156	5.310	4.060	0.690	2.322
53.340	42.710	-9999.990	0.020	0.020	0.110	146.40.156	5.270	4.780	-9999.990	-9999.990
53.400	42.710	-9999.990	0.020	0.020	0.110	146.40.156	5.150	4.780	-9999.990	-9999.990
53.460	44.670	-9999.990	0.020	0.020	0.110	146.40.156	5.030	4.790	-9999.990	-9999.990
53.520	44.670	-9999.990	0.020	0.020	0.110	146.40.156	5.030	4.790	-9999.990	-9999.990
53.580	42.710	-9999.990	0.020	0.030	0.110	146.61.156	5.180	4.060	-9999.990	-9999.990
53.640	50.250	-9999.990	0.020	0.030	0.110	146.61.156	5.180	4.060	-9999.990	-9999.990
53.700	50.250	-9999.990	0.020	0.030	0.110	146.61.156	5.070	4.070	-9999.990	-9999.990
53.760	78.180	-9999.990	0.020	0.030	0.110	146.61.156	5.070	4.070	-9999.990	-9999.990
53.820	78.180	-9999.990	0.020	0.030	0.110	146.61.156	5.070	4.070	-9999.990	-9999.990
53.880	50.253	-9999.990	0.020	0.030	0.100	146.61.142	5.260	3.140	-9999.990	-9999.990
53.940	61.419	-9999.990	0.020	0.030	0.100	146.61.142	5.260	3.140	-9999.990	-9999.990
54.000	61.420	-9999.990	0.020	0.030	0.100	146.61.142	5.140	3.140	-9999.990	-9999.990
54.060	47.741	-9999.990	0.020	0.030	0.100	146.61.142	5.140	3.140	-9999.990	-9999.990
54.120	47.740	-9999.990	0.020	0.030	0.100	146.61.142	5.140	3.140	-9999.990	-9999.990
54.180	58.630	-9999.990	0.020	0.030	0.100	146.61.142	5.150	3.140	-9999.990	-9999.990
54.240	52.770	-9999.990	0.020	0.030	0.110	146.61.156	4.990	3.570	-9999.990	-9999.990
54.300	52.770	-9999.990	0.020	0.050	0.080	146.102.113	4.610	1.470	-9999.990	-9999.990
54.360	45.230	-9999.990	0.020	0.050	0.070	146.102.99	4.530	1.370	-9999.990	-9999.990
54.420	45.230	-9999.990	0.020	0.050	0.070	146.102.99	4.540	1.370	-9999.990	-9999.990
54.480	41.880	-9999.990	0.020	0.050	0.070	146.102.99	4.430	1.370	-9999.990	-9999.990
54.540	62.818	-9999.990	0.020	0.050	0.070	146.102.99	4.430	1.370	-9999.990	-9999.990
54.600	62.820	-9999.990	0.020	0.050	0.070	146.102.99	4.320	1.370	-9999.990	-9999.990
54.660	50.251	-9999.990	0.020	0.050	0.070	146.102.99	4.430	1.370	-9999.990	-9999.990
54.720	50.250	-9999.990	0.010	0.070	0.050	73.143.71	3.870	0.680	-9999.990	-9999.990
54.780	40.200	-9999.990	0.010	0.070	0.050	73.143.71	3.870	0.680	-9999.990	-9999.990
54.840	69.800	-9999.990	0.010	0.080	0.050	73.163.71	4.030	0.650	-9999.990	-9999.990
54.900	69.800	-9999.990	0.010	0.080	0.050	73.163.71	4.210	0.620	-9999.990	-9999.990
54.960	55.280	-9999.990	0.010	0.080	0.050	73.163.71	4.070	0.620	-9999.990	-9999.990
55.020	55.280	-9999.990	0.010	0.080	0.050	73.163.71	4.260	0.590	-9999.990	-9999.990
55.080	65.330	-9999.990	0.010	0.080	0.050	73.163.71	4.580	0.590	-9999.990	-9999.990
55.140	60.311	-9999.990	0.010	0.080	0.050	73.163.71	4.580	0.590	-9999.990	-9999.990
55.200	60.310	-9999.990	0.010	0.080	0.050	73.163.71	5.020	0.570	-9999.990	-9999.990
55.260	64.220	-9999.990	0.010	0.070	0.070	73.143.99	5.890	1.000	-9999.990	-9999.990
55.320	64.220	-9999.990	0.010	0.070	0.070	73.143.99	6.110	1.000	-9999.990	-9999.990

Boring DD2-BK
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ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
55.380	42.712	-9999.990	0.010	0.070	0.070	73.143.99	6.520	0.910	-9999.990	-9999.990
55.440	62.820	-9999.990	0.020	0.040	0.110	146.81.156	6.630	2.990	-9999.990	-9999.990
55.500	62.820	-9999.990	0.020	0.040	0.110	146.81.156	6.630	2.990	-9999.990	-9999.990
55.560	52.770	-9999.990	0.020	0.040	0.110	146.81.156	6.630	2.990	-9999.990	-9999.990
55.620	52.770	-9999.990	0.020	0.040	0.110	146.81.156	6.460	2.990	-9999.990	-9999.990
55.680	40.200	-9999.990	0.020	0.040	0.110	146.81.156	6.620	2.990	-9999.990	-9999.990
55.740	72.870	-9999.990	0.020	0.040	0.110	146.81.156	6.460	2.990	-9999.990	-9999.990
55.800	72.870	-9999.990	0.020	0.040	0.110	146.81.156	6.860	2.730	-9999.990	-9999.990
55.860	87.958	-9999.990	0.020	0.040	0.110	146.81.156	6.460	2.990	-9999.990	-9999.990
55.920	87.960	-9999.990	0.020	0.040	0.110	146.81.156	6.680	2.730	-9999.990	-9999.990
55.980	86.560	-9999.990	0.020	0.040	0.110	146.81.156	6.680	2.730	-9999.990	-9999.990
56.040	75.391	-9999.990	0.020	0.040	0.110	146.81.156	6.460	2.990	-9999.990	-9999.990
56.100	75.390	-9999.990	0.020	0.040	0.110	146.81.156	6.460	2.990	-9999.990	-9999.990
56.160	80.420	-9999.990	0.020	0.040	0.110	146.81.156	6.470	2.990	-9999.990	-9999.990
56.220	80.420	-9999.990	0.020	0.040	0.110	146.81.156	6.050	2.990	-9999.990	-9999.990
56.280	80.420	-9999.990	0.020	0.040	0.110	146.81.156	6.050	2.990	-9999.990	-9999.990
56.340	103.050	-9999.990	0.020	0.040	0.110	146.81.156	6.250	2.750	-9999.990	-9999.990
56.400	103.050	-9999.990	0.020	0.040	0.100	146.81.142	5.980	2.750	-9999.990	-9999.990
56.460	75.390	-9999.990	0.020	0.040	0.110	146.81.156	6.270	2.750	-9999.990	-9999.990
56.520	75.390	-9999.990	0.020	0.040	0.100	146.81.142	6.690	2.360	-9999.990	-9999.990
56.580	83.769	-9999.990	0.020	0.040	0.100	146.81.142	6.630	2.560	-9999.990	-9999.990
56.640	52.773	-9999.990	0.020	0.040	0.100	146.81.142	6.610	2.580	-9999.990	-9999.990
56.700	52.770	-9999.990	0.020	0.040	0.100	146.81.142	6.670	2.390	-9999.990	-9999.990
56.760	72.600	-9999.990	0.020	0.040	0.110	146.81.156	5.960	2.840	-9999.990	-9999.990
56.820	72.600	-9999.990	0.020	0.040	0.110	146.81.156	5.960	2.840	-9999.990	-9999.990
56.880	57.790	-9999.990	0.020	0.020	0.130	146.40.184	6.480	7.710	-9999.990	-9999.990
56.940	100.530	-9999.990	0.020	0.020	0.130	146.40.184	6.630	7.700	-9999.990	-9999.990
57.000	100.530	-9999.990	0.020	0.020	0.140	146.40.199	6.940	7.680	-9999.990	-9999.990
57.060	95.501	-9999.990	0.020	0.020	0.140	146.40.199	6.940	7.680	-9999.990	-9999.990
57.120	42.710	-9999.990	0.020	0.020	0.130	146.40.184	7.150	6.430	-9999.990	-9999.990
57.180	42.710	-9999.990	0.020	0.020	0.130	146.40.184	7.150	6.430	-9999.990	-9999.990
57.240	57.788	-9999.990	0.020	0.020	0.130	146.40.184	6.990	6.440	-9999.990	-9999.990
57.300	57.790	-9999.990	0.020	0.020	0.130	146.40.184	6.900	5.550	-9999.990	-9999.990
57.360	75.390	-9999.990	0.020	0.020	0.130	146.40.184	7.070	5.540	-9999.990	-9999.990
57.420	106.120	-9999.990	0.020	0.020	0.130	146.40.184	7.080	5.540	-9999.990	-9999.990
57.480	106.120	-9999.990	0.020	0.020	0.130	146.40.184	6.920	5.540	-9999.990	-9999.990
57.540	98.020	-9999.990	0.020	0.020	0.130	146.40.184	6.770	5.550	-9999.990	-9999.990
57.600	98.020	-9999.990	0.020	0.000	0.150	146.0.213	6.850	40.230	-9999.990	-9999.990
57.660	82.930	-9999.990	0.020	0.010	0.150	146.20.213	6.900	21.010	-9999.990	-9999.990
57.720	67.852	-9999.990	0.020	0.020	0.140	146.40.199	7.550	7.221	-9999.990	-9999.990
57.780	67.850	-9999.990	0.020	0.020	0.140	146.40.199	7.550	7.220	-9999.990	-9999.990
57.840	92.987	-9999.990	0.020	0.020	0.140	146.40.199	6.910	8.720	-9999.990	-9999.990
57.900	92.990	-9999.990	0.020	0.020	0.140	146.40.199	6.960	7.300	-9999.990	-9999.990
57.960	87.961	-9999.990	0.020	0.020	0.140	146.40.199	6.960	7.300	-9999.990	-9999.990
58.020	98.019	-9999.990	0.020	0.020	0.130	146.40.184	7.010	6.250	-9999.990	-9999.990
58.080	98.020	-9999.990	0.020	0.020	0.130	146.40.184	6.870	6.260	-9999.990	-9999.990
58.140	100.530	-9999.990	0.020	0.020	0.130	146.40.184	6.920	5.480	-9999.990	-9999.990
58.200	100.530	-9999.990	0.020	0.020	0.130	146.40.184	6.610	6.290	-9999.990	-9999.990
58.260	82.930	-9999.990	0.020	0.020	0.130	146.40.184	6.440	7.390	-9999.990	-9999.990
58.320	83.770	-9999.990	0.020	0.040	0.110	146.81.156	6.360	2.930	-9999.990	-9999.990
58.380	83.770	-9999.990	0.020	0.050	0.090	146.102.128	5.850	1.790	-9999.990	-9999.990
58.440	90.470	-9999.990	0.020	0.050	0.090	146.102.128	5.680	1.900	-9999.990	-9999.990
58.500	90.470	-9999.990	0.020	0.030	0.110	146.61.156	6.000	3.400	-9999.990	-9999.990
58.560	90.470	-9999.990	0.020	0.030	0.110	146.61.156	6.000	3.400	-9999.990	-9999.990
58.620	75.392	-9999.990	0.020	0.030	0.110	146.61.156	6.000	3.400	-9999.990	-9999.990
58.680	75.390	-9999.990	0.020	0.030	0.110	146.61.156	6.120	3.410	-9999.990	-9999.990
58.740	120.090	-9999.990	0.020	0.030	0.110	146.61.156	5.880	3.410	-9999.990	-9999.990
58.800	120.090	-9999.990	0.020	0.030	0.110	146.61.156	5.770	3.420	-9999.990	-9999.990
58.860	77.904	-9999.990	0.020	0.030	0.110	146.61.156	5.770	3.420	-9999.990	-9999.990
58.920	92.990	-9999.990	0.020	0.030	0.110	146.61.156	5.890	3.410	-9999.990	-9999.990
58.980	92.990	-9999.990	0.020	0.030	0.110	146.61.156	5.670	3.420	-9999.990	-9999.990
59.040	106.120	-9999.990	0.020	0.030	0.110	146.61.156	5.670	3.420	-9999.990	-9999.990
59.100	106.120	-9999.990	0.020	0.030	0.110	146.61.156	5.670	3.420	-9999.990	-9999.990
59.160	95.501	-9999.990	0.020	0.030	0.110	146.61.156	5.630	3.780	-9999.990	-9999.990
59.220	90.471	-9999.990	0.020	0.030	0.110	146.61.156	5.440	3.780	-9999.990	-9999.990
59.280	90.470	-9999.990	0.020	0.030	0.110	146.61.156	5.310	4.230	-9999.990	-9999.990
59.340	98.239	-9999.990	0.020	0.030	0.110	146.61.156	5.310	4.230	-9999.990	-9999.990
59.400	98.240	-9999.990	0.020	0.030	0.110	146.61.156	5.400	4.230	-9999.990	-9999.990
59.460	87.960	-9999.990	0.020	0.020	0.110	146.40.156	5.190	4.790	-9999.990	-9999.990
59.520	90.470	-9999.990	0.020	0.020	0.110	146.40.156	5.100	4.790	-9999.990	-9999.990
59.580	90.470	-9999.990	0.020	0.030	0.110	146.61.156	5.340	3.810	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
59.640	90.470	-9999.990	0.020	0.030	0.110	146.61.156	5.580	3.450	-9999.990	-9999.990
59.700	90.470	-9999.990	0.020	0.030	0.110	146.61.156	5.440	3.810	-9999.990	-9999.990
59.760	67.850	-9999.990	0.020	0.030	0.110	146.61.156	5.440	3.810	-9999.990	-9999.990
59.820	95.497	-9999.990	0.020	0.030	0.110	146.61.156	5.340	3.820	-9999.990	-9999.990
59.880	95.500	-9999.990	0.020	0.030	0.110	146.61.156	5.470	3.460	-9999.990	-9999.990
59.940	92.990	-9999.990	0.020	0.030	0.110	146.61.156	5.570	3.450	-9999.990	-9999.990
60.000	92.990	-9999.990	0.020	0.030	0.110	146.61.156	5.470	3.460	-9999.990	-9999.990
60.060	60.313	-9999.990	0.020	0.030	0.110	146.61.156	5.470	3.460	-9999.990	-9999.990
60.120	72.870	-9999.990	0.020	0.030	0.110	146.61.156	5.470	3.460	-9999.990	-9999.990
60.180	72.870	-9999.990	0.020	0.030	0.110	146.61.156	5.510	3.160	-9999.990	-9999.990
60.240	93.670	-9999.990	0.020	0.030	0.110	146.61.156	5.570	3.460	-9999.990	-9999.990
60.300	93.670	-9999.990	0.020	0.030	0.110	146.61.156	5.710	3.160	-9999.990	-9999.990
60.360	75.390	-9999.990	0.020	0.050	0.090	146.102.128	5.480	1.780	-9999.990	-9999.990
60.420	95.500	-9999.990	0.010	0.050	0.090	73.102.128	5.950	1.600	-9999.990	-9999.990
60.480	95.500	-9999.990	0.020	0.050	0.090	146.102.128	5.770	1.680	-9999.990	-9999.990
60.540	77.902	-9999.990	0.010	0.050	0.090	73.102.128	5.910	1.680	-9999.990	-9999.990
60.600	77.900	-9999.990	0.020	0.050	0.090	146.102.128	5.780	1.680	-9999.990	-9999.990
60.660	87.959	-9999.990	0.020	0.050	0.090	146.102.128	5.780	1.680	-9999.990	-9999.990
60.720	95.499	-9999.990	0.020	0.050	0.090	146.102.128	5.660	1.690	-9999.990	-9999.990
60.780	95.500	-9999.990	0.020	0.050	0.090	146.102.128	5.270	1.790	-9999.990	-9999.990
60.840	72.872	-9999.990	0.020	0.050	0.090	146.102.128	5.270	1.790	-9999.990	-9999.990
60.900	72.870	-9999.990	0.020	0.050	0.090	146.102.128	5.170	1.790	1.140	3.364
60.960	94.940	-9999.990	0.020	0.050	0.090	146.102.128	5.170	1.790	-9999.990	-9999.990
61.020	110.590	-9999.990	0.020	0.050	0.090	146.102.128	5.170	1.790	-9999.990	-9999.990
61.080	110.590	-9999.990	0.020	0.050	0.090	146.102.128	5.160	1.800	-9999.990	-9999.990
61.140	95.500	-9999.990	0.020	0.050	0.090	146.102.128	5.060	1.800	-9999.990	-9999.990
61.200	95.500	-9999.990	0.020	0.050	0.090	146.102.128	5.160	1.800	-9999.990	-9999.990
61.260	75.392	-9999.990	0.020	0.050	0.090	146.102.128	5.060	1.800	-9999.990	-9999.990
61.320	87.959	-9999.990	0.020	0.050	0.090	146.102.128	4.920	1.920	-9999.990	-9999.990
61.380	87.960	-9999.990	0.020	0.050	0.090	146.102.128	5.030	1.920	-9999.990	-9999.990
61.440	80.420	-9999.990	0.020	0.040	0.090	146.81.128	4.890	2.060	-9999.990	-9999.990
61.500	80.420	-9999.990	0.020	0.040	0.090	146.81.128	4.770	2.210	-9999.990	-9999.990
61.560	82.930	-9999.990	0.020	0.040	0.090	146.81.128	4.770	2.210	-9999.990	-9999.990
61.620	62.820	-9999.990	0.020	0.040	0.090	146.81.128	4.760	2.220	-9999.990	-9999.990
61.680	62.820	-9999.990	0.020	0.040	0.090	146.81.128	4.950	2.210	-9999.990	-9999.990
61.740	57.790	-9999.990	0.020	0.040	0.090	146.81.128	4.770	2.220	-9999.990	-9999.990
61.800	57.790	-9999.990	0.020	0.050	0.090	146.102.128	4.920	1.940	-9999.990	-9999.990
61.860	57.790	-9999.990	0.020	0.050	0.090	146.102.128	4.830	1.940	-9999.990	-9999.990
61.920	50.251	-9999.990	0.020	0.030	0.110	146.61.156	5.280	3.560	-9999.990	-9999.990
61.980	50.250	-9999.990	0.020	0.030	0.110	146.61.156	5.280	3.560	-9999.990	-9999.990
62.040	55.280	-9999.990	0.020	0.030	0.110	146.61.156	5.370	3.560	-9999.990	-9999.990
62.100	55.280	-9999.990	0.020	0.030	0.110	146.61.156	5.160	3.950	-9999.990	-9999.990
62.160	92.146	-9999.990	0.020	0.030	0.110	146.61.156	5.250	3.940	-9999.990	-9999.990
62.220	62.823	-9999.990	0.020	0.030	0.110	146.61.156	5.340	3.940	-9999.990	-9999.990
62.280	62.820	-9999.990	0.020	0.030	0.110	146.61.156	5.220	4.420	-9999.990	-9999.990
62.340	80.420	-9999.990	0.020	0.030	0.110	146.61.156	5.220	4.420	-9999.990	-9999.990
62.400	80.420	-9999.990	0.020	0.030	0.110	146.61.156	5.470	3.560	-9999.990	-9999.990
62.460	67.850	-9999.990	0.020	0.030	0.110	146.61.156	5.470	3.560	-9999.990	-9999.990
62.520	72.870	-9999.990	0.020	0.030	0.110	146.61.156	5.710	3.250	-9999.990	-9999.990
62.580	72.870	-9999.990	0.020	0.030	0.110	146.61.156	5.610	3.250	-9999.990	-9999.990
62.640	90.468	-9999.990	0.020	0.040	0.110	146.81.156	5.750	2.990	-9999.990	-9999.990
62.700	90.470	-9999.990	0.020	0.040	0.110	146.81.156	5.640	2.990	-9999.990	-9999.990
62.760	86.560	-9999.990	0.020	0.030	0.110	146.61.156	5.710	3.270	-9999.990	-9999.990
62.820	80.421	-9999.990	0.020	0.030	0.110	146.61.156	5.710	3.270	-9999.990	-9999.990
62.880	80.420	-9999.990	0.020	0.030	0.110	146.61.156	5.600	3.270	-9999.990	-9999.990
62.940	77.900	-9999.990	0.020	0.030	0.110	146.61.156	5.600	3.270	-9999.990	-9999.990
63.000	77.900	-9999.990	0.020	0.030	0.110	146.61.156	5.610	3.270	-9999.990	-9999.990
63.060	95.498	-9999.990	0.020	0.030	0.110	146.61.156	5.610	3.270	-9999.990	-9999.990
63.120	100.530	-9999.990	0.020	0.030	0.110	146.61.156	5.840	3.260	-9999.990	-9999.990
63.180	100.530	-9999.990	0.020	0.030	0.110	146.61.156	5.730	3.270	-9999.990	-9999.990
63.240	94.941	-9999.990	0.020	0.040	0.100	146.81.142	5.920	2.780	-9999.990	-9999.990
63.300	94.940	-9999.990	0.020	0.040	0.110	146.81.156	5.750	3.030	-9999.990	-9999.990
63.360	77.902	-9999.990	0.020	0.030	0.110	146.61.156	5.720	3.310	-9999.990	-9999.990
63.420	90.470	-9999.990	0.020	0.040	0.110	146.81.156	5.860	3.040	-9999.990	-9999.990
63.480	90.470	-9999.990	0.020	0.040	0.110	146.81.156	5.980	3.030	-9999.990	-9999.990
63.540	90.470	-9999.990	0.020	0.040	0.110	146.81.156	5.990	3.030	-9999.990	-9999.990
63.600	90.470	-9999.990	0.020	0.040	0.110	146.81.156	5.880	3.040	-9999.990	-9999.990
63.660	78.180	-9999.990	0.020	0.030	0.110	146.61.156	5.730	3.320	-9999.990	-9999.990
63.720	95.500	-9999.990	0.020	0.030	0.110	146.61.156	5.620	3.320	-9999.990	-9999.990
63.780	95.500	-9999.990	0.020	0.030	0.110	146.61.156	5.620	3.320	-9999.990	-9999.990
63.840	120.647	-9999.990	0.020	0.030	0.110	146.61.156	5.620	3.320	-9999.990	-9999.990

Boring DD2-BK
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Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
63.900	72.870	-9999.990	0.020	0.020	0.130	146.40.184	6.190	5.750	-9999.990	-9999.990
63.960	72.870	-9999.990	0.020	0.020	0.120	146.40.170	6.020	5.070	-9999.990	-9999.990
64.020	80.419	-9999.990	0.020	0.020	0.130	146.40.184	5.850	6.630	-9999.990	-9999.990
64.080	80.420	-9999.990	0.020	0.020	0.130	146.40.184	5.750	6.630	-9999.990	-9999.990
64.140	90.469	-9999.990	0.020	0.020	0.130	146.40.184	5.750	6.630	-9999.990	-9999.990
64.200	100.529	-9999.990	0.020	0.020	0.130	146.40.184	5.750	6.630	-9999.990	-9999.990
64.260	100.530	-9999.990	0.020	0.020	0.120	146.40.170	5.780	5.740	-9999.990	-9999.990
64.320	86.560	-9999.990	0.020	0.020	0.120	146.40.170	5.690	5.740	-9999.990	-9999.990
64.380	86.560	-9999.990	0.020	0.020	0.120	146.40.170	5.560	6.630	-9999.990	-9999.990
64.440	67.850	-9999.990	0.020	0.020	0.130	146.40.184	5.620	7.790	-9999.990	-9999.990
64.500	90.470	-9999.990	0.020	0.000	0.150	146.0.213	5.990	63.380	-9999.990	-9999.990
64.560	90.470	-9999.990	0.020	0.000	0.150	146.0.213	5.990	63.380	-9999.990	-9999.990
64.620	60.313	-9999.990	0.020	0.010	0.140	146.20.199	6.240	17.675	-9999.990	-9999.990
64.680	60.310	-9999.990	0.020	0.010	0.140	146.20.199	6.240	17.670	-9999.990	-9999.990
64.740	85.435	-9999.990	0.020	0.010	0.140	146.20.199	6.480	13.011	-9999.990	-9999.990
64.800	87.960	-9999.990	0.020	0.010	0.140	146.20.199	6.520	10.310	-9999.990	-9999.990
64.860	87.960	-9999.990	0.020	0.010	0.140	146.20.199	6.480	13.010	-9999.990	-9999.990
64.920	55.280	-9999.990	0.020	0.010	0.140	146.20.199	6.240	17.730	-9999.990	-9999.990
64.980	55.280	-9999.990	0.020	0.010	0.140	146.20.199	6.110	27.610	-9999.990	-9999.990
65.040	62.820	-9999.990	0.020	0.000	0.150	146.0.213	6.520	-9999.990	-9999.990	-9999.990
65.100	50.251	-9999.990	0.020	0.000	0.150	146.0.213	6.400	-9999.990	-9999.990	-9999.990
65.160	50.250	-9999.990	0.020	0.000	0.150	146.0.213	6.220	-9999.990	-9999.990	-9999.990
65.220	82.930	-9999.990	0.020	0.000	0.150	146.0.213	6.470	-9999.990	-9999.990	-9999.990
65.280	82.930	-9999.990	0.020	0.000	0.150	146.0.213	6.470	-9999.990	-9999.990	-9999.990
65.340	75.391	-9999.990	0.020	0.000	0.150	146.0.213	6.470	-9999.990	-9999.990	-9999.990
65.400	55.842	-9999.990	0.020	0.010	0.140	146.20.199	6.270	12.660	-9999.990	-9999.990
65.460	55.840	-9999.990	0.020	0.010	0.140	146.20.199	6.270	12.660	-9999.990	-9999.990
65.520	67.849	-9999.990	0.020	0.010	0.140	146.20.199	6.100	26.559	-9999.990	-9999.990
65.580	67.850	-9999.990	0.020	0.040	0.100	146.81.142	5.900	2.682	-9999.990	-9999.990
65.640	75.389	-9999.990	0.020	0.040	0.100	146.81.142	5.900	2.680	-9999.990	-9999.990
65.700	75.390	-9999.990	0.020	0.040	0.100	146.81.142	6.030	2.680	-9999.990	-9999.990
65.760	75.390	-9999.990	0.020	0.040	0.100	146.81.142	6.030	2.680	-9999.990	-9999.990
65.820	77.900	-9999.990	0.020	0.040	0.110	146.81.156	5.990	2.900	-9999.990	-9999.990
65.880	77.900	-9999.990	0.020	0.030	0.110	146.61.156	5.830	3.150	-9999.990	-9999.990
65.940	80.420	-9999.990	0.020	0.030	0.110	146.61.156	5.940	3.150	-9999.990	-9999.990
66.000	50.250	-9999.990	0.020	0.030	0.110	146.61.156	5.830	3.160	-9999.990	-9999.990
66.060	50.250	-9999.990	0.020	0.030	0.110	146.61.156	5.610	3.160	-9999.990	-9999.990
66.120	70.360	-9999.990	0.020	0.030	0.110	146.61.156	5.610	3.160	-9999.990	-9999.990
66.180	70.360	-9999.990	0.020	0.030	0.110	146.61.156	5.510	3.160	-9999.990	-9999.990
66.240	67.850	-9999.990	0.020	0.030	0.110	146.61.156	5.410	3.160	-9999.990	-9999.990
66.300	55.280	-9999.990	0.020	0.030	0.110	146.61.156	5.500	3.160	-9999.990	-9999.990
66.360	55.280	-9999.990	0.020	0.030	0.110	146.61.156	5.800	3.160	-9999.990	-9999.990
66.420	80.417	-9999.990	0.020	0.030	0.110	146.61.156	5.770	3.440	-9999.990	-9999.990
66.480	80.420	-9999.990	0.020	0.030	0.110	146.61.156	5.980	3.430	-9999.990	-9999.990
66.540	90.470	-9999.990	0.020	0.030	0.110	146.61.156	5.980	3.430	-9999.990	-9999.990
66.600	70.362	-9999.990	0.020	0.030	0.120	146.61.170	5.800	4.170	-9999.990	-9999.990
66.660	70.360	-9999.990	0.020	0.030	0.120	146.61.170	5.800	4.170	-9999.990	-9999.990
66.720	100.527	-9999.990	0.020	0.020	0.120	146.40.170	5.550	4.680	-9999.990	-9999.990
66.780	100.530	-9999.990	0.020	0.000	0.140	146.0.199	5.800	31.977	-9999.990	-9999.990
66.840	85.442	-9999.990	0.020	0.000	0.140	146.0.199	5.800	31.980	-9999.990	-9999.990
66.900	98.020	-9999.990	0.020	0.000	0.140	146.0.199	6.000	31.650	-9999.990	-9999.990
66.960	98.020	-9999.990	0.020	0.000	0.140	146.0.199	5.900	31.820	-9999.990	-9999.990
67.020	80.420	-9999.990	0.020	0.030	0.120	146.61.170	6.030	4.220	-9999.990	-9999.990
67.080	80.420	-9999.990	0.020	0.030	0.120	146.61.170	6.030	4.220	-9999.990	-9999.990
67.140	87.959	-9999.990	0.020	0.030	0.110	146.61.156	6.200	3.780	-9999.990	-9999.990
67.200	83.770	-9999.990	0.020	0.030	0.120	146.61.170	6.040	4.200	-9999.990	-9999.990
67.260	83.770	-9999.990	0.020	0.030	0.120	146.61.170	5.920	4.200	-9999.990	-9999.990
67.320	100.530	-9999.990	0.020	0.030	0.120	146.61.170	6.030	4.200	-9999.990	-9999.990
67.380	100.530	-9999.990	0.020	0.030	0.120	146.61.170	6.110	4.710	-9999.990	-9999.990
67.440	92.990	-9999.990	0.020	0.030	0.120	146.61.170	6.110	4.710	-9999.990	-9999.990
67.500	67.850	-9999.990	0.020	0.030	0.120	146.61.170	6.230	4.700	-9999.990	-9999.990
67.560	67.850	-9999.990	0.020	0.030	0.120	146.61.170	6.350	4.700	-9999.990	-9999.990
67.620	75.390	-9999.990	0.020	0.030	0.120	146.61.170	6.350	4.700	-9999.990	-9999.990
67.680	75.390	-9999.990	0.020	0.030	0.120	146.61.170	6.680	4.170	-9999.990	-9999.990
67.740	87.959	-9999.990	0.010	0.050	0.100	73.102.142	6.570	2.140	-9999.990	-9999.990
67.800	65.330	-9999.990	0.020	0.040	0.100	146.81.142	6.500	2.300	-9999.990	-9999.990
67.860	65.330	-9999.990	0.020	0.040	0.100	146.81.142	6.230	2.690	1.355	0.795
67.920	67.850	-9999.990	0.020	0.040	0.110	146.81.156	6.720	2.690	-9999.990	-9999.990
67.980	67.850	-9999.990	0.020	0.040	0.110	146.81.156	6.660	2.940	-9999.990	-9999.990
68.040	47.742	-9999.990	0.020	0.040	0.110	146.81.156	6.660	2.940	-9999.990	-9999.990
68.100	60.307	-9999.990	0.020	0.040	0.110	146.81.156	6.830	2.930	-9999.990	-9999.990

Boring DD2-BK
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ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
68.160	60.310	-9999.990	0.020	0.040	0.110	146.81.156	6.660	2.940	-9999.990	-9999.990
68.220	62.820	-9999.990	0.020	0.030	0.110	146.61.156	6.590	3.240	-9999.990	-9999.990
68.280	62.820	-9999.990	0.020	0.040	0.110	146.81.156	6.830	2.930	-9999.990	-9999.990
68.340	61.420	-9999.990	0.020	0.040	0.110	146.81.156	6.830	2.930	-9999.990	-9999.990
68.400	55.280	-9999.990	0.020	0.040	0.110	146.81.156	6.830	2.930	-9999.990	-9999.990
68.460	55.280	-9999.990	0.020	0.040	0.110	146.81.156	6.660	2.920	-9999.990	-9999.990
68.520	45.231	-9999.990	0.020	0.040	0.110	146.81.156	6.660	2.920	-9999.990	-9999.990
68.580	45.230	-9999.990	0.020	0.040	0.110	146.81.156	6.840	2.920	-9999.990	-9999.990
68.640	32.661	-9999.990	0.010	0.060	0.080	73.122.113	6.820	1.470	-9999.990	-9999.990
68.700	60.307	-9999.990	0.020	0.040	0.110	146.81.156	7.100	2.680	-9999.990	-9999.990
68.760	60.310	-9999.990	0.020	0.040	0.110	146.81.156	6.670	2.940	-9999.990	-9999.990
68.820	65.330	-9999.990	0.020	0.040	0.110	146.81.156	7.030	2.930	-9999.990	-9999.990
68.880	65.330	-9999.990	0.010	0.040	0.110	73.81.156	7.300	2.680	-9999.990	-9999.990
68.940	32.663	-9999.990	0.010	0.040	0.110	73.81.156	7.300	2.680	-9999.990	-9999.990
69.000	55.280	-9999.990	0.010	0.040	0.110	73.81.156	7.300	2.680	-9999.990	-9999.990
69.060	55.280	-9999.990	0.010	0.040	0.110	73.81.156	7.730	2.680	-9999.990	-9999.990
69.120	92.150	-9999.990	0.010	0.040	0.110	73.81.156	7.730	2.680	-9999.990	-9999.990
69.180	92.150	-9999.990	0.010	0.040	0.110	73.81.156	7.510	2.680	-9999.990	-9999.990
69.240	45.235	-9999.990	0.010	0.040	0.110	73.81.156	7.510	2.680	-9999.990	-9999.990
69.300	57.789	-9999.990	0.010	0.040	0.110	73.81.156	7.510	2.680	-9999.990	-9999.990
69.360	57.790	-9999.990	0.010	0.040	0.110	73.81.156	7.730	2.680	-9999.990	-9999.990
69.420	27.646	-9999.990	0.010	0.040	0.110	73.81.156	7.510	2.680	-9999.990	-9999.990
69.480	27.640	-9999.990	0.010	0.040	0.110	73.81.156	7.600	2.470	-9999.990	-9999.990
69.540	67.850	-9999.990	0.010	0.040	0.110	73.81.156	8.080	2.470	-9999.990	-9999.990
69.600	39.083	-9999.990	0.010	0.040	0.110	73.81.156	8.080	2.470	-9999.990	-9999.990
69.660	39.080	-9999.990	0.020	0.040	0.110	146.81.156	7.440	2.940	-9999.990	-9999.990
69.720	30.150	-9999.990	0.020	0.040	0.110	146.81.156	7.160	3.250	-9999.990	-9999.990
69.780	30.150	-9999.990	0.020	0.040	0.110	146.81.156	6.960	3.250	-9999.990	-9999.990
69.840	32.660	-9999.990	0.020	0.040	0.110	146.81.156	6.960	3.250	-9999.990	-9999.990
69.900	50.250	-9999.990	0.020	0.030	0.110	146.61.156	6.780	3.250	-9999.990	-9999.990
69.960	50.250	-9999.990	0.020	0.040	0.110	146.81.156	6.970	3.250	-9999.990	-9999.990
70.020	42.711	-9999.990	0.020	0.040	0.110	146.81.156	6.960	3.260	-9999.990	-9999.990
70.080	42.710	-9999.990	0.020	0.040	0.110	146.81.156	6.960	3.260	-9999.990	-9999.990
70.140	70.357	-9999.990	0.020	0.040	0.120	146.81.170	7.160	3.260	-9999.990	-9999.990
70.200	65.331	-9999.990	0.020	0.020	0.140	146.40.199	7.360	9.259	-9999.990	-9999.990
70.260	65.330	-9999.990	0.020	0.020	0.140	146.40.199	7.540	9.280	-9999.990	-9999.990
70.320	52.770	-9999.990	0.020	0.020	0.140	146.40.199	7.610	7.440	-9999.990	-9999.990
70.380	52.770	-9999.990	0.020	0.020	0.140	146.40.199	7.620	7.430	-9999.990	-9999.990
70.440	75.390	-9999.990	0.020	0.020	0.140	146.40.199	7.690	6.200	-9999.990	-9999.990
70.500	65.330	-9999.990	0.020	0.020	0.140	146.40.199	7.200	9.170	-9999.990	-9999.990
70.560	65.330	-9999.990	0.020	0.020	0.140	146.40.199	7.030	9.180	-9999.990	-9999.990
70.620	52.771	-9999.990	0.020	0.020	0.140	146.40.199	7.030	9.180	-9999.990	-9999.990
70.680	55.280	-9999.990	0.020	0.020	0.140	146.40.199	7.030	9.180	-9999.990	-9999.990
70.740	55.280	-9999.990	0.020	0.020	0.140	146.40.199	7.190	9.170	-9999.990	-9999.990
70.800	37.690	-9999.990	0.020	0.020	0.140	146.40.199	7.360	9.150	-9999.990	-9999.990
70.860	37.690	-9999.990	0.020	0.020	0.140	146.40.199	7.360	9.150	-9999.990	-9999.990
70.920	67.847	-9999.990	0.020	0.020	0.140	146.40.199	7.720	9.120	-9999.990	-9999.990
70.980	32.660	-9999.990	0.020	0.020	0.140	146.40.199	7.920	9.100	-9999.990	-9999.990
71.040	32.660	-9999.990	0.020	0.020	0.140	146.40.199	7.920	9.100	-9999.990	-9999.990
71.100	53.048	-9999.990	0.020	0.020	0.140	146.40.199	7.530	9.130	-9999.990	-9999.990
71.160	53.050	-9999.990	0.020	0.010	0.150	146.20.213	7.290	12.020	-9999.990	-9999.990
71.220	65.330	-9999.990	0.020	0.020	0.140	146.40.199	7.990	7.320	-9999.990	-9999.990
71.280	60.311	-9999.990	0.020	0.020	0.140	146.40.199	7.720	9.080	-9999.990	-9999.990
71.340	60.310	-9999.990	0.020	0.020	0.140	146.40.199	7.720	9.080	-9999.990	-9999.990
71.400	60.310	-9999.990	0.020	0.020	0.140	146.40.199	7.910	9.060	-9999.990	-9999.990
71.460	60.310	-9999.990	0.020	0.020	0.140	146.40.199	8.200	7.310	-9999.990	-9999.990
71.520	57.790	-9999.990	0.020	0.020	0.140	146.40.199	8.200	7.310	-9999.990	-9999.990
71.580	58.630	-9999.990	0.020	0.020	0.140	146.40.199	8.510	6.130	-9999.990	-9999.990
71.640	58.630	-9999.990	0.020	0.020	0.140	146.40.199	8.510	6.130	-9999.990	-9999.990
71.700	50.250	-9999.990	0.020	0.020	0.140	146.40.199	8.510	6.130	-9999.990	-9999.990
71.760	50.250	-9999.990	0.020	0.020	0.140	146.40.199	8.070	6.150	-9999.990	-9999.990
71.820	77.900	-9999.990	0.010	0.030	0.130	73.61.184	9.230	4.610	-9999.990	-9999.990
71.880	50.253	-9999.990	0.020	0.020	0.140	146.40.199	8.760	6.130	-9999.990	-9999.990
71.940	50.250	-9999.990	0.020	0.020	0.140	146.40.199	9.020	6.130	-9999.990	-9999.990
72.000	67.850	-9999.990	0.010	0.050	0.110	73.102.156	9.900	2.450	-9999.990	-9999.990
72.060	67.850	-9999.990	0.010	0.050	0.110	73.102.156	9.900	2.450	-9999.990	-9999.990
72.120	58.631	-9999.990	0.010	0.050	0.110	73.102.156	9.900	2.450	-9999.990	-9999.990
72.180	72.870	-9999.990	0.010	0.050	0.110	73.102.156	9.900	2.450	-9999.990	-9999.990
72.240	72.870	-9999.990	0.010	0.050	0.110	73.102.156	11.390	2.270	-9999.990	-9999.990
72.300	50.250	-9999.990	0.010	0.050	0.110	73.102.156	10.910	2.270	-9999.990	-9999.990
72.360	50.250	-9999.990	0.010	0.050	0.110	73.102.156	10.470	2.270	-9999.990	-9999.990

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Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
72.420	67.848	-9999.990	0.010	0.050	0.110	73.102.156	10.060	2.270	-9999.990	-9999.990
72.480	45.230	-9999.990	0.010	0.050	0.110	73.102.156	9.680	2.270	-9999.990	-9999.990
72.540	45.230	-9999.990	0.010	0.050	0.110	73.102.156	9.680	2.270	-9999.990	-9999.990
72.600	52.769	-9999.990	0.010	0.040	0.110	73.81.156	8.880	2.450	-9999.990	-9999.990
72.660	52.770	-9999.990	0.010	0.040	0.110	73.81.156	8.870	2.450	-9999.990	-9999.990
72.720	57.790	-9999.990	0.010	0.040	0.110	73.81.156	8.470	2.660	-9999.990	-9999.990
72.780	61.419	-9999.990	0.010	0.040	0.110	73.81.156	8.770	2.660	-9999.990	-9999.990
72.840	61.420	-9999.990	0.010	0.040	0.110	73.81.156	8.770	2.660	-9999.990	-9999.990
72.900	82.930	-9999.990	0.010	0.040	0.120	73.81.170	8.650	2.910	-9999.990	-9999.990
72.960	82.930	-9999.990	0.010	0.040	0.120	73.81.170	8.650	2.910	-9999.990	-9999.990
73.020	75.390	-9999.990	0.020	0.020	0.140	146.40.199	8.660	7.290	-9999.990	-9999.990
73.080	65.330	-9999.990	0.020	0.020	0.140	146.40.199	8.420	7.300	-9999.990	-9999.990
73.140	65.330	-9999.990	0.020	0.000	0.170	146.0.241	8.980	115.489	-9999.990	-9999.990
73.200	77.899	-9999.990	0.020	0.010	0.170	146.20.241	9.550	31.489	-9999.990	-9999.990
73.260	77.900	-9999.990	0.020	0.010	0.170	146.20.241	9.810	31.310	-9999.990	-9999.990
73.320	57.790	-9999.990	0.020	0.000	0.170	146.0.241	8.890	-9999.990	-9999.990	-9999.990
73.380	60.310	-9999.990	0.020	0.000	0.170	146.0.241	8.680	-9999.990	-9999.990	-9999.990
73.440	60.310	-9999.990	0.020	0.000	0.170	146.0.241	8.680	-9999.990	-9999.990	-9999.990
73.500	72.870	-9999.990	0.020	0.000	0.170	146.0.241	8.400	-9999.990	-9999.990	-9999.990
73.560	72.870	-9999.990	0.020	0.000	0.170	146.0.241	8.400	-9999.990	-9999.990	-9999.990
73.620	50.252	-9999.990	0.020	0.000	0.170	146.0.241	8.400	-9999.990	-9999.990	-9999.990
73.680	60.310	-9999.990	0.020	0.000	0.170	146.0.241	8.600	-9999.990	-9999.990	-9999.990
73.740	60.310	-9999.990	0.020	0.000	0.170	146.0.241	8.810	-9999.990	-9999.990	-9999.990
73.800	-9999.990	-9999.990	0.020	0.000	0.180	146.0.255	9.350	-9999.990	-9999.990	-9999.990
73.860	-9999.990	-9999.990	0.020	0.000	0.180	146.0.255	9.350	-9999.990	-9999.990	-9999.990
73.920	75.390	-9999.990	0.020	0.000	0.170	146.0.241	8.670	-9999.990	-9999.990	-9999.990
73.980	55.842	-9999.990	0.020	0.010	0.150	146.20.213	7.830	11.970	-9999.990	-9999.990
74.040	55.840	-9999.990	0.020	0.010	0.150	146.20.213	8.470	11.990	-9999.990	-9999.990
74.100	80.415	-9999.990	0.020	0.010	0.150	146.20.213	8.250	12.010	-9999.990	-9999.990
74.160	80.420	-9999.990	0.020	0.010	0.150	146.20.213	8.480	11.980	-9999.990	-9999.990
74.220	75.390	-9999.990	0.020	0.020	0.150	146.40.213	9.080	9.070	-9999.990	-9999.990
74.280	103.047	-9999.990	0.020	0.020	0.150	146.40.213	9.080	9.070	-9999.990	-9999.990
74.340	103.050	-9999.990	0.020	0.010	0.160	146.20.227	9.260	11.980	-9999.990	-9999.990
74.400	92.150	-9999.990	0.020	0.010	0.160	146.20.227	9.260	11.980	-9999.990	-9999.990
74.460	92.150	-9999.990	0.020	0.010	0.160	146.20.227	9.540	11.950	-9999.990	-9999.990
74.520	90.470	-9999.990	0.020	0.010	0.160	146.20.227	9.540	11.950	-9999.990	-9999.990
74.580	103.050	-9999.990	0.020	0.010	0.160	146.20.227	9.540	11.950	-9999.990	-9999.990
74.640	103.050	-9999.990	0.010	0.030	0.130	73.61.184	9.570	4.021	-9999.990	-9999.990
74.700	115.619	-9999.990	0.020	0.030	0.140	146.61.199	8.980	5.380	-9999.990	-9999.990
74.760	115.620	-9999.990	0.020	0.030	0.140	146.61.199	8.980	5.380	-9999.990	-9999.990
74.820	120.650	-9999.990	0.020	0.000	0.170	146.0.241	8.600	-9999.990	-9999.990	-9999.990
74.880	138.258	-9999.990	0.020	0.000	0.170	146.0.241	8.510	-9999.990	-9999.990	-9999.990
74.940	138.260	-9999.990	0.020	0.000	0.170	146.0.241	8.510	-9999.990	-9999.990	-9999.990
75.000	85.440	-9999.990	0.020	0.000	0.170	146.0.241	8.750	-9999.990	-9999.990	-9999.990
75.060	85.440	-9999.990	0.020	0.000	0.170	146.0.241	8.750	-9999.990	1.249	3.737
75.120	105.560	-9999.990	0.020	0.000	0.170	146.0.241	8.750	-9999.990	-9999.990	-9999.990
75.180	98.020	-9999.990	0.020	0.010	0.150	146.20.213	8.370	11.070	-9999.990	-9999.990
75.240	98.020	-9999.990	0.020	0.010	0.150	146.20.213	8.370	11.070	-9999.990	-9999.990
75.300	123.157	-9999.990	0.020	0.010	0.150	146.20.213	8.640	11.040	-9999.990	-9999.990
75.360	123.160	-9999.990	0.020	0.010	0.150	146.20.213	8.020	16.809	-9999.990	-9999.990
75.420	87.967	-9999.990	0.020	0.000	0.170	146.0.241	8.460	-9999.990	-9999.990	-9999.990
75.480	62.820	-9999.990	0.020	0.000	0.170	146.0.241	8.740	-9999.990	-9999.990	-9999.990
75.540	62.820	-9999.990	0.020	0.000	0.170	146.0.241	9.050	-9999.990	-9999.990	-9999.990
75.600	100.526	-9999.990	0.020	0.000	0.170	146.0.241	9.050	-9999.990	-9999.990	-9999.990
75.660	100.530	-9999.990	0.020	0.000	0.180	146.0.255	9.370	-9999.990	-9999.990	-9999.990
75.720	72.870	-9999.990	0.020	0.000	0.180	146.0.255	9.370	-9999.990	-9999.990	-9999.990
75.780	72.870	-9999.990	0.020	0.000	0.170	146.0.241	9.130	-9999.990	-9999.990	-9999.990
75.840	72.870	-9999.990	0.020	0.000	0.170	146.0.241	9.220	-9999.990	-9999.990	-9999.990
75.900	80.420	-9999.990	0.020	0.000	0.170	146.0.241	9.220	-9999.990	-9999.990	-9999.990
75.960	80.420	-9999.990	0.020	0.000	0.180	146.0.255	9.570	-9999.990	-9999.990	-9999.990
76.020	64.222	-9999.990	0.020	0.000	0.180	146.0.255	9.780	-9999.990	-9999.990	-9999.990
76.080	90.467	-9999.990	0.020	0.000	0.180	146.0.255	9.550	-9999.990	-9999.990	-9999.990
76.140	90.470	-9999.990	0.020	0.000	0.170	146.0.241	9.240	-9999.990	-9999.990	-9999.990
76.200	67.852	-9999.990	0.020	0.000	0.170	146.0.241	9.260	-9999.990	-9999.990	-9999.990
76.260	67.850	-9999.990	0.020	0.000	0.180	146.0.255	9.890	-9999.990	-9999.990	-9999.990
76.320	103.050	-9999.990	0.020	0.000	0.180	146.0.255	11.020	-9999.990	-9999.990	-9999.990
76.380	85.440	-9999.990	0.020	0.000	0.180	146.0.255	11.020	-9999.990	-9999.990	-9999.990
76.440	85.440	-9999.990	0.020	0.000	0.180	146.0.255	11.020	-9999.990	-9999.990	-9999.990
76.500	80.970	-9999.990	0.020	0.000	0.180	146.0.255	10.730	-9999.990	-9999.990	-9999.990
76.560	80.970	-9999.990	0.020	0.000	0.180	146.0.255	11.140	-9999.990	-9999.990	-9999.990
76.620	77.900	-9999.990	0.020	0.000	0.180	146.0.255	11.140	-9999.990	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
76.680	82.930	-9999.990	0.020	0.000	0.180	146.0.255	10.840	-9999.990	-9999.990	-9999.990
76.740	82.930	-9999.990	0.020	0.000	0.180	146.0.255	10.670	-9999.990	-9999.990	-9999.990
76.800	67.850	-9999.990	0.020	0.000	0.180	146.0.255	10.780	-9999.990	-9999.990	-9999.990
76.860	67.850	-9999.990	0.020	0.000	0.180	146.0.255	10.500	-9999.990	-9999.990	-9999.990
76.920	110.586	-9999.990	0.020	0.020	0.160	146.40.227	10.460	9.890	-9999.990	-9999.990
76.980	103.051	-9999.990	0.020	0.020	0.160	146.40.227	10.460	9.890	-9999.990	-9999.990
77.040	103.050	-9999.990	0.010	0.020	0.160	73.40.227	10.780	9.870	-9999.990	-9999.990
77.100	95.501	-9999.990	0.020	0.010	0.160	146.20.227	9.660	18.199	-9999.990	-9999.990
77.160	95.500	-9999.990	0.020	0.010	0.160	146.20.227	9.390	18.250	-9999.990	-9999.990
77.220	82.930	-9999.990	0.020	0.010	0.160	146.20.227	8.830	31.780	-9999.990	-9999.990
77.280	90.469	-9999.990	0.020	0.010	0.160	146.20.227	8.830	31.780	-9999.990	-9999.990
77.340	90.470	-9999.990	0.020	0.010	0.160	146.20.227	9.390	18.271	-9999.990	-9999.990
77.400	77.901	-9999.990	0.020	0.010	0.160	146.20.227	9.390	18.270	-9999.990	-9999.990
77.460	80.970	-9999.990	0.020	0.010	0.160	146.20.227	9.390	18.270	-9999.990	-9999.990
77.520	80.970	-9999.990	0.020	0.010	0.160	146.20.227	9.390	18.270	-9999.990	-9999.990
77.580	75.390	-9999.990	0.020	0.010	0.160	146.20.227	9.390	18.270	-9999.990	-9999.990
77.640	75.390	-9999.990	0.020	0.010	0.160	146.20.227	9.390	18.270	-9999.990	-9999.990
77.700	82.929	-9999.990	0.020	0.010	0.160	146.20.227	9.750	12.891	-9999.990	-9999.990
77.760	95.500	-9999.990	0.020	0.010	0.160	146.20.227	9.240	12.950	-9999.990	-9999.990
77.820	95.500	-9999.990	0.020	0.020	0.150	146.40.213	9.580	9.980	-9999.990	-9999.990
77.880	90.471	-9999.990	0.020	0.020	0.150	146.40.213	9.960	8.130	-9999.990	-9999.990
77.940	90.470	-9999.990	0.020	0.010	0.160	146.20.227	9.230	13.090	-9999.990	-9999.990
78.000	95.500	-9999.990	0.020	0.010	0.160	146.20.227	9.230	13.090	-9999.990	-9999.990
78.060	108.069	-9999.990	0.020	0.010	0.160	146.20.227	8.780	13.150	-9999.990	-9999.990
78.120	108.070	-9999.990	0.020	0.010	0.160	146.20.227	8.780	13.150	-9999.990	-9999.990
78.180	72.600	-9999.990	0.020	0.020	0.150	146.40.213	9.080	10.110	-9999.990	-9999.990
78.240	72.600	-9999.990	0.020	0.010	0.150	146.20.213	8.560	13.260	-9999.990	-9999.990
78.300	95.498	-9999.990	0.020	0.010	0.160	146.20.227	9.000	13.200	-9999.990	-9999.990
78.360	100.530	-9999.990	0.020	0.010	0.160	146.20.227	9.000	13.200	-9999.990	-9999.990
78.420	100.530	-9999.990	0.020	0.010	0.160	146.20.227	9.230	13.210	-9999.990	-9999.990
78.480	94.940	-9999.990	0.020	0.020	0.150	146.40.213	9.330	10.100	-9999.990	-9999.990
78.540	94.940	-9999.990	0.020	0.010	0.160	146.20.227	8.990	13.430	-9999.990	-9999.990
78.600	118.128	-9999.990	0.020	0.010	0.160	146.20.227	8.990	13.430	-9999.990	-9999.990
78.660	105.561	-9999.990	0.020	0.010	0.160	146.20.227	8.990	13.430	-9999.990	-9999.990
78.720	105.560	-9999.990	0.020	0.010	0.160	146.20.227	8.680	19.749	-9999.990	-9999.990
78.780	110.589	-9999.990	0.020	0.030	0.130	146.61.184	8.200	4.703	-9999.990	-9999.990
78.840	110.590	-9999.990	0.020	0.030	0.130	146.61.184	8.430	4.690	-9999.990	-9999.990
78.900	92.990	-9999.990	0.020	0.030	0.130	146.61.184	8.430	4.690	-9999.990	-9999.990
78.960	90.470	-9999.990	0.010	0.040	0.120	73.81.170	9.550	3.380	-9999.990	-9999.990
79.020	90.470	-9999.990	0.010	0.030	0.130	73.61.184	9.430	3.720	-9999.990	-9999.990
79.080	120.650	-9999.990	0.010	0.040	0.120	73.81.170	10.330	3.090	-9999.990	-9999.990
79.140	120.650	-9999.990	0.010	0.040	0.120	73.81.170	10.330	3.090	-9999.990	-9999.990
79.200	95.503	-9999.990	0.010	0.040	0.120	73.81.170	10.330	3.090	-9999.990	-9999.990
79.260	90.470	-9999.990	0.010	0.040	0.120	73.81.170	11.260	2.840	-9999.990	-9999.990
79.320	90.470	-9999.990	0.010	0.040	0.120	73.81.170	10.850	2.850	-9999.990	-9999.990
79.380	77.901	-9999.990	0.010	0.040	0.120	73.81.170	10.850	2.850	-9999.990	-9999.990
79.440	77.900	-9999.990	0.010	0.040	0.120	73.81.170	10.840	2.850	-9999.990	-9999.990
79.500	90.470	-9999.990	0.010	0.040	0.120	73.81.170	11.240	2.840	-9999.990	-9999.990
79.560	80.421	-9999.990	0.010	0.040	0.130	73.81.184	11.490	3.070	-9999.990	-9999.990
79.620	80.420	-9999.990	0.010	0.040	0.130	73.81.184	11.490	3.070	-9999.990	-9999.990
79.680	103.050	-9999.990	0.010	0.040	0.120	73.81.170	10.300	3.080	-9999.990	-9999.990
79.740	103.050	-9999.990	0.010	0.040	0.120	73.81.170	10.810	2.840	-9999.990	-9999.990
79.800	108.910	-9999.990	0.010	0.040	0.120	73.81.170	11.380	2.630	-9999.990	-9999.990
79.860	125.680	-9999.990	0.010	0.050	0.120	73.102.170	11.550	2.460	-9999.990	-9999.990
79.920	125.680	-9999.990	0.010	0.050	0.120	73.102.170	12.020	2.460	-9999.990	-9999.990
79.980	90.474	-9999.990	0.010	0.050	0.110	73.102.156	11.740	2.300	-9999.990	-9999.990
80.040	90.470	-9999.990	0.010	0.050	0.110	73.102.156	11.740	2.300	-9999.990	-9999.990
80.100	98.018	-9999.990	0.010	0.050	0.120	73.102.170	11.130	2.460	-9999.990	-9999.990
80.160	100.530	-9999.990	0.010	0.050	0.110	73.102.156	11.300	2.310	-9999.990	-9999.990
80.220	100.530	-9999.990	0.010	0.050	0.110	73.102.156	10.890	2.310	-9999.990	-9999.990
80.280	-9999.990	-9999.990	0.010	0.070	0.090	73.143.128	12.190	1.360	-9999.990	-9999.990
80.340	-9999.990	-9999.990	0.010	0.050	0.110	73.102.156	11.050	2.170	-9999.990	-9999.990
80.400	-9999.990	-9999.990	0.010	0.050	0.110	73.102.156	11.050	2.170	-9999.990	-9999.990
80.460	87.960	-9999.990	0.010	0.050	0.110	73.102.156	10.890	2.300	-9999.990	-9999.990
80.520	87.960	-9999.990	0.010	0.050	0.110	73.102.156	9.700	2.470	-9999.990	-9999.990
80.580	77.900	-9999.990	0.010	0.040	0.120	73.81.170	9.580	2.650	-9999.990	-9999.990
80.640	77.900	-9999.990	0.010	0.050	0.110	73.102.156	10.890	2.310	-9999.990	-9999.990
80.700	105.557	-9999.990	0.010	0.050	0.110	73.102.156	11.300	2.310	-9999.990	-9999.990
80.760	108.910	-9999.990	0.010	0.050	0.110	73.102.156	10.900	2.310	-9999.990	-9999.990
80.820	108.910	-9999.990	0.010	0.050	0.110	73.102.156	10.660	2.170	-9999.990	-9999.990
80.880	98.021	-9999.990	0.010	0.050	0.110	73.102.156	10.300	2.180	-9999.990	-9999.990

Boring DD2-BK
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Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
80.940	98.020	-9999.990	0.010	0.030	0.130	73.61.184	10.060	3.820	-9999.990	-9999.990
81.000	80.420	-9999.990	0.010	0.030	0.130	73.61.184	9.500	3.820	-9999.990	-9999.990
81.060	80.420	-9999.990	0.010	0.030	0.130	73.61.184	9.240	3.830	-9999.990	-9999.990
81.120	80.420	-9999.990	0.010	0.040	0.130	73.81.184	9.600	3.500	-9999.990	-9999.990
81.180	103.050	-9999.990	0.010	0.040	0.130	73.81.184	9.600	3.500	-9999.990	-9999.990
81.240	103.050	-9999.990	0.010	0.040	0.130	73.81.184	10.170	3.500	-9999.990	-9999.990
81.300	85.442	-9999.990	0.010	0.040	0.130	73.81.184	9.880	3.500	-9999.990	-9999.990
81.360	98.020	-9999.990	0.010	0.030	0.130	73.61.184	9.400	4.200	-9999.990	-9999.990
81.420	98.020	-9999.990	0.010	0.030	0.130	73.61.184	9.400	4.200	-9999.990	-9999.990
81.480	78.182	-9999.990	0.010	0.030	0.130	73.61.184	9.780	3.810	-9999.990	-9999.990
81.540	78.180	-9999.990	0.010	0.030	0.130	73.61.184	9.780	3.810	-9999.990	-9999.990
81.600	103.047	-9999.990	0.010	0.040	0.130	73.81.184	10.190	3.490	-9999.990	-9999.990
81.660	103.050	-9999.990	0.010	0.030	0.130	73.61.184	9.790	3.800	-9999.990	-9999.990
81.720	103.050	-9999.990	0.010	0.040	0.130	73.81.184	9.630	3.480	-9999.990	-9999.990
81.780	108.069	-9999.990	0.010	0.040	0.120	73.81.170	9.370	3.490	-9999.990	-9999.990
81.840	108.070	-9999.990	0.010	0.020	0.150	73.40.213	9.840	6.410	-9999.990	-9999.990
81.900	65.330	-9999.990	0.010	0.020	0.150	73.40.213	9.840	6.410	-9999.990	-9999.990
81.960	92.987	-9999.990	0.020	0.020	0.150	146.40.213	9.200	8.740	-9999.990	-9999.990
82.020	92.990	-9999.990	0.020	0.020	0.150	146.40.213	9.500	7.420	-9999.990	-9999.990
82.080	92.990	-9999.990	0.020	0.000	0.170	146.0.241	9.420	61.884	-9999.990	-9999.990
82.140	92.990	-9999.990	0.020	0.000	0.170	146.0.241	9.150	-9999.990	1.119	3.951
82.200	62.823	-9999.990	0.020	0.000	0.170	146.0.241	9.150	-9999.990	-9999.990	-9999.990
82.260	122.880	-9999.990	0.020	0.000	0.170	146.0.241	9.150	-9999.990	-9999.990	-9999.990
82.320	122.880	-9999.990	0.020	0.000	0.170	146.0.241	8.720	-9999.990	-9999.990	-9999.990
82.380	113.101	-9999.990	0.020	0.000	0.170	146.0.241	8.970	-9999.990	-9999.990	-9999.990
82.440	113.100	-9999.990	0.020	0.000	0.170	146.0.241	8.970	-9999.990	-9999.990	-9999.990
82.500	85.440	-9999.990	0.020	0.000	0.170	146.0.241	9.160	-9999.990	-9999.990	-9999.990
82.560	113.097	-9999.990	0.020	0.000	0.170	146.0.241	8.830	-9999.990	-9999.990	-9999.990
82.620	113.100	-9999.990	0.020	0.000	0.170	146.0.241	8.830	-9999.990	-9999.990	-9999.990
82.680	103.320	-9999.990	0.020	0.000	0.170	146.0.241	8.830	-9999.990	-9999.990	-9999.990
82.740	103.320	-9999.990	0.020	0.000	0.170	146.0.241	8.830	-9999.990	-9999.990	-9999.990
82.800	90.471	-9999.990	0.020	0.000	0.170	146.0.241	9.280	-9999.990	-9999.990	-9999.990
82.860	110.590	-9999.990	0.020	0.000	0.170	146.0.241	8.970	-9999.990	-9999.990	-9999.990
82.920	110.590	-9999.990	0.020	0.000	0.170	146.0.241	8.790	-9999.990	-9999.990	-9999.990
82.980	103.051	-9999.990	0.020	0.000	0.170	146.0.241	8.620	-9999.990	-9999.990	-9999.990
83.040	103.050	-9999.990	0.020	0.000	0.170	146.0.241	8.860	62.640	-9999.990	-9999.990
83.100	118.128	-9999.990	0.020	0.020	0.140	146.40.199	8.880	7.236	-9999.990	-9999.990
83.160	95.500	-9999.990	0.020	0.020	0.150	146.40.213	9.080	7.220	-9999.990	-9999.990
83.220	95.500	-9999.990	0.010	0.040	0.120	73.81.170	9.230	3.130	-9999.990	-9999.990
83.280	115.618	-9999.990	0.010	0.040	0.120	73.81.170	8.990	3.130	-9999.990	-9999.990
83.340	115.620	-9999.990	0.010	0.040	0.120	73.81.170	9.330	2.910	-9999.990	-9999.990
83.400	83.773	-9999.990	0.010	0.040	0.120	73.81.170	9.330	2.910	-9999.990	-9999.990
83.460	90.469	-9999.990	0.010	0.040	0.120	73.81.170	9.580	2.910	-9999.990	-9999.990
83.520	90.470	-9999.990	0.010	0.040	0.120	73.81.170	9.220	3.130	-9999.990	-9999.990
83.580	115.620	-9999.990	0.010	0.040	0.120	73.81.170	8.970	3.130	-9999.990	-9999.990
83.640	115.620	-9999.990	0.010	0.040	0.120	73.81.170	8.970	3.130	-9999.990	-9999.990
83.700	67.855	-9999.990	0.010	0.040	0.120	73.81.170	8.830	2.910	-9999.990	-9999.990
83.760	67.850	-9999.990	0.010	0.040	0.120	73.81.170	8.400	2.910	-9999.990	-9999.990
83.820	67.850	-9999.990	0.010	0.040	0.110	73.81.156	8.480	2.720	-9999.990	-9999.990
83.880	90.468	-9999.990	0.010	0.050	0.110	73.102.156	9.100	2.410	-9999.990	-9999.990
83.940	90.470	-9999.990	0.010	0.050	0.110	73.102.156	9.350	2.400	-9999.990	-9999.990
84.000	82.930	-9999.990	0.010	0.050	0.110	73.102.156	10.620	2.270	-9999.990	-9999.990
84.060	90.469	-9999.990	0.010	0.050	0.110	73.102.156	10.960	2.270	-9999.990	-9999.990
84.120	90.470	-9999.990	0.010	0.050	0.110	73.102.156	9.890	2.400	-9999.990	-9999.990
84.180	94.940	-9999.990	0.010	0.050	0.110	73.102.156	9.890	2.400	-9999.990	-9999.990
84.240	94.940	-9999.990	0.010	0.050	0.110	73.102.156	10.310	2.270	-9999.990	-9999.990
84.300	77.902	-9999.990	0.010	0.050	0.110	73.102.156	10.000	2.270	-9999.990	-9999.990
84.360	105.560	-9999.990	0.010	0.050	0.110	73.102.156	10.000	2.270	-9999.990	-9999.990
84.420	105.560	-9999.990	0.010	0.050	0.110	73.102.156	9.720	2.270	-9999.990	-9999.990
84.480	92.990	-9999.990	0.010	0.050	0.110	73.102.156	9.450	2.270	-9999.990	-9999.990
84.540	103.050	-9999.990	0.010	0.030	0.130	73.61.184	9.360	3.730	-9999.990	-9999.990
84.600	103.050	-9999.990	0.010	0.030	0.130	73.61.184	9.140	3.730	-9999.990	-9999.990
84.660	100.530	-9999.990	0.010	0.030	0.130	73.61.184	8.740	3.730	-9999.990	-9999.990
84.720	100.530	-9999.990	0.010	0.040	0.120	73.81.170	9.020	3.460	-9999.990	-9999.990
84.780	45.242	-9999.990	0.010	0.040	0.120	73.81.170	9.630	3.020	-9999.990	-9999.990
84.840	103.044	-9999.990	0.010	0.040	0.120	73.81.170	9.630	3.020	-9999.990	-9999.990
84.900	103.050	-9999.990	0.010	0.040	0.120	73.81.170	9.630	3.020	-9999.990	-9999.990
84.960	95.501	-9999.990	0.010	0.050	0.100	73.102.142	9.770	1.940	-9999.990	-9999.990
85.020	95.500	-9999.990	0.010	0.040	0.120	73.81.170	9.180	3.020	-9999.990	-9999.990
85.080	105.559	-9999.990	0.010	0.040	0.120	73.81.170	8.760	3.020	-9999.990	-9999.990
85.140	85.442	-9999.990	0.010	0.040	0.120	73.81.170	8.570	3.020	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
85.200	85.440	-9999.990	0.010	0.040	0.120	73.81.170	8.380	3.020	-9999.990	-9999.990
85.260	95.500	-9999.990	0.010	0.040	0.110	73.81.156	8.450	2.840	-9999.990	-9999.990
85.320	95.500	-9999.990	0.010	0.040	0.110	73.81.156	8.720	2.680	-9999.990	-9999.990
85.380	114.498	-9999.990	0.010	0.040	0.110	73.81.156	9.000	2.530	-9999.990	-9999.990
85.440	128.189	-9999.990	0.010	0.040	0.110	73.81.156	8.920	2.670	-9999.990	-9999.990
85.500	128.190	-9999.990	0.010	0.050	0.100	73.102.142	8.640	1.870	-9999.990	-9999.990
85.560	77.905	-9999.990	0.010	0.050	0.100	73.102.142	8.350	1.960	-9999.990	-9999.990
85.620	77.900	-9999.990	0.010	0.050	0.100	73.102.142	8.160	1.960	-9999.990	-9999.990
85.680	105.560	-9999.990	0.010	0.050	0.100	73.102.142	8.160	1.960	-9999.990	-9999.990
85.740	85.442	-9999.990	0.010	0.050	0.100	73.102.142	8.240	1.870	-9999.990	-9999.990
85.800	85.440	-9999.990	0.010	0.050	0.100	73.102.142	7.440	1.960	-9999.990	-9999.990
85.860	110.590	-9999.990	0.010	0.050	0.100	73.102.142	7.440	1.960	-9999.990	-9999.990
85.920	110.590	-9999.990	0.010	0.050	0.100	73.102.142	7.850	1.870	-9999.990	-9999.990
85.980	100.531	-9999.990	0.010	0.050	0.100	73.102.142	7.610	1.960	-9999.990	-9999.990
86.040	113.100	-9999.990	0.020	0.040	0.120	146.81.170	7.380	3.250	-9999.990	-9999.990
86.100	113.100	-9999.990	0.010	0.050	0.100	73.102.142	6.890	2.180	-9999.990	-9999.990
86.160	125.679	-9999.990	0.010	0.050	0.100	73.102.142	7.080	2.070	-9999.990	-9999.990
86.220	125.680	-9999.990	0.010	0.050	0.100	73.102.142	7.450	1.970	-9999.990	-9999.990
86.280	138.259	-9999.990	0.010	0.050	0.100	73.102.142	7.780	1.970	-9999.990	-9999.990
86.340	111.713	-9999.990	0.010	0.050	0.100	73.102.142	7.330	2.170	-9999.990	-9999.990
86.400	111.710	-9999.990	0.010	0.050	0.100	73.102.142	7.330	2.170	-9999.990	-9999.990
86.460	82.933	-9999.990	0.020	0.030	0.120	146.61.170	7.280	3.770	-9999.990	-9999.990
86.520	82.930	-9999.990	0.020	0.030	0.120	146.61.170	7.460	3.500	-9999.990	-9999.990
86.580	87.960	-9999.990	0.020	0.030	0.120	146.61.170	7.190	3.500	-9999.990	-9999.990
86.640	105.558	-9999.990	0.020	0.030	0.120	146.61.170	7.330	3.500	-9999.990	-9999.990
86.700	105.560	-9999.990	0.020	0.030	0.120	146.61.170	7.150	3.780	-9999.990	-9999.990
86.760	105.560	-9999.990	0.020	0.030	0.120	146.61.170	7.150	3.780	-9999.990	-9999.990
86.820	105.560	-9999.990	0.020	0.030	0.120	146.61.170	7.230	4.100	-9999.990	-9999.990
86.880	100.531	-9999.990	0.020	0.030	0.120	146.61.170	7.050	4.490	-9999.990	-9999.990
86.940	103.050	-9999.990	0.020	0.030	0.130	146.61.184	7.320	4.490	-9999.990	-9999.990
87.000	103.050	-9999.990	0.020	0.030	0.130	146.61.184	7.460	4.480	-9999.990	-9999.990
87.060	118.128	-9999.990	0.020	0.030	0.120	146.61.170	7.180	4.490	-9999.990	-9999.990
87.120	118.130	-9999.990	0.020	0.030	0.120	146.61.170	7.050	4.490	-9999.990	-9999.990
87.180	108.070	-9999.990	0.020	0.030	0.120	146.61.170	7.050	4.490	-9999.990	-9999.990
87.240	139.647	-9999.990	0.020	0.030	0.120	146.61.170	7.370	4.100	-9999.990	-9999.990
87.300	139.650	-9999.990	0.020	0.030	0.120	146.61.170	7.940	3.490	-9999.990	-9999.990
87.360	113.100	-9999.990	0.010	0.030	0.120	73.61.170	8.100	3.490	-9999.990	-9999.990
87.420	113.100	-9999.990	0.010	0.030	0.120	73.61.170	8.100	3.490	-9999.990	-9999.990
87.480	120.649	-9999.990	0.010	0.030	0.120	73.61.170	8.100	3.490	-9999.990	-9999.990
87.540	128.190	-9999.990	0.020	0.030	0.120	146.61.170	7.930	3.500	-9999.990	-9999.990
87.600	128.190	-9999.990	0.020	0.030	0.120	146.61.170	7.930	3.500	-9999.990	-9999.990
87.660	120.651	-9999.990	0.010	0.040	0.120	73.81.170	7.990	3.250	-9999.990	-9999.990
87.720	120.650	-9999.990	0.010	0.040	0.110	73.81.156	8.730	2.690	-9999.990	-9999.990
87.780	123.159	-9999.990	0.010	0.040	0.120	73.81.170	8.470	2.850	-9999.990	-9999.990
87.840	135.740	-9999.990	0.020	0.030	0.130	146.61.184	8.850	4.890	-9999.990	-9999.990
87.900	135.740	-9999.990	0.010	0.030	0.130	73.61.184	9.110	4.460	-9999.990	-9999.990
87.960	103.053	-9999.990	0.010	0.030	0.130	73.61.184	9.110	4.460	-9999.990	-9999.990
88.020	103.050	-9999.990	0.010	0.030	0.130	73.61.184	9.190	4.110	-9999.990	-9999.990
88.080	85.442	-9999.990	0.010	0.030	0.130	73.61.184	9.190	4.110	-9999.990	-9999.990
88.140	105.556	-9999.990	0.020	0.020	0.150	146.40.213	9.140	8.199	-9999.990	-9999.990
88.200	105.560	-9999.990	0.020	0.020	0.150	146.40.213	9.770	7.180	-9999.990	-9999.990
88.260	87.960	-9999.990	0.020	0.020	0.150	146.40.213	9.580	7.170	-9999.990	-9999.990
88.320	87.960	-9999.990	0.010	0.020	0.150	73.40.213	10.060	6.380	-9999.990	-9999.990
88.380	87.960	-9999.990	0.010	0.030	0.140	73.61.199	10.360	5.760	-9999.990	-9999.990
88.440	108.908	-9999.990	0.010	0.030	0.140	73.61.199	10.360	5.760	-9999.990	-9999.990
88.500	108.910	-9999.990	0.010	0.030	0.140	73.61.199	10.350	5.760	-9999.990	-9999.990
88.560	98.021	-9999.990	0.010	0.020	0.150	73.40.213	10.270	6.390	-9999.990	-9999.990
88.620	98.020	-9999.990	0.010	0.020	0.150	73.40.213	10.270	6.390	-9999.990	-9999.990
88.680	92.990	-9999.990	0.010	0.020	0.150	73.40.213	10.270	6.390	-9999.990	-9999.990
88.740	125.677	-9999.990	0.010	0.020	0.150	73.40.213	10.060	6.400	-9999.990	-9999.990
88.800	125.680	-9999.990	0.010	0.020	0.150	73.40.213	10.060	6.400	-9999.990	-9999.990
88.860	115.620	-9999.990	0.020	0.010	0.170	146.20.241	9.920	18.920	-9999.990	-9999.990
88.920	115.620	-9999.990	0.020	0.010	0.170	146.20.241	10.600	14.620	-9999.990	-9999.990
88.980	78.184	-9999.990	0.020	0.020	0.160	146.40.227	10.550	10.081	-9999.990	-9999.990
89.040	113.100	-9999.990	0.020	0.010	0.160	146.20.227	9.980	14.900	-9999.990	-9999.990
89.100	113.100	-9999.990	0.020	0.010	0.160	146.20.227	10.240	12.130	-9999.990	-9999.990
89.160	85.440	-9999.990	0.020	0.010	0.160	146.20.227	9.540	19.560	-9999.990	-9999.990
89.220	85.440	-9999.990	0.020	0.010	0.160	146.20.227	9.540	19.560	-9999.990	-9999.990
89.280	140.764	-9999.990	0.020	0.010	0.160	146.20.227	9.780	15.031	-9999.990	-9999.990
89.340	128.191	-9999.990	0.020	0.010	0.160	146.20.227	9.600	15.080	-9999.990	-9999.990
89.400	128.190	-9999.990	0.020	0.010	0.160	146.20.227	9.780	15.060	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
89.460	97.746	-9999.990	0.020	0.010	0.160	146.20.227	9.780	15.060	-9999.990	-9999.990
89.520	97.740	-9999.990	0.020	0.010	0.160	146.20.227	9.600	15.080	-9999.990	-9999.990
89.580	128.190	-9999.990	0.020	0.010	0.160	146.20.227	9.780	15.060	-9999.990	-9999.990
89.640	98.023	-9999.990	0.020	0.010	0.160	146.20.227	10.050	12.180	-9999.990	-9999.990
89.700	98.020	-9999.990	0.020	0.010	0.160	146.20.227	9.860	12.200	-9999.990	-9999.990
89.760	105.559	-9999.990	0.010	0.020	0.160	73.40.227	10.750	10.210	-9999.990	-9999.990
89.820	105.560	-9999.990	0.020	0.010	0.160	146.20.227	10.450	12.130	-9999.990	-9999.990
89.880	118.129	-9999.990	0.020	0.010	0.160	146.20.227	9.970	14.970	-9999.990	-9999.990
89.940	95.500	-9999.990	0.020	0.010	0.160	146.20.227	10.170	14.860	-9999.990	-9999.990
90.000	95.500	-9999.990	0.020	0.010	0.160	146.20.227	10.170	14.860	-9999.990	-9999.990
90.060	95.500	-9999.990	0.020	0.010	0.170	146.20.241	10.800	14.670	-9999.990	-9999.990
90.120	95.500	-9999.990	0.020	0.010	0.170	146.20.241	10.800	14.670	-9999.990	-9999.990
90.180	115.618	-9999.990	0.020	0.010	0.170	146.20.241	10.800	14.670	-9999.990	-9999.990
90.240	85.443	-9999.990	0.010	0.010	0.160	73.20.227	11.120	11.920	-9999.990	-9999.990
90.300	85.440	-9999.990	0.010	0.010	0.160	73.20.227	11.370	11.880	-9999.990	-9999.990
90.360	105.560	-9999.990	0.010	0.020	0.150	73.40.213	13.370	6.210	-9999.990	-9999.990
90.420	105.560	-9999.990	0.010	0.020	0.160	73.40.227	12.910	6.880	-9999.990	-9999.990
90.480	108.070	-9999.990	0.010	0.040	0.140	73.81.199	14.510	3.640	-9999.990	-9999.990
90.540	114.500	-9999.990	0.010	0.040	0.140	73.81.199	14.510	3.640	-9999.990	-9999.990
90.600	114.500	-9999.990	0.010	0.040	0.140	73.81.199	15.160	3.430	-9999.990	-9999.990
90.660	120.649	-9999.990	0.010	0.030	0.150	73.61.213	14.790	5.190	-9999.990	-9999.990
90.720	120.650	-9999.990	0.010	0.020	0.150	73.40.213	13.360	6.190	-9999.990	-9999.990
90.780	113.101	-9999.990	0.010	0.020	0.150	73.40.213	13.040	6.190	-9999.990	-9999.990
90.840	95.502	-9999.990	0.010	0.010	0.170	73.20.241	12.540	14.819	-9999.990	-9999.990
90.900	95.500	-9999.990	0.010	0.010	0.170	73.20.241	13.540	12.240	-9999.990	-9999.990
90.960	90.471	-9999.990	0.010	0.010	0.170	73.20.241	13.540	12.240	-9999.990	-9999.990
91.020	90.470	-9999.990	0.010	0.010	0.170	73.20.241	13.540	12.240	-9999.990	-9999.990
91.080	89.360	-9999.990	0.010	0.030	0.150	73.61.213	13.890	5.581	1.063	5.676
91.140	80.422	-9999.990	0.010	0.030	0.150	73.61.213	14.680	5.570	-9999.990	-9999.990
91.200	80.420	-9999.990	0.010	0.030	0.150	73.61.213	17.200	4.420	-9999.990	-9999.990
91.260	138.260	-9999.990	0.010	0.030	0.150	73.61.213	15.930	4.750	-9999.990	-9999.990
91.320	115.620	-9999.990	0.010	0.040	0.150	73.81.213	17.440	4.130	-9999.990	-9999.990
91.380	115.620	-9999.990	0.010	0.040	0.150	73.81.213	17.440	4.130	-9999.990	-9999.990
91.440	108.911	-9999.990	0.010	0.040	0.150	73.81.213	17.440	4.130	-9999.990	-9999.990
91.500	108.910	-9999.990	0.010	0.040	0.150	73.81.213	16.870	4.130	-9999.990	-9999.990
91.560	95.501	-9999.990	0.010	0.030	0.150	73.61.213	16.110	4.430	-9999.990	-9999.990
91.620	60.310	-9999.990	0.010	0.040	0.150	73.81.213	16.840	4.140	-9999.990	-9999.990
91.680	60.310	-9999.990	0.010	0.040	0.150	73.81.213	16.840	4.140	-9999.990	-9999.990
91.740	75.388	-9999.990	0.010	0.030	0.140	73.61.199	16.300	4.150	-9999.990	-9999.990
91.800	75.390	-9999.990	0.010	0.030	0.140	73.61.199	16.300	4.150	-9999.990	-9999.990
91.860	77.900	-9999.990	0.010	0.040	0.150	73.81.213	17.410	4.140	-9999.990	-9999.990
91.920	92.988	-9999.990	0.010	0.030	0.150	73.61.213	17.170	4.430	-9999.990	-9999.990
91.980	92.990	-9999.990	0.010	0.050	0.130	73.102.184	19.780	2.890	-9999.990	-9999.990
92.040	115.620	-9999.990	0.010	0.050	0.130	73.102.184	17.830	2.750	-9999.990	-9999.990
92.100	115.620	-9999.990	0.010	0.040	0.130	73.81.184	16.940	2.890	-9999.990	-9999.990
92.160	87.963	-9999.990	0.010	0.040	0.130	73.81.184	15.740	2.930	-9999.990	-9999.990
92.220	103.050	-9999.990	0.010	0.040	0.130	73.81.184	14.750	2.930	-9999.990	-9999.990
92.280	103.050	-9999.990	0.010	0.040	0.130	73.81.184	14.750	2.930	-9999.990	-9999.990
92.340	110.589	-9999.990	0.010	0.050	0.130	73.102.184	15.430	2.790	-9999.990	-9999.990
92.400	110.590	-9999.990	0.010	0.050	0.130	73.102.184	16.160	2.660	-9999.990	-9999.990
92.460	123.157	-9999.990	0.010	0.050	0.130	73.102.184	16.160	2.660	-9999.990	-9999.990
92.520	90.470	-9999.990	0.010	0.050	0.130	73.102.184	15.940	2.790	-9999.990	-9999.990
92.580	90.470	-9999.990	0.010	0.050	0.130	73.102.184	16.480	2.790	-9999.990	-9999.990
92.640	113.098	-9999.990	0.010	0.050	0.130	73.102.184	17.330	2.660	-9999.990	-9999.990
92.700	113.100	-9999.990	0.010	0.050	0.130	73.102.184	16.720	2.660	-9999.990	-9999.990
92.760	80.973	-9999.990	0.010	0.050	0.130	73.102.184	16.720	2.660	-9999.990	-9999.990
92.820	98.020	-9999.990	0.010	0.050	0.120	73.102.170	17.590	2.540	-9999.990	-9999.990
92.880	98.020	-9999.990	0.010	0.050	0.120	73.102.170	15.600	2.660	-9999.990	-9999.990
92.940	128.190	-9999.990	0.010	0.050	0.130	73.102.184	15.920	2.790	-9999.990	-9999.990
93.000	128.190	-9999.990	0.010	0.050	0.130	73.102.184	15.930	2.790	-9999.990	-9999.990
93.060	108.072	-9999.990	0.010	0.050	0.130	73.102.184	16.490	2.790	-9999.990	-9999.990
93.120	115.619	-9999.990	0.010	0.030	0.140	73.61.199	14.830	4.230	-9999.990	-9999.990
93.180	115.620	-9999.990	0.010	0.030	0.140	73.61.199	14.830	4.230	-9999.990	-9999.990
93.240	125.679	-9999.990	0.010	0.030	0.140	73.61.199	15.270	4.230	-9999.990	-9999.990
93.300	125.680	-9999.990	0.010	0.030	0.140	73.61.199	15.270	4.230	-9999.990	-9999.990
93.360	118.130	-9999.990	0.010	0.030	0.140	73.61.199	15.710	4.230	-9999.990	-9999.990
93.420	105.561	-9999.990	0.010	0.030	0.140	73.61.199	15.710	4.240	-9999.990	-9999.990
93.480	105.560	-9999.990	0.010	0.030	0.150	73.61.213	14.250	4.550	-9999.990	-9999.990
93.540	135.737	-9999.990	0.010	0.030	0.140	73.61.199	15.250	4.240	-9999.990	-9999.990
93.600	135.740	-9999.990	0.010	0.030	0.140	73.61.199	15.260	4.240	-9999.990	-9999.990
93.660	135.740	-9999.990	0.010	0.040	0.140	73.81.199	15.930	3.980	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
93.720	128.470	-9999.990	0.010	0.040	0.140	73.81.199	15.930	3.980	-9999.990	-9999.990
93.780	128.470	-9999.990	0.010	0.030	0.140	73.61.199	15.730	4.240	-9999.990	-9999.990
93.840	118.131	-9999.990	0.010	0.040	0.140	73.81.199	17.780	3.740	-9999.990	-9999.990
93.900	118.130	-9999.990	0.010	0.040	0.140	73.81.199	17.530	3.980	-9999.990	-9999.990
93.960	110.591	-9999.990	0.010	0.040	0.140	73.81.199	17.530	3.980	-9999.990	-9999.990
94.020	120.649	-9999.990	0.010	0.030	0.150	73.61.213	16.030	4.540	-9999.990	-9999.990
94.080	120.650	-9999.990	0.010	0.020	0.160	73.40.227	15.150	7.520	-9999.990	-9999.990
94.140	140.766	-9999.990	0.010	0.020	0.170	73.40.241	14.990	8.410	-9999.990	-9999.990
94.200	140.770	-9999.990	0.010	0.020	0.160	73.40.227	15.580	7.480	-9999.990	-9999.990
94.260	92.990	-9999.990	0.010	0.020	0.160	73.40.227	16.200	6.740	-9999.990	-9999.990
94.320	108.070	-9999.990	0.010	0.010	0.180	73.20.255	15.590	16.710	-9999.990	-9999.990
94.380	108.070	-9999.990	0.010	0.010	0.180	73.20.255	15.990	16.680	-9999.990	-9999.990
94.440	138.257	-9999.990	0.010	0.010	0.180	73.20.255	15.040	21.460	-9999.990	-9999.990
94.500	138.260	-9999.990	0.010	0.010	0.180	73.20.255	14.700	21.510	-9999.990	-9999.990
94.560	100.534	-9999.990	0.010	0.000	0.200	73.0.255	14.770	-9999.990	-9999.990	-9999.990
94.620	92.150	-9999.990	0.010	0.010	0.180	73.20.255	15.740	13.930	-9999.990	-9999.990
94.680	92.150	-9999.990	0.010	0.010	0.180	73.20.255	15.740	13.930	-9999.990	-9999.990
94.740	120.647	-9999.990	0.010	0.010	0.180	73.20.255	16.150	13.910	-9999.990	-9999.990
94.800	120.650	-9999.990	0.010	0.010	0.180	73.20.255	17.020	13.880	-9999.990	-9999.990
94.860	115.621	-9999.990	0.010	0.010	0.180	73.20.255	16.570	13.890	-9999.990	-9999.990
94.920	80.424	-9999.990	0.010	0.010	0.190	73.20.255	15.420	21.829	-9999.990	-9999.990
94.980	80.420	-9999.990	0.010	0.000	0.200	73.0.255	15.590	-9999.990	-9999.990	-9999.990
95.040	113.100	-9999.990	0.010	0.000	0.200	73.0.255	15.240	-9999.990	-9999.990	-9999.990
95.100	113.100	-9999.990	0.010	0.020	0.180	73.40.255	17.680	11.660	-9999.990	-9999.990
95.160	110.590	-9999.990	0.010	0.020	0.180	73.40.255	18.760	11.640	-9999.990	-9999.990
95.220	108.070	-9999.990	0.010	0.020	0.180	73.40.255	19.340	11.620	-9999.990	-9999.990
95.280	108.070	-9999.990	0.010	0.020	0.180	73.40.255	19.960	11.610	-9999.990	-9999.990
95.340	106.120	-9999.990	0.010	0.010	0.190	73.20.255	19.700	13.700	-9999.990	-9999.990
95.400	106.120	-9999.990	0.010	0.010	0.190	73.20.255	18.850	16.720	-9999.990	-9999.990
95.460	90.472	-9999.990	0.010	0.010	0.190	73.20.255	18.850	16.720	-9999.990	-9999.990
95.520	113.098	-9999.990	0.010	0.010	0.190	73.20.255	18.610	21.500	-9999.990	-9999.990
95.580	113.100	-9999.990	0.010	0.010	0.190	73.20.255	18.610	21.500	-9999.990	-9999.990
95.640	114.500	-9999.990	0.010	0.020	0.170	73.40.241	19.540	8.371	-9999.990	-9999.990
95.700	114.500	-9999.990	0.010	0.020	0.170	73.40.241	19.540	8.370	-9999.990	-9999.990
95.760	133.218	-9999.990	0.010	0.020	0.180	73.40.255	19.260	9.540	-9999.990	-9999.990
95.820	103.050	-9999.990	0.010	0.020	0.180	73.40.255	18.990	11.070	-9999.990	-9999.990
95.880	103.050	-9999.990	0.010	0.020	0.180	73.40.255	21.150	11.030	-9999.990	-9999.990
95.940	103.050	-9999.990	0.010	0.020	0.180	73.40.255	21.960	11.020	-9999.990	-9999.990
96.000	103.050	-9999.990	0.010	0.010	0.190	73.20.255	20.820	13.110	-9999.990	-9999.990
96.060	108.069	-9999.990	0.010	0.010	0.190	73.20.255	21.600	13.090	-9999.990	-9999.990
96.120	85.442	-9999.990	0.010	0.030	0.170	73.61.241	26.110	5.811	-9999.990	-9999.990
96.180	85.440	-9999.990	0.010	0.030	0.170	73.61.241	27.460	5.800	-9999.990	-9999.990
96.240	103.048	-9999.990	0.010	0.030	0.170	73.61.241	27.460	5.800	-9999.990	-9999.990
96.300	103.050	-9999.990	0.010	0.030	0.170	73.61.241	26.870	6.380	-9999.990	-9999.990
96.360	105.560	-9999.990	0.010	0.020	0.170	73.40.241	25.060	7.080	-9999.990	-9999.990
96.420	115.619	-9999.990	0.010	0.020	0.170	73.40.241	25.060	7.080	-9999.990	-9999.990
96.480	115.620	-9999.990	0.010	0.020	0.170	73.40.241	26.290	7.070	-9999.990	-9999.990
96.540	123.159	-9999.990	0.010	0.030	0.160	73.61.227	29.040	4.590	-9999.990	-9999.990
96.600	123.160	-9999.990	0.010	0.030	0.160	73.61.227	26.770	4.980	-9999.990	-9999.990
96.660	118.131	-9999.990	0.010	0.030	0.160	73.61.227	30.050	4.970	-9999.990	-9999.990
96.720	114.500	-9999.990	0.010	0.030	0.160	73.61.227	30.050	4.970	-9999.990	-9999.990
96.780	114.500	-9999.990	0.010	0.030	0.160	73.61.227	30.050	4.970	-9999.990	-9999.990
96.840	118.130	-9999.990	0.010	0.030	0.160	73.61.227	32.050	4.970	-9999.990	-9999.990
96.900	118.130	-9999.990	0.010	0.030	0.160	73.61.227	32.050	4.970	-9999.990	-9999.990
96.960	123.159	-9999.990	0.010	0.030	0.160	73.61.227	32.050	4.970	-9999.990	-9999.990
97.020	100.532	-9999.990	0.000	0.030	0.160	0.61.227	34.340	4.970	-9999.990	-9999.990
97.080	100.530	-9999.990	0.000	0.030	0.160	0.61.227	34.340	4.970	-9999.990	-9999.990
97.140	92.992	-9999.990	0.000	0.030	0.160	0.61.227	34.340	4.970	-9999.990	-9999.990
97.200	92.990	-9999.990	0.000	0.030	0.170	0.61.241	40.129	4.960	-9999.990	-9999.990
97.260	114.500	-9999.990	0.000	0.030	0.170	0.61.241	43.780	4.960	-9999.990	-9999.990
97.320	105.560	-9999.990	0.000	0.030	0.170	0.61.241	38.690	5.420	-9999.990	-9999.990
97.380	105.560	-9999.990	0.010	0.030	0.180	73.61.255	31.481	6.640	-9999.990	-9999.990
97.440	105.560	-9999.990	0.010	0.030	0.180	73.61.255	31.480	6.640	-9999.990	-9999.990
97.500	105.560	-9999.990	0.010	0.030	0.180	73.61.255	31.480	6.640	-9999.990	-9999.990
97.560	82.935	-9999.990	0.010	0.020	0.180	73.40.255	28.841	7.480	-9999.990	-9999.990
97.620	87.960	-9999.990	0.010	0.020	0.180	73.40.255	30.720	7.470	-9999.990	-9999.990
97.680	87.960	-9999.990	0.010	0.020	0.180	73.40.255	30.720	7.470	-9999.990	-9999.990
97.740	92.150	-9999.990	0.010	0.020	0.180	73.40.255	30.720	7.470	-9999.990	-9999.990
97.800	92.150	-9999.990	0.010	0.020	0.180	73.40.255	31.900	8.550	-9999.990	-9999.990
97.860	123.157	-9999.990	0.010	0.010	0.190	73.20.255	24.891	15.059	-9999.990	-9999.990
97.920	87.964	-9999.990	0.010	0.010	0.190	73.20.255	24.890	15.060	-9999.990	-9999.990

Boring DD2-BK
Summary of Geophysical Logging Data
Supplemental Background Soil and Groundwater Investigation
Grants Reclamation Project

ARCADIS Design & Consultancy for natural and built assets

Depth (ft)	Natural Gamma (API units)	Induction Conductivity (mS/m)	GR_KRAT (unitless)	GR_URAT (unitless)	GR_THRAT (unitless)	Color Cube (R.G.B)	Th/K (ppm/%)	Th/U (ppm/ppm)	K (static) (%)	U (static) (ppm)
97.980	87.960	-9999.990	0.010	0.030	0.170	73.61.241	28.240	6.160	-9999.990	-9999.990
98.040	130.710	-9999.990	0.010	0.020	0.180	73.40.255	23.840	8.020	-9999.990	-9999.990
98.100	113.102	-9999.990	0.010	0.020	0.180	73.40.255	21.670	11.430	-9999.990	-9999.990
98.160	113.100	-9999.990	0.010	0.020	0.180	73.40.255	21.670	11.430	-9999.990	-9999.990
98.220	110.590	-9999.990	0.010	0.030	0.160	73.61.227	26.350	4.601	-9999.990	-9999.990
98.280	110.590	-9999.990	0.010	0.030	0.160	73.61.227	24.060	5.090	-9999.990	-9999.990
98.340	90.472	-9999.990	0.010	0.030	0.160	73.61.227	23.450	5.700	-9999.990	-9999.990
98.400	118.130	-9999.990	0.010	0.030	0.170	73.61.241	21.620	6.460	-9999.990	-9999.990
98.460	118.130	-9999.990	0.010	0.030	0.170	73.61.241	21.620	6.460	-9999.990	-9999.990
98.520	130.709	-9999.990	0.010	0.020	0.170	73.40.241	20.070	7.460	-9999.990	-9999.990
98.580	130.710	-9999.990	0.010	0.020	0.170	73.40.241	20.070	7.460	-9999.990	-9999.990
98.640	138.259	-9999.990	0.010	0.020	0.170	73.40.241	18.730	8.810	-9999.990	-9999.990
98.700	80.976	-9999.990	0.010	0.020	0.170	73.40.241	18.730	8.810	-9999.990	-9999.990
98.760	80.970	-9999.990	0.010	0.020	0.170	73.40.241	19.660	8.800	-9999.990	-9999.990
98.820	115.620	-9999.990	0.010	0.020	0.180	73.40.255	20.670	8.790	-9999.990	-9999.990
98.880	115.620	-9999.990	0.010	0.020	0.180	73.40.255	20.670	8.790	-9999.990	-9999.990
98.940	118.130	-9999.990	0.010	0.040	0.150	73.81.213	25.410	3.770	-9999.990	-9999.990
99.000	130.710	-9999.990	0.010	0.040	0.150	73.81.213	23.040	4.140	-9999.990	-9999.990
99.060	130.710	-9999.990	0.010	0.030	0.160	73.61.227	23.280	5.140	-9999.990	-9999.990
99.120	85.445	-9999.990	0.010	0.030	0.160	73.61.227	21.300	5.830	-9999.990	-9999.990
99.180	85.440	-9999.990	0.010	0.020	0.170	73.40.241	19.620	6.740	-9999.990	-9999.990
99.240	128.186	-9999.990	0.010	0.020	0.170	73.40.241	19.620	6.740	-9999.990	-9999.990
99.300	95.500	-9999.990	0.010	0.020	0.170	73.40.241	20.780	6.740	-9999.990	-9999.990
99.360	95.500	-9999.990	0.010	0.020	0.170	73.40.241	20.780	6.740	-9999.990	-9999.990
99.420	77.902	-9999.990	0.010	0.020	0.170	73.40.241	19.170	7.990	-9999.990	-9999.990
99.480	77.900	-9999.990	0.010	0.020	0.180	73.40.255	18.740	9.810	-9999.990	-9999.990
99.540	111.706	-9999.990	0.010	0.020	0.180	73.40.255	18.740	9.810	-9999.990	-9999.990
99.600	100.531	-9999.990	0.010	0.020	0.180	73.40.255	19.800	9.790	-9999.990	-9999.990
99.660	100.530	-9999.990	0.010	0.020	0.180	73.40.255	19.800	9.790	-9999.990	-9999.990
99.720	120.650	-9999.990	0.010	0.010	0.180	73.20.255	18.320	12.730	-9999.990	-9999.990
99.780	120.650	-9999.990	0.010	0.010	0.180	73.20.255	19.330	12.700	-9999.990	-9999.990
99.840	108.451	-9999.990	0.010	0.010	0.190	73.20.255	17.930	18.039	-9999.990	-9999.990
99.900	-9999.990	-9999.990	0.010	0.010	0.190	73.20.255	18.900	17.980	-9999.990	-9999.990
99.960	-9999.990	-9999.990	0.010	0.010	0.190	73.20.255	18.900	17.980	-9999.990	-9999.990
100.020	-9999.990	-9999.990	0.010	0.010	0.190	73.20.255	19.990	17.930	-9999.990	-9999.990
100.080	-9999.990	-9999.990	0.010	0.010	0.200	73.20.255	18.480	31.030	-9999.990	-9999.990

Note:
R.G.B - Red/Green/Blue color values, each between 0 and 255, corresponding to GR_KRAT, GR_URAT and GR_THRAT, respectively
GR_KRAT, GR_URAT, GR_THRAT - Ratios of K, U, and Th to Total Gamma Ray, values used to create color cube values
-9999.99 - no data

APPENDIX D3

Geophysical Data for Existing Wells Not Logged by USGS

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
2.349	87.844	NL	-9999.990	-9999.990	-9999.990
2.414	92.313	NL	-9999.990	-9999.990	-9999.990
2.479	92.313	NL	-9999.990	-9999.990	-9999.990
2.545	99.761	NL	-9999.990	-9999.990	-9999.990
2.610	94.497	NL	-9999.990	-9999.990	-9999.990
2.675	94.497	NL	-9999.990	-9999.990	-9999.990
2.740	86.479	NL	-9999.990	-9999.990	-9999.990
2.805	121.973	NL	-9999.990	-9999.990	-9999.990
2.871	121.973	NL	-9999.990	-9999.990	-9999.990
2.936	88.589	NL	-9999.990	-9999.990	-9999.990
3.001	88.589	NL	-9999.990	-9999.990	-9999.990
3.066	88.589	NL	-9999.990	-9999.990	-9999.990
3.131	80.992	NL	-9999.990	-9999.990	-9999.990
3.197	106.316	NL	-9999.990	-9999.990	-9999.990
3.262	106.316	NL	-9999.990	-9999.990	-9999.990
3.327	80.992	NL	-9999.990	-9999.990	-9999.990
3.392	80.992	NL	-9999.990	-9999.990	-9999.990
3.457	78.460	NL	-9999.990	-9999.990	-9999.990
3.523	88.589	NL	-9999.990	-9999.990	-9999.990
3.588	88.589	NL	-9999.990	-9999.990	-9999.990
3.653	44.988	NL	-9999.990	-9999.990	-9999.990
3.718	93.653	NL	-9999.990	-9999.990	-9999.990
3.783	93.653	NL	-9999.990	-9999.990	-9999.990
3.849	95.623	NL	-9999.990	-9999.990	-9999.990
3.914	70.302	NL	-9999.990	-9999.990	-9999.990
3.979	70.302	NL	-9999.990	-9999.990	-9999.990
4.044	63.270	NL	-9999.990	-9999.990	-9999.990
4.109	78.742	NL	0.581	0.000	0.000
4.174	78.742	NL	0.391	0.016	0.487
4.240	83.525	NL	0.088	0.010	0.325
4.305	67.489	NL	0.000	0.174	0.174
4.370	67.489	NL	0.233	0.000	0.233
4.435	81.555	NL	0.155	0.000	0.309
4.501	80.992	NL	0.510	0.000	0.000
4.566	80.992	NL	0.255	0.000	0.000
4.631	78.742	NL	0.509	0.169	0.169
4.696	75.929	NL	0.172	0.172	0.000
4.761	75.929	NL	0.258	0.258	0.000
4.826	70.865	NL	0.672	0.828	0.000
4.892	44.988	NL	0.171	0.000	0.000
4.957	44.988	NL	0.713	0.000	0.000
5.022	58.207	NL	0.475	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
5.087	58.207	NL	1.174	0.000	0.000
5.153	56.238	NL	1.514	0.000	0.000
5.218	60.738	NL	0.837	0.000	0.000
5.283	60.738	NL	0.345	0.000	0.000
5.348	67.489	NL	0.261	0.000	0.000
5.413	65.801	NL	0.167	0.000	0.000
5.478	65.801	NL	0.000	0.000	0.000
5.544	78.742	NL	0.000	0.000	0.000
5.609	67.489	NL	0.331	0.000	0.000
5.674	67.489	NL	0.670	0.000	0.000
5.739	83.525	NL	0.501	0.000	0.000
5.805	50.613	NL	0.334	0.000	0.000
5.870	50.613	NL	0.841	0.000	0.345
5.935	70.865	NL	0.505	0.000	0.517
6.000	64.676	NL	0.680	0.000	0.516
6.065	64.676	NL	0.853	0.000	0.171
6.130	106.316	NL	0.766	0.000	0.514
6.196	70.302	NL	0.847	0.000	0.172
6.261	70.302	NL	0.847	0.000	0.681
6.326	88.589	NL	0.759	0.000	0.257
6.391	92.809	NL	0.339	0.000	0.172
6.457	92.809	NL	1.681	0.000	0.165
6.522	123.765	NL	1.512	0.000	0.501
6.587	83.525	NL	1.674	0.000	0.832
6.652	83.525	NL	0.671	0.000	0.167
6.717	87.182	NL	0.252	0.000	0.501
6.783	87.182	NL	0.504	0.000	0.167
6.848	64.676	NL	0.499	0.000	0.000
6.913	101.251	NL	0.497	0.000	0.000
6.978	101.251	NL	0.494	0.000	0.000
7.043	70.302	NL	1.672	0.000	0.000
7.109	64.676	NL	2.011	0.000	0.000
7.174	64.676	NL	2.362	0.000	0.000
7.239	63.270	NL	0.657	0.000	0.000
7.304	92.809	NL	1.239	0.000	0.000
7.369	92.809	NL	0.838	0.000	0.000
7.434	93.653	NL	0.000	0.000	0.000
7.500	87.182	NL	0.747	0.000	0.000
7.565	87.182	NL	0.498	0.000	0.168
7.630	78.460	NL	0.827	0.000	0.663
7.695	78.742	NL	1.488	0.000	0.497
7.760	78.742	NL	2.314	0.000	0.662

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
7.826	106.316	NL	0.163	0.166	0.000
7.891	98.437	NL	0.497	0.249	0.000
7.956	98.437	NL	0.497	0.498	0.000
8.021	78.460	NL	0.503	0.000	0.000
8.086	81.555	NL	0.507	0.000	0.253
8.152	81.555	NL	0.169	0.000	0.169
8.217	87.182	NL	0.164	0.000	0.000
8.282	96.186	NL	0.246	0.000	0.000
8.347	96.186	NL	0.837	0.172	0.000
8.413	70.302	NL	0.682	0.000	0.000
8.478	70.302	NL	0.258	0.000	0.000
8.543	68.333	NL	0.172	0.000	0.000
8.608	89.996	NL	0.479	0.000	0.669
8.673	89.996	NL	0.744	0.000	0.514
8.738	91.121	NL	0.513	0.000	0.343
8.804	101.251	NL	0.321	0.159	0.159
8.869	101.251	NL	0.238	0.238	0.238
8.934	104.065	NL	0.000	0.477	0.477
8.999	78.460	NL	1.298	0.000	0.160
9.064	78.460	NL	0.974	0.498	0.240
9.130	109.693	NL	0.332	0.332	0.480
9.195	95.623	NL	2.135	0.000	0.000
9.260	95.623	NL	1.732	0.000	0.250
9.325	126.579	NL	1.970	0.000	0.167
9.391	70.302	NL	0.161	0.000	0.000
9.456	70.302	NL	0.491	0.000	0.250
9.521	98.718	NL	0.649	0.000	0.167
9.586	89.996	NL	0.480	0.000	0.000
9.651	89.996	NL	0.733	0.000	0.000
9.716	89.996	NL	1.297	0.000	0.000
9.782	88.589	NL	0.655	0.000	0.000
9.847	88.589	NL	0.736	0.000	0.000
9.912	104.065	NL	0.330	0.000	0.169
9.977	48.081	NL	1.329	0.161	1.006
10.043	48.081	NL	0.987	0.242	0.503
10.108	64.676	NL	0.502	0.484	0.335
10.173	64.676	NL	0.492	0.168	0.168
10.238	75.929	NL	0.744	0.252	0.252
10.303	44.988	NL	0.653	0.000	0.000
10.368	44.988	NL	1.176	0.000	0.334
10.434	86.057	NL	0.752	0.000	0.248
10.499	87.182	NL	0.831	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
10.564	87.182	NL	0.846	0.000	0.510
10.629	88.589	NL	1.014	0.000	0.255
10.694	73.115	NL	0.341	0.000	0.170
10.760	73.115	NL	0.163	0.000	0.000
10.825	65.801	NL	0.496	0.000	0.253
10.890	73.115	NL	0.656	0.000	0.168
10.955	73.115	NL	0.483	0.000	0.000
11.021	73.115	NL	0.498	0.255	0.000
11.086	91.121	NL	0.989	0.170	0.167
11.151	91.121	NL	0.662	0.000	0.499
11.216	104.065	NL	0.746	0.000	0.249
11.281	95.623	NL	0.824	0.000	0.166
11.346	95.623	NL	0.825	0.000	0.319
11.412	111.381	NL	0.743	0.000	0.729
11.477	106.879	NL	0.672	0.000	0.640
11.542	106.879	NL	0.822	0.000	0.000
11.607	73.115	NL	0.493	0.000	0.000
11.673	88.589	NL	0.652	0.000	0.000
11.738	88.589	NL	1.323	0.000	0.161
11.803	120.950	NL	0.983	0.000	0.241
11.868	120.950	NL	0.984	0.000	0.000
11.933	86.057	NL	0.825	0.000	0.000
11.998	89.996	NL	0.736	0.000	0.505
12.064	89.996	NL	0.334	0.000	0.337
12.129	111.381	NL	0.158	0.000	0.000
12.194	109.693	NL	0.487	0.000	0.000
12.259	109.693	NL	0.978	0.000	0.000
12.325	103.783	NL	0.000	0.000	0.000
12.390	109.693	NL	0.246	0.000	0.000
12.455	109.693	NL	0.329	0.000	0.165
12.520	126.579	NL	0.335	0.000	0.167
12.585	89.996	NL	0.252	0.000	0.000
12.650	89.996	NL	0.168	0.000	0.000
12.716	106.316	NL	1.024	0.000	0.000
12.781	95.623	NL	0.505	0.000	0.000
12.846	95.623	NL	0.678	0.000	0.000
12.911	104.065	NL	0.680	0.000	0.000
12.976	106.316	NL	0.508	0.258	0.000
13.042	106.316	NL	0.171	0.172	0.000
13.107	81.555	NL	1.516	0.000	0.169
13.172	113.914	NL	1.268	0.000	0.255
13.237	113.914	NL	1.181	0.000	0.170

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
13.302	109.693	NL	0.166	0.000	0.166
13.368	121.513	NL	0.505	0.000	0.250
13.433	121.513	NL	1.002	0.000	0.499
13.498	101.251	NL	1.492	0.000	0.000
13.563	101.251	NL	1.244	0.000	0.000
13.628	61.863	NL	1.328	0.000	0.000
13.694	116.447	NL	0.166	0.000	0.330
13.759	116.447	NL	0.249	0.000	0.495
13.824	78.742	NL	0.334	0.000	1.159
13.889	115.321	NL	0.168	0.000	0.168
13.955	115.321	NL	0.499	0.000	0.252
14.020	78.460	NL	0.332	0.000	0.000
14.085	81.555	NL	0.999	0.000	0.165
14.150	81.555	NL	0.501	0.000	0.248
14.215	68.333	NL	1.163	0.000	0.000
14.280	98.437	NL	0.665	0.000	0.000
14.346	98.437	NL	0.498	0.000	0.250
14.411	113.914	NL	0.830	0.000	0.166
14.476	78.742	NL	0.166	0.000	0.000
14.541	78.742	NL	0.251	0.000	0.000
14.606	75.929	NL	0.167	0.000	0.000
14.672	89.996	NL	0.502	0.000	0.000
14.737	89.996	NL	0.499	0.248	0.000
14.802	106.879	NL	0.500	0.165	0.000
14.867	78.460	NL	0.168	0.000	0.000
14.932	78.460	NL	1.008	0.000	0.000
14.998	87.182	NL	0.504	0.000	0.000
15.063	73.397	NL	0.169	0.000	0.000
15.128	73.397	NL	0.253	0.000	0.000
15.193	73.115	NL	0.172	0.000	0.172
15.258	73.115	NL	0.513	0.000	0.000
15.324	98.718	NL	0.257	0.000	0.000
15.389	78.742	NL	0.171	0.000	0.000
15.454	78.742	NL	0.509	0.000	0.499
15.519	75.929	NL	0.510	0.000	0.495
15.584	84.369	NL	0.340	0.000	0.492
15.650	84.369	NL	0.502	0.000	0.505
15.715	70.302	NL	0.753	0.000	0.253
15.780	55.675	NL	0.505	0.000	0.168
15.845	55.675	NL	0.333	0.000	0.000
15.910	59.051	NL	0.249	0.000	0.254
15.976	87.182	NL	0.666	0.000	0.169

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
16.041	87.182	NL	0.166	0.166	0.000
16.106	60.738	NL	0.250	0.250	0.000
16.171	81.555	NL	0.000	0.000	0.000
16.236	81.555	NL	0.664	0.000	0.000
16.302	78.460	NL	1.249	0.000	0.000
16.367	87.182	NL	1.329	0.000	0.000
16.432	87.182	NL	1.169	0.000	0.000
16.497	65.801	NL	0.753	0.000	0.000
16.563	75.929	NL	1.006	0.000	0.000
16.628	75.929	NL	0.164	0.000	0.334
16.693	50.613	NL	0.247	0.000	0.000
16.758	61.863	NL	0.169	0.000	0.000
16.823	61.863	NL	0.000	0.499	0.000
16.889	58.207	NL	0.248	0.250	0.000
16.954	58.207	NL	0.165	0.166	0.000
17.019	61.863	NL	0.501	0.000	0.168
17.084	56.238	NL	0.502	0.000	0.252
17.149	56.238	NL	0.502	0.000	0.504
17.215	45.550	NL	0.171	0.000	0.000
17.280	53.425	NL	0.511	0.255	0.000
17.345	53.425	NL	0.682	0.170	0.000
17.410	63.270	NL	0.000	0.000	0.000
17.475	61.863	NL	0.258	0.000	0.258
17.541	61.863	NL	0.516	0.000	0.172
17.606	65.801	NL	0.681	0.000	0.000
17.671	56.238	NL	0.511	0.000	0.000
17.736	56.238	NL	0.000	0.000	0.170
17.801	73.397	NL	0.000	0.000	0.000
17.866	59.051	NL	0.255	0.000	0.000
17.932	59.051	NL	0.170	0.000	0.000
17.997	61.863	NL	0.167	0.166	0.000
18.062	55.675	NL	0.754	0.249	0.252
18.127	55.675	NL	0.502	0.498	0.168
18.192	42.176	NL	0.499	0.000	0.000
18.258	64.676	NL	0.249	0.000	0.000
18.323	64.676	NL	0.667	0.000	0.000
18.388	78.460	NL	0.997	0.000	0.000
18.453	56.238	NL	0.998	0.000	0.496
18.518	56.238	NL	2.000	0.000	0.331
18.584	65.801	NL	0.000	0.000	0.000
18.649	65.801	NL	0.000	0.000	0.250
18.714	59.051	NL	0.000	0.000	0.167

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
18.779	70.302	NL	0.500	0.000	0.000
18.844	70.302	NL	0.250	0.000	0.000
18.910	58.207	NL	0.167	0.000	0.000
18.975	73.115	NL	0.661	0.000	0.167
19.040	73.115	NL	0.746	0.000	0.000
19.105	60.738	NL	0.669	0.000	0.000
19.170	59.051	NL	0.337	0.000	0.000
19.236	59.051	NL	0.506	0.000	0.000
19.301	50.613	NL	0.669	0.000	0.000
19.366	67.489	NL	0.169	0.000	0.000
19.431	67.489	NL	0.253	0.000	0.000
19.497	65.801	NL	0.335	0.000	0.000
19.562	61.863	NL	0.170	0.000	0.000
19.627	61.863	NL	0.511	0.000	0.000
19.692	53.144	NL	0.340	0.000	0.000
19.757	61.863	NL	0.000	0.000	0.000
19.822	61.863	NL	0.257	0.000	0.000
19.888	73.397	NL	0.342	0.000	0.000
19.953	84.369	NL	0.679	0.167	0.171
20.018	84.369	NL	0.508	0.250	0.000
20.083	67.489	NL	0.509	0.000	0.000
20.148	60.738	NL	0.663	0.000	0.000
20.214	60.738	NL	0.252	0.250	0.000
20.279	98.437	NL	0.504	0.167	0.000
20.344	98.437	NL	0.334	0.000	0.168
20.409	70.302	NL	0.252	0.000	0.252
20.475	70.865	NL	0.842	0.000	0.504
20.540	70.865	NL	0.167	0.000	0.000
20.605	61.863	NL	0.250	0.000	0.250
20.670	78.742	NL	0.668	0.000	0.166
20.735	78.742	NL	0.497	0.000	0.000
20.801	43.019	NL	0.745	0.000	0.000
20.866	73.115	NL	0.496	0.000	0.000
20.931	73.115	NL	0.669	0.000	0.000
20.996	50.613	NL	0.503	0.000	0.000
21.061	64.676	NL	0.167	0.000	0.332
21.126	64.676	NL	0.501	0.000	0.000
21.192	70.865	NL	1.005	0.000	0.000
21.257	87.182	NL	1.171	0.000	0.000
21.322	87.182	NL	0.000	0.000	0.000
21.387	83.525	NL	0.249	0.000	0.000
21.452	59.051	NL	0.166	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
21.518	59.051	NL	0.504	0.000	0.000
21.583	91.121	NL	0.755	0.000	0.000
21.648	42.176	NL	1.678	0.000	0.000
21.713	42.176	NL	0.514	0.000	0.172
21.778	63.270	NL	0.517	0.000	0.258
21.844	84.369	NL	0.339	0.000	0.170
21.909	84.369	NL	0.843	0.168	0.509
21.974	75.929	NL	1.020	0.000	0.255
22.039	75.929	NL	1.694	0.000	0.170
22.104	47.800	NL	1.183	0.000	0.509
22.170	84.369	NL	1.013	0.000	0.254
22.235	84.369	NL	1.353	0.000	0.170
22.300	58.207	NL	0.499	0.000	0.334
22.365	53.425	NL	0.749	0.000	0.501
22.431	53.425	NL	1.498	0.000	0.499
22.496	60.738	NL	0.672	0.000	0.000
22.561	81.555	NL	0.504	0.000	0.000
22.626	81.555	NL	1.004	0.000	0.000
22.691	47.800	NL	0.832	0.000	0.000
22.756	70.865	NL	0.499	0.000	0.000
22.822	70.865	NL	0.665	0.000	0.000
22.887	70.302	NL	0.000	0.000	0.491
22.952	70.302	NL	0.000	0.000	0.246
23.017	70.302	NL	0.000	0.000	0.164
23.082	68.333	NL	0.672	0.000	0.504
23.148	56.238	NL	0.755	0.000	0.503
23.213	56.238	NL	0.335	0.000	0.335
23.278	75.929	NL	0.501	0.000	0.167
23.343	89.996	NL	1.499	0.000	0.250
23.408	89.996	NL	2.001	0.000	0.501
23.474	73.397	NL	0.166	0.000	0.000
23.539	89.996	NL	0.000	0.000	0.000
23.604	89.996	NL	0.000	0.000	0.166
23.669	63.270	NL	0.170	0.000	0.000
23.734	63.270	NL	0.505	0.000	0.000
23.800	70.302	NL	0.845	0.169	0.000
23.865	91.121	NL	0.674	0.000	0.000
23.930	91.121	NL	0.252	0.000	0.251
23.995	73.115	NL	0.168	0.000	0.167
24.061	106.316	NL	1.698	0.000	0.510
24.126	106.316	NL	1.022	0.000	0.766
24.191	75.929	NL	1.188	0.000	0.511

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
24.256	75.929	NL	1.189	0.000	0.171
24.321	75.929	NL	0.763	0.000	0.257
24.386	53.425	NL	0.171	0.000	0.514
24.452	78.742	NL	0.509	0.000	0.166
24.517	78.742	NL	0.254	0.000	0.249
24.582	88.589	NL	0.170	0.000	0.497
24.647	95.623	NL	0.671	0.000	0.000
24.712	95.623	NL	0.501	0.000	0.250
24.778	70.302	NL	0.335	0.000	0.167
24.843	88.589	NL	0.836	0.000	0.169
24.908	88.589	NL	1.254	0.000	0.253
24.973	75.929	NL	1.005	0.000	0.507
25.038	64.676	NL	0.499	0.000	0.000
25.104	64.676	NL	1.002	0.000	0.000
25.169	88.589	NL	0.839	0.000	0.000
25.234	61.863	NL	0.663	0.000	0.168
25.299	61.863	NL	0.499	0.000	0.000
25.365	68.333	NL	0.335	0.000	0.000
25.430	68.333	NL	0.334	0.000	0.166
25.495	56.238	NL	0.499	0.000	0.000
25.560	55.675	NL	0.165	0.000	0.000
25.625	55.675	NL	0.672	0.000	0.000
25.691	59.051	NL	0.505	0.000	0.000
25.756	73.397	NL	0.167	0.000	0.000
25.821	73.397	NL	0.831	0.000	0.000
25.886	73.115	NL	0.746	0.000	0.000
25.951	63.270	NL	0.167	0.000	0.000
26.016	63.270	NL	0.336	0.000	0.000
26.082	61.863	NL	0.252	0.000	0.000
26.147	73.397	NL	0.672	0.000	0.000
26.212	73.397	NL	0.171	0.000	0.000
26.277	89.996	NL	0.256	0.000	0.000
26.342	44.988	NL	0.683	0.000	0.000
26.408	44.988	NL	0.340	0.170	0.688
26.473	60.738	NL	0.257	0.000	0.515
26.538	70.302	NL	0.342	0.000	0.685
26.603	70.302	NL	0.334	0.000	0.170
26.669	75.929	NL	0.501	0.000	0.000
26.734	61.863	NL	0.170	0.000	0.000
26.799	61.863	NL	0.674	0.000	0.167
26.864	68.333	NL	0.758	0.000	0.251
26.929	59.051	NL	0.838	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
26.994	59.051	NL	0.168	0.000	0.000
27.060	53.425	NL	0.503	0.000	0.000
27.125	53.425	NL	0.672	0.000	0.000
27.190	93.653	NL	0.838	0.000	0.000
27.255	56.238	NL	1.003	0.000	0.250
27.320	56.238	NL	0.334	0.000	0.166
27.386	59.051	NL	0.000	0.000	0.167
27.451	73.397	NL	0.000	0.000	0.250
27.516	73.397	NL	0.000	0.000	0.000
27.581	67.489	NL	0.502	0.666	1.167
27.646	60.738	NL	0.500	0.499	1.001
27.712	60.738	NL	0.498	0.665	1.000
27.777	67.489	NL	0.337	0.169	0.168
27.842	83.525	NL	0.505	0.253	0.000
27.907	83.525	NL	0.670	0.000	0.000
27.972	70.302	NL	0.000	0.000	0.000
28.038	48.081	NL	0.506	0.000	0.000
28.103	48.081	NL	0.337	0.000	0.000
28.168	64.676	NL	0.170	0.000	1.162
28.233	70.865	NL	0.507	0.000	0.497
28.299	70.865	NL	0.845	0.000	0.331
28.364	75.929	NL	0.000	0.000	0.000
28.429	75.929	NL	0.000	0.000	0.252
28.494	75.929	NL	0.000	0.000	0.168
28.559	56.238	NL	0.170	0.000	0.170
28.624	75.929	NL	0.254	0.000	0.254
28.690	75.929	NL	0.171	0.000	0.000
28.755	81.555	NL	0.000	0.000	0.681
28.820	81.555	NL	0.254	0.000	0.256
28.885	84.369	NL	0.169	0.000	0.340
28.950	86.057	NL	0.337	0.000	0.510
29.016	86.057	NL	0.764	0.000	0.255
29.081	70.302	NL	1.184	0.000	0.170
29.146	48.081	NL	0.331	0.000	0.000
29.211	48.081	NL	0.496	0.000	0.000
29.276	70.302	NL	0.494	0.000	0.000
29.342	78.742	NL	0.836	0.000	0.000
29.407	78.742	NL	0.754	0.000	0.000
29.472	91.121	NL	0.670	0.000	0.000
29.537	64.676	NL	1.693	0.000	0.000
29.603	64.676	NL	1.772	0.000	0.000
29.668	44.988	NL	1.524	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
29.733	68.333	NL	0.000	0.000	0.000
29.798	68.333	NL	0.000	0.000	0.000
29.863	59.051	NL	0.000	0.000	0.000
29.929	48.081	NL	0.501	0.000	0.000
29.994	48.081	NL	1.003	0.000	0.000
30.059	44.988	NL	1.171	0.000	0.167
30.124	75.929	NL	0.504	0.000	0.000
30.189	75.929	NL	1.005	0.000	0.000
30.254	89.996	NL	1.678	0.000	0.000
30.320	58.207	NL	1.519	0.000	0.000
30.385	58.207	NL	0.760	0.000	0.000
30.450	50.613	NL	0.506	0.000	0.000
30.515	50.613	NL	0.507	0.000	0.169
30.580	68.333	NL	0.760	0.000	0.254
30.646	67.489	NL	1.183	0.000	0.675
30.711	67.489	NL	0.669	0.000	0.000
30.776	50.613	NL	0.755	0.250	0.000
30.841	50.613	NL	0.673	0.167	0.000
30.906	50.613	NL	0.683	0.000	0.000
30.972	59.051	NL	0.514	0.000	0.000
31.037	53.144	NL	0.170	0.000	0.000
31.102	53.144	NL	0.853	0.000	0.000
31.167	39.363	NL	0.766	0.000	0.000
31.233	68.333	NL	0.849	0.000	0.000
31.298	68.333	NL	0.664	0.000	0.000
31.363	56.238	NL	0.250	0.000	0.000
31.428	68.333	NL	0.501	0.000	0.168
31.493	68.333	NL	0.167	0.000	0.000
31.558	59.051	NL	0.000	0.000	0.000
31.624	61.863	NL	0.000	0.168	0.168
31.689	61.863	NL	0.166	0.000	0.168
31.754	37.957	NL	0.249	0.000	0.251
31.819	39.363	NL	0.664	0.000	0.000
31.884	39.363	NL	0.336	0.000	0.000
31.950	64.676	NL	0.503	0.000	0.000
32.015	70.865	NL	0.506	0.000	0.000
32.080	70.865	NL	0.664	0.000	0.167
32.145	50.613	NL	0.752	0.000	0.250
32.210	50.613	NL	0.835	0.000	0.500
32.276	55.675	NL	0.668	0.000	0.000
32.341	70.302	NL	0.503	0.000	0.250
32.406	70.302	NL	0.167	0.168	0.166

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
32.471	65.801	NL	0.333	0.500	0.166
32.537	67.489	NL	0.999	0.250	0.249
32.602	67.489	NL	1.498	0.167	0.666
32.667	73.397	NL	0.000	0.000	0.168
32.732	47.800	NL	0.248	0.000	0.252
32.797	47.800	NL	0.165	0.000	0.162
32.862	88.589	NL	0.341	0.000	0.000
32.928	64.676	NL	0.508	0.000	0.000
32.993	64.676	NL	0.338	0.000	0.000
33.058	63.270	NL	0.674	0.000	0.000
33.123	84.369	NL	0.507	0.000	0.000
33.188	84.369	NL	0.168	0.170	0.000
33.254	60.738	NL	0.851	0.169	0.000
33.319	61.863	NL	1.019	0.254	0.000
33.384	61.863	NL	1.524	0.508	0.000
33.449	60.738	NL	0.340	0.000	0.000
33.514	56.238	NL	0.257	0.000	0.000
33.580	56.238	NL	0.000	0.000	0.000
33.645	61.863	NL	0.000	0.167	0.000
33.710	80.992	NL	0.250	0.250	0.000
33.775	80.992	NL	0.503	0.500	0.000
33.840	73.115	NL	0.000	0.000	0.000
33.906	73.115	NL	0.248	0.000	0.000
33.971	53.425	NL	0.166	0.000	0.000
34.036	70.865	NL	0.502	0.000	0.502
34.101	70.865	NL	0.251	0.000	0.251
34.167	64.676	NL	0.334	0.000	0.334
34.232	37.957	NL	0.000	0.000	0.335
34.297	37.957	NL	0.253	0.000	0.502
34.362	78.742	NL	0.168	0.000	0.000
34.427	48.081	NL	0.664	0.000	0.165
34.492	48.081	NL	0.744	0.000	0.498
34.558	89.996	NL	1.489	0.168	0.167
34.623	73.397	NL	0.498	0.000	0.000
34.688	73.397	NL	0.495	0.246	0.000
34.753	78.742	NL	0.663	0.164	0.000
34.819	86.057	NL	0.167	0.169	0.000
34.884	86.057	NL	0.000	0.253	0.000
34.949	61.863	NL	0.165	0.507	0.165
35.014	80.992	NL	0.169	0.000	0.169
35.079	80.992	NL	0.254	0.000	0.254
35.145	98.437	NL	0.507	0.000	0.507

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
35.210	86.057	NL	0.670	0.000	0.840
35.275	86.057	NL	0.504	0.000	0.251
35.340	50.613	NL	1.010	0.000	0.167
35.405	81.555	NL	0.678	0.000	0.000
35.471	81.555	NL	0.512	0.000	0.000
35.536	63.270	NL	0.168	0.000	0.000
35.601	63.270	NL	0.513	0.000	0.000
35.666	98.437	NL	0.256	0.000	0.000
35.731	96.186	NL	0.340	0.169	0.000
35.796	96.186	NL	0.170	0.000	0.000
35.862	56.238	NL	0.257	0.000	0.000
35.927	80.992	NL	0.340	0.000	0.000
35.992	80.992	NL	0.336	0.000	0.168
36.057	81.555	NL	0.504	0.000	0.748
36.122	83.525	NL	0.672	0.000	0.331
36.188	83.525	NL	0.836	0.000	0.000
36.253	81.555	NL	1.004	0.000	0.000
36.318	58.207	NL	1.000	0.000	0.000
36.383	58.207	NL	0.000	0.000	0.503
36.448	98.718	NL	0.000	0.000	0.748
36.514	70.302	NL	0.000	0.000	0.499
36.579	70.302	NL	0.334	0.000	0.167
36.644	70.865	NL	1.251	0.000	0.250
36.709	65.801	NL	0.666	0.000	0.000
36.775	65.801	NL	0.337	0.000	0.169
36.840	65.801	NL	0.506	0.000	0.254
36.905	89.996	NL	0.672	0.000	0.000
36.970	89.996	NL	0.337	0.000	0.000
37.035	58.207	NL	0.253	0.000	0.000
37.100	68.333	NL	0.333	0.000	0.000
37.166	68.333	NL	0.666	0.169	0.171
37.231	63.270	NL	0.500	0.253	0.256
37.296	63.270	NL	0.333	0.000	0.513
37.361	64.676	NL	0.838	0.171	0.000
37.426	55.675	NL	0.503	0.000	0.000
37.492	55.675	NL	0.166	0.000	0.000
37.557	65.801	NL	1.170	0.000	0.000
37.622	78.460	NL	1.257	0.000	0.000
37.687	78.460	NL	0.837	0.000	0.171
37.752	87.182	NL	1.018	0.000	0.510
37.818	88.589	NL	1.017	0.000	0.255
37.883	88.589	NL	1.356	0.000	0.170

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
37.948	73.397	NL	0.169	0.000	0.000
38.013	59.051	NL	0.253	0.000	0.253
38.078	59.051	NL	0.169	0.000	0.338
38.144	65.801	NL	0.166	0.000	0.168
38.209	53.425	NL	0.249	0.000	0.000
38.274	53.425	NL	0.000	0.000	0.000
38.339	78.460	NL	0.504	0.000	0.166
38.405	44.988	NL	0.752	0.000	0.248
38.470	44.988	NL	0.501	0.000	0.497
38.535	68.333	NL	0.168	0.000	0.168
38.600	50.613	NL	0.000	0.000	0.000
38.665	50.613	NL	0.000	0.165	0.000
38.730	81.555	NL	0.337	0.000	0.000
38.796	75.929	NL	0.757	0.000	0.000
38.861	75.929	NL	0.335	0.000	0.000
38.926	58.207	NL	1.499	0.000	0.000
38.991	58.207	NL	1.247	0.000	0.000
39.056	93.653	NL	0.835	0.000	0.000
39.122	44.988	NL	0.829	0.000	0.000
39.187	44.988	NL	0.992	0.000	0.000
39.252	73.397	NL	1.165	0.000	0.000
39.317	88.589	NL	0.000	0.000	0.498
39.382	88.589	NL	0.584	0.000	0.585
39.448	65.801	NL	0.750	0.000	0.584
39.513	47.800	NL	1.005	0.000	0.504
39.578	47.800	NL	0.250	0.000	0.000
39.643	60.738	NL	0.332	0.000	0.000
39.708	55.675	NL	0.000	0.000	0.000
39.774	55.675	NL	0.342	0.000	0.000
39.839	61.863	NL	0.680	0.000	0.000
39.904	53.144	NL	0.515	0.000	0.000
39.969	53.144	NL	0.340	0.169	0.000
40.034	43.019	NL	0.511	0.253	0.000
40.100	47.800	NL	1.532	0.000	0.000
40.165	47.800	NL	0.255	0.000	0.170
40.230	40.488	NL	0.170	0.168	0.256
40.295	27.834	NL	0.508	0.000	0.000
40.360	27.834	NL	0.507	0.000	0.000
40.426	64.676	NL	0.338	0.000	0.000
40.491	45.550	NL	0.502	0.000	0.000
40.556	45.550	NL	1.086	0.000	0.000
40.621	64.676	NL	1.005	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
40.687	64.676	NL	0.507	0.000	0.497
40.752	35.426	NL	0.250	0.000	0.916
40.817	43.019	NL	0.167	0.000	0.750
40.882	43.019	NL	0.000	0.000	0.500
40.947	73.115	NL	0.412	0.494	0.000
41.013	63.270	NL	0.413	0.329	0.165
41.078	63.270	NL	0.997	0.000	0.000
41.143	48.081	NL	0.251	0.000	0.000
41.208	50.613	NL	0.497	0.000	0.000
41.273	50.613	NL	0.000	0.000	0.000
41.339	68.333	NL	0.000	0.000	0.000
41.404	73.397	NL	0.166	0.000	0.000
41.469	73.397	NL	0.997	0.000	0.000
41.534	58.207	NL	0.910	0.000	0.000
41.599	78.742	NL	0.910	0.000	0.000
41.664	78.742	NL	0.000	0.497	0.000
41.730	65.801	NL	0.340	0.248	0.000
41.795	45.550	NL	0.676	0.166	0.000
41.860	45.550	NL	1.020	0.000	0.000
41.925	70.302	NL	0.590	0.000	0.172
41.990	65.801	NL	0.678	0.000	0.257
42.056	65.801	NL	0.515	0.497	0.515
42.121	60.738	NL	0.514	0.249	0.170
42.186	70.865	NL	0.000	0.166	0.255
42.251	70.865	NL	0.494	0.494	0.000
42.317	44.988	NL	0.415	0.247	0.000
42.382	44.988	NL	0.417	0.165	0.000
42.447	55.675	NL	0.000	0.000	0.000
42.512	50.613	NL	0.411	0.000	0.000
42.577	50.613	NL	0.161	0.000	0.000
42.643	50.613	NL	0.000	0.000	0.000
42.708	60.738	NL	0.335	0.168	0.166
42.773	60.738	NL	0.663	0.251	0.000
42.838	56.238	NL	1.006	0.503	0.000
42.903	63.270	NL	0.664	0.000	0.166
42.968	63.270	NL	0.746	0.000	0.249
43.034	67.489	NL	0.994	0.000	0.497
43.099	88.589	NL	0.333	0.000	0.000
43.164	88.589	NL	0.249	0.000	0.000
43.229	65.801	NL	0.000	0.000	0.000
43.294	43.019	NL	0.000	0.000	0.169
43.360	43.019	NL	0.161	0.000	0.254

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
43.425	53.425	NL	0.000	0.000	0.000
43.490	58.207	NL	0.168	0.000	0.000
43.555	58.207	NL	0.252	0.000	0.000
43.620	53.144	NL	0.505	0.000	0.000
43.686	88.589	NL	0.166	0.000	0.166
43.751	88.589	NL	0.249	0.000	0.249
43.816	73.115	NL	0.000	0.000	0.499
43.881	55.675	NL	0.333	0.167	0.000
43.947	55.675	NL	0.822	0.250	0.000
44.012	63.270	NL	1.482	0.500	0.000
44.077	63.270	NL	0.241	0.000	0.408
44.142	61.863	NL	0.322	0.000	0.411
44.207	60.738	NL	0.000	0.000	0.000
44.272	60.738	NL	0.649	0.000	0.162
44.338	70.865	NL	0.488	0.000	0.243
44.403	56.238	NL	0.489	0.000	0.000
44.468	56.238	NL	0.326	0.000	0.161
44.533	65.801	NL	0.407	0.000	0.242
44.598	43.019	NL	0.487	0.000	0.000
44.664	43.019	NL	0.163	0.000	0.000
44.729	67.489	NL	0.166	0.000	0.000
44.794	60.738	NL	0.000	0.000	0.000
44.859	60.738	NL	0.245	0.000	0.000
44.924	53.425	NL	0.163	0.000	0.000
44.990	50.613	NL	0.000	0.000	0.486
45.055	50.613	NL	0.000	0.000	0.243
45.120	48.081	NL	0.000	0.000	0.162
45.185	61.863	NL	0.000	0.000	0.000
45.250	61.863	NL	0.321	0.000	0.000
45.316	43.019	NL	0.240	0.000	0.000
45.381	53.144	NL	0.480	0.000	0.000
45.446	53.144	NL	0.400	0.000	0.000
45.511	70.302	NL	0.400	0.000	0.162
45.576	50.613	NL	0.962	0.000	0.000
45.642	50.613	NL	0.964	0.000	0.161
45.707	73.397	NL	0.965	0.000	0.242
45.772	73.397	NL	0.967	0.000	0.483
45.837	59.051	NL	0.164	0.000	0.161
45.902	73.397	NL	0.729	0.000	0.000
45.968	73.397	NL	0.493	0.000	0.000
46.033	65.801	NL	0.244	0.000	0.000
46.098	55.675	NL	0.484	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
46.163	55.675	NL	0.476	0.000	0.000
46.228	50.613	NL	0.402	0.000	0.000
46.294	70.865	NL	0.321	0.000	0.000
46.359	70.865	NL	0.000	0.000	0.000
46.424	45.550	NL	0.168	0.000	0.000
46.489	47.800	NL	0.251	0.000	0.000
46.555	47.800	NL	0.494	0.000	0.000
46.620	65.801	NL	0.661	0.000	0.414
46.685	50.613	NL	0.579	0.000	0.414
46.750	50.613	NL	0.000	0.000	0.000
46.815	50.613	NL	0.656	0.000	0.000
46.881	37.957	NL	0.574	0.000	0.000
46.946	37.957	NL	0.000	0.000	0.000
47.011	37.957	NL	0.065	0.008	0.016
47.076	39.363	NL	0.000	0.000	0.000
47.141	39.363	NL	0.956	0.000	0.000
47.206	32.895	NL	0.955	0.000	0.000
47.272	53.425	NL	0.637	0.000	0.000
47.337	53.425	NL	0.000	0.000	0.000
47.402	45.550	NL	0.000	0.000	0.000
47.467	45.550	NL	0.000	0.000	0.000
47.532	45.550	NL	0.000	0.000	0.000
47.598	28.115	NL	0.000	0.000	0.000
47.663	28.115	NL	0.000	0.000	0.000
47.728	55.675	NL	0.000	0.000	0.000
47.793	53.144	NL	0.000	0.000	0.000
47.858	53.144	NL	0.000	0.000	0.000
47.924	63.270	NL	1.912	0.000	0.000
47.989	53.425	NL	0.956	0.000	0.000
48.054	53.425	NL	0.479	0.000	0.000
48.119	43.019	NL	0.000	0.000	0.000
48.185	48.081	NL	0.329	0.000	0.240
48.250	48.081	NL	0.246	0.000	0.160
48.315	70.302	NL	0.492	0.000	0.000
48.380	40.488	NL	0.000	0.000	0.165
48.445	40.488	NL	0.000	0.000	0.248
48.510	53.144	NL	0.000	0.000	0.000
48.576	48.081	NL	0.240	0.000	0.000
48.641	48.081	NL	0.160	0.000	0.000
48.706	59.051	NL	0.000	0.000	0.000
48.771	40.488	NL	0.244	0.000	0.169
48.836	40.488	NL	0.491	0.000	0.253

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
48.902	53.144	NL	0.000	0.000	0.507
48.967	67.489	NL	0.171	0.000	0.171
49.032	67.489	NL	0.256	0.000	0.256
49.097	37.957	NL	0.512	0.000	0.512
49.162	47.800	NL	0.000	0.000	0.247
49.228	47.800	NL	0.000	0.000	0.165
49.293	48.081	NL	0.000	0.000	0.000
49.358	48.081	NL	1.052	0.000	0.169
49.423	55.675	NL	1.139	0.000	0.000
49.488	50.613	NL	1.476	0.000	0.000
49.554	50.613	NL	0.811	0.000	0.169
49.619	63.270	NL	0.820	0.000	0.253
49.684	70.865	NL	0.483	0.000	0.506
49.749	70.865	NL	0.241	0.000	0.000
49.815	42.176	NL	0.161	0.000	0.000
49.880	65.801	NL	0.000	0.000	0.000
49.945	65.801	NL	0.578	0.242	0.000
50.010	63.270	NL	0.665	0.161	0.000
50.075	73.397	NL	1.007	0.000	0.000
50.140	73.397	NL	0.000	0.168	0.000
50.206	59.051	NL	0.160	0.252	0.000
50.271	40.488	NL	0.478	0.000	0.000
50.336	40.488	NL	0.576	0.000	0.000
50.401	50.613	NL	0.665	0.000	0.000
50.466	47.800	NL	1.492	0.000	0.000
50.532	47.800	NL	0.887	0.000	0.000
50.597	60.738	NL	0.735	0.000	0.159
50.662	50.613	NL	0.517	0.478	0.000
50.727	50.613	NL	0.000	0.239	0.000
50.792	35.426	NL	0.000	0.159	0.000
50.858	47.800	NL	0.000	0.000	0.000
50.923	47.800	NL	0.830	0.000	0.242
50.988	37.957	NL	0.842	0.000	0.161
51.053	37.957	NL	0.517	0.000	0.489
51.118	50.613	NL	0.174	0.000	0.244
51.184	56.238	NL	0.261	0.000	0.163
51.249	56.238	NL	0.000	0.000	0.000
51.314	43.019	NL	0.000	0.000	0.000
51.379	53.425	NL	0.000	0.000	0.162
51.444	53.425	NL	0.000	0.000	0.000
51.510	50.613	NL	0.170	0.000	0.000
51.575	44.988	NL	0.255	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
51.640	44.988	NL	0.984	0.000	0.000
51.705	60.738	NL	0.921	0.172	0.236
51.770	48.081	NL	0.413	0.000	0.158
51.836	48.081	NL	0.990	0.000	0.000
51.901	50.613	NL	0.240	0.000	0.000
51.966	58.207	NL	0.318	0.000	0.000
52.031	58.207	NL	0.000	0.000	0.000
52.097	37.957	NL	0.170	0.000	0.000
52.162	40.488	NL	0.255	0.000	0.000
52.227	40.488	NL	0.000	0.000	0.000
52.292	50.613	NL	0.339	0.000	0.000
52.357	53.144	NL	0.252	0.000	0.158
52.423	53.144	NL	0.471	0.000	0.000
52.488	58.207	NL	0.236	0.239	0.000
52.553	32.895	NL	0.157	0.159	0.161
52.618	32.895	NL	0.478	0.000	0.000
52.683	64.676	NL	0.239	0.000	0.000
52.749	64.676	NL	0.159	0.000	0.000
52.814	55.675	NL	0.000	0.000	0.000
52.879	58.207	NL	0.347	0.000	0.000
52.944	58.207	NL	0.521	0.000	0.000
53.009	47.800	NL	0.522	0.000	0.000
53.074	45.550	NL	0.174	0.000	0.174
53.140	45.550	NL	0.161	0.000	0.583
53.205	65.801	NL	0.000	0.000	0.000
53.270	30.927	NL	0.173	0.000	0.000
53.335	30.927	NL	0.260	0.000	0.000
53.400	50.613	NL	0.000	0.000	0.000
53.466	27.834	NL	0.000	0.000	0.172
53.531	27.834	NL	0.163	0.000	0.000
53.596	33.739	NL	0.000	0.000	0.000
53.661	45.550	NL	0.000	0.000	0.000
53.727	45.550	NL	0.000	0.000	0.000
53.792	61.863	NL	0.000	0.000	0.000
53.857	40.488	NL	0.170	0.000	0.000
53.922	40.488	NL	0.255	0.000	0.000
53.987	50.613	NL	0.000	0.000	0.000
54.053	56.238	NL	0.000	0.000	0.000
54.118	56.238	NL	0.000	0.000	0.161
54.183	32.895	NL	0.000	0.000	0.000
54.248	30.365	NL	0.514	0.172	0.171
54.313	30.365	NL	0.770	0.257	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
54.378	36.551	NL	1.026	0.000	0.000
54.444	36.551	NL	0.000	0.000	0.000
54.509	65.801	NL	0.000	0.000	0.000
54.574	43.019	NL	0.000	0.000	0.000
54.639	43.019	NL	0.240	0.000	0.170
54.704	55.675	NL	0.160	0.000	0.255
54.770	30.927	NL	0.000	0.000	0.000
54.835	30.927	NL	0.171	0.000	0.000
54.900	48.081	NL	0.416	0.000	0.000
54.965	45.550	NL	0.474	0.000	0.000
55.030	45.550	NL	0.237	0.000	0.000
55.096	60.738	NL	0.158	0.000	0.000
55.161	36.551	NL	0.486	0.000	0.000
55.226	36.551	NL	0.243	0.000	0.000
55.291	50.613	NL	0.162	0.000	0.000
55.356	45.550	NL	0.000	0.000	0.000
55.422	45.550	NL	0.420	0.000	0.000
55.487	47.800	NL	0.164	0.000	0.000
55.552	30.365	NL	0.000	0.000	0.000
55.617	30.365	NL	0.694	0.000	0.000
55.682	45.550	NL	0.366	0.000	0.000
55.748	42.176	NL	0.071	0.000	0.000
55.813	42.176	NL	0.489	0.000	0.833
55.878	35.426	NL	0.486	0.000	0.761
55.943	30.927	NL	0.324	0.000	0.163
56.008	30.927	NL	0.000	0.000	0.000
56.074	58.207	NL	0.000	0.000	0.237
56.139	58.207	NL	0.000	0.000	0.158
56.204	36.551	NL	1.127	0.000	0.000
56.269	40.488	NL	0.733	0.000	0.000
56.334	40.488	NL	0.319	0.000	0.000
56.400	53.144	NL	0.474	0.000	0.171
56.465	48.081	NL	0.237	0.000	0.256
56.530	48.081	NL	0.158	0.000	0.512
56.595	28.115	NL	0.171	0.000	0.000
56.660	55.675	NL	0.000	0.000	0.000
56.726	55.675	NL	0.158	0.000	0.000
56.791	45.550	NL	0.482	0.171	0.000
56.856	32.895	NL	0.718	0.257	0.000
56.921	32.895	NL	0.479	0.000	0.000
56.986	47.800	NL	0.339	0.000	0.000
57.052	37.957	NL	0.508	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
57.117	37.957	NL	0.000	0.000	0.000
57.182	65.801	NL	0.948	0.000	0.000
57.247	50.613	NL	0.712	0.000	0.000
57.312	50.613	NL	0.474	0.000	0.000
57.378	32.895	NL	0.000	0.000	0.000
57.443	48.081	NL	0.000	0.000	0.000
57.508	48.081	NL	0.000	0.000	0.161
57.573	63.270	NL	0.348	0.000	0.175
57.638	59.051	NL	0.753	0.000	0.263
57.704	59.051	NL	0.853	0.000	0.526
57.769	32.895	NL	0.663	0.000	0.000
57.834	32.895	NL	0.244	0.000	0.000
57.899	42.176	NL	0.487	0.000	0.162
57.965	68.333	NL	0.000	0.000	0.000
58.030	68.333	NL	0.000	0.000	0.000
58.095	43.019	NL	0.163	0.000	0.000
58.160	44.988	NL	0.000	0.171	0.000
58.225	44.988	NL	0.000	0.256	0.000
58.290	40.488	NL	0.000	0.000	0.000
58.356	39.363	NL	0.000	0.000	0.000
58.421	39.363	NL	0.240	0.000	0.000
58.486	70.865	NL	0.160	0.000	0.000
58.551	55.675	NL	0.171	0.000	0.000
58.616	55.675	NL	0.496	0.000	0.000
58.682	39.363	NL	0.830	0.000	0.000
58.747	55.675	NL	0.646	0.000	0.000
58.812	55.675	NL	0.492	0.000	0.000
58.877	50.613	NL	0.825	0.000	0.000
58.942	64.676	NL	0.172	0.000	0.000
59.008	64.676	NL	0.259	0.000	0.000
59.073	37.957	NL	0.517	0.000	0.000
59.138	63.270	NL	0.657	0.000	0.000
59.203	63.270	NL	0.243	0.000	0.000
59.268	65.801	NL	0.162	0.000	0.000
59.334	50.613	NL	0.338	0.000	0.000
59.399	50.613	NL	0.252	0.000	0.000
59.464	55.675	NL	0.160	0.000	0.000
59.529	55.675	NL	0.345	0.000	0.000
59.594	53.144	NL	0.518	0.000	0.000
59.660	35.426	NL	1.035	0.000	0.000
59.725	35.426	NL	0.175	0.000	0.000
59.790	53.425	NL	0.263	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
59.855	45.550	NL	0.525	0.000	0.000
59.920	45.550	NL	0.666	0.000	0.000
59.986	70.865	NL	0.506	0.000	0.000
60.051	64.676	NL	0.165	0.000	0.000
60.116	64.676	NL	0.346	0.000	0.000
60.181	40.488	NL	0.000	0.000	0.000
60.246	47.800	NL	0.162	0.000	0.000
60.312	47.800	NL	0.000	0.000	0.000
60.377	73.397	NL	0.000	0.000	0.240
60.442	67.489	NL	0.160	0.000	0.160
60.507	67.489	NL	0.000	0.000	0.171
60.572	53.144	NL	0.000	0.000	0.000
60.638	65.801	NL	0.159	0.000	0.000
60.703	65.801	NL	0.819	0.172	0.172
60.768	60.738	NL	0.241	0.258	0.497
60.833	64.676	NL	0.161	0.672	0.675
60.898	64.676	NL	0.000	0.000	0.000
60.964	55.675	NL	0.000	0.000	0.000
61.029	65.801	NL	0.000	0.000	0.000
61.094	65.801	NL	0.649	0.171	0.000
61.159	64.676	NL	0.239	0.256	0.000
61.224	64.676	NL	0.159	0.000	0.160
61.290	78.460	NL	0.475	0.000	0.000
61.355	83.525	NL	0.238	0.000	0.000
61.420	83.525	NL	0.158	0.000	0.000
61.485	78.460	NL	0.169	0.000	0.000
61.550	70.302	NL	0.000	0.000	0.237
61.616	70.302	NL	0.158	0.000	0.158
61.681	37.957	NL	0.480	0.000	0.000
61.746	55.675	NL	0.240	0.000	0.000
61.811	55.675	NL	0.160	0.000	0.000
61.876	75.929	NL	0.478	0.478	0.651
61.942	65.801	NL	0.239	0.239	0.498
62.007	65.801	NL	0.159	0.159	0.324
62.072	75.929	NL	0.349	0.000	0.000
62.137	73.115	NL	0.504	0.000	0.000
62.202	73.115	NL	0.161	0.000	0.000
62.268	63.270	NL	0.175	0.000	0.000
62.333	61.863	NL	0.263	0.000	0.000
62.398	61.863	NL	0.688	0.000	0.163
62.463	58.207	NL	0.485	0.000	0.000
62.528	43.019	NL	0.242	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
62.594	43.019	NL	0.320	0.000	0.000
62.659	47.800	NL	0.000	0.000	0.000
62.724	63.270	NL	0.000	0.000	0.000
62.789	63.270	NL	0.000	0.000	0.000
62.854	73.397	NL	0.171	0.000	0.000
62.920	73.397	NL	0.236	0.000	0.236
62.985	59.051	NL	0.316	0.000	0.158
63.050	88.589	NL	0.342	0.000	0.000
63.115	88.589	NL	0.258	0.000	0.238
63.180	78.460	NL	0.674	0.000	0.159
63.246	47.800	NL	0.988	0.169	0.000
63.311	47.800	NL	0.238	0.254	0.000
63.376	78.460	NL	0.159	0.508	0.000
63.441	73.397	NL	0.686	0.000	0.342
63.507	73.397	NL	0.512	0.239	0.512
63.572	61.863	NL	0.511	0.481	0.511
63.637	75.929	NL	0.479	0.000	0.479
63.702	75.929	NL	0.479	0.000	0.479
63.767	45.550	NL	0.636	0.000	0.319
63.833	75.929	NL	0.514	0.000	0.171
63.898	75.929	NL	0.516	0.000	0.257
63.963	47.800	NL	0.000	0.000	0.674
64.028	68.333	NL	0.654	0.000	0.000
64.093	68.333	NL	0.500	0.000	0.000
64.158	73.397	NL	0.680	0.000	0.000
64.224	59.051	NL	0.174	0.000	0.484
64.289	59.051	NL	0.261	0.000	0.242
64.354	70.865	NL	0.000	0.000	0.161
64.419	63.270	NL	0.486	0.000	0.000
64.484	63.270	NL	0.243	0.000	0.000
64.550	75.929	NL	0.323	0.000	0.000
64.615	75.929	NL	0.000	0.000	0.171
64.680	88.589	NL	0.243	0.000	0.256
64.745	89.996	NL	0.162	0.000	0.000
64.811	89.996	NL	0.949	0.000	0.169
64.876	60.738	NL	0.475	0.000	0.253
64.941	92.809	NL	0.316	0.000	0.000
65.006	92.809	NL	0.171	0.000	0.337
65.071	70.865	NL	0.257	0.000	0.505
65.136	83.525	NL	0.000	0.000	1.171
65.202	83.525	NL	0.000	0.000	0.000
65.267	60.738	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
65.332	81.555	NL	0.000	0.000	0.000
65.397	81.555	NL	0.171	0.000	0.170
65.462	70.865	NL	0.495	0.000	0.000
65.528	35.426	NL	0.159	0.000	0.000
65.593	35.426	NL	0.477	0.000	0.000
65.658	67.489	NL	0.238	0.000	0.000
65.723	73.397	NL	0.159	0.000	0.160
65.788	73.397	NL	0.000	0.000	0.000
65.854	43.019	NL	0.000	0.000	0.000
65.919	78.460	NL	0.000	0.000	0.000
65.984	78.460	NL	0.000	0.000	0.172
66.049	70.302	NL	0.000	0.000	0.258
66.114	60.738	NL	0.000	0.000	0.000
66.180	60.738	NL	0.174	0.000	0.000
66.245	63.270	NL	0.261	0.000	0.000
66.310	63.270	NL	0.321	0.000	0.000
66.375	36.551	NL	0.347	0.000	0.485
66.440	68.333	NL	1.015	0.000	0.242
66.506	68.333	NL	0.853	0.000	0.162
66.571	80.992	NL	0.345	0.000	0.000
66.636	104.065	NL	0.761	0.000	0.000
66.701	104.065	NL	0.679	0.000	0.000
66.766	80.992	NL	0.173	0.489	0.663
66.832	98.437	NL	0.000	0.244	0.506
66.897	98.437	NL	0.000	0.163	0.163
66.962	32.895	NL	0.825	0.000	0.000
67.027	64.676	NL	0.736	0.000	0.000
67.092	64.676	NL	1.148	0.000	0.000
67.158	55.675	NL	1.117	0.000	0.169
67.223	60.738	NL	0.968	0.000	0.253
67.288	60.738	NL	0.983	0.000	0.506
67.353	59.051	NL	0.472	0.170	0.169
67.418	60.738	NL	0.474	0.000	0.254
67.484	60.738	NL	0.316	0.000	0.508
67.549	55.675	NL	0.515	0.000	0.000
67.614	60.738	NL	0.773	0.000	0.239
67.679	60.738	NL	0.671	0.000	0.317
67.744	70.302	NL	0.000	0.000	0.168
67.810	78.460	NL	0.000	0.000	0.000
67.875	78.460	NL	0.159	0.000	0.000
67.940	53.144	NL	0.170	0.000	0.652
68.005	53.144	NL	0.000	0.000	0.497

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
68.071	84.369	NL	0.159	0.000	0.674
68.136	70.865	NL	0.943	0.000	0.000
68.201	70.865	NL	0.471	0.000	0.000
68.266	88.589	NL	0.314	0.000	0.000
68.331	61.863	NL	0.654	0.000	0.000
68.396	61.863	NL	0.501	0.000	0.000
68.462	63.270	NL	0.160	0.000	0.000
68.527	70.865	NL	0.661	0.000	0.000
68.592	70.865	NL	0.245	0.000	0.000
68.657	63.270	NL	0.163	0.000	0.000
68.722	64.676	NL	0.658	0.000	0.000
68.788	64.676	NL	0.502	0.244	0.000
68.853	70.865	NL	0.162	0.163	0.000
68.918	47.800	NL	0.174	0.000	0.000
68.983	47.800	NL	0.243	0.000	0.000
69.049	48.081	NL	0.162	0.000	0.000
69.114	70.302	NL	0.484	0.000	0.000
69.179	70.302	NL	0.242	0.000	0.000
69.244	48.081	NL	0.161	0.000	0.000
69.309	53.144	NL	1.472	0.000	0.000
69.374	53.144	NL	0.996	0.000	0.000
69.440	78.742	NL	1.354	0.000	0.000
69.505	55.675	NL	0.000	0.000	0.000
69.570	55.675	NL	0.000	0.000	0.000
69.635	60.738	NL	0.000	0.000	0.000
69.700	60.738	NL	0.341	0.000	0.812
69.766	59.051	NL	0.253	0.000	0.746
69.831	60.738	NL	0.505	0.000	0.663
69.896	60.738	NL	0.000	0.171	0.000
69.961	75.929	NL	0.237	0.257	0.000
70.026	48.081	NL	0.316	0.514	0.000
70.092	48.081	NL	0.480	0.000	0.000
70.157	59.051	NL	0.240	0.000	0.000
70.222	80.992	NL	0.160	0.000	0.160
70.287	80.992	NL	0.171	0.000	0.000
70.353	63.270	NL	0.256	0.000	0.000
70.418	64.676	NL	0.513	0.000	0.000
70.483	64.676	NL	0.000	0.000	0.000
70.548	75.929	NL	0.000	0.000	0.000
70.613	75.929	NL	0.000	0.000	0.322
70.678	75.929	NL	1.000	0.000	0.000
70.744	45.550	NL	0.501	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
70.809	67.489	NL	0.681	0.000	0.000
70.874	67.489	NL	0.666	0.000	0.000
70.939	63.270	NL	0.507	0.000	0.000
71.004	61.863	NL	0.164	0.000	0.000
71.070	61.863	NL	0.342	0.000	0.342
71.135	45.550	NL	0.513	0.000	0.512
71.200	63.270	NL	0.514	0.000	0.000
71.265	63.270	NL	0.483	0.000	0.169
71.330	59.051	NL	0.722	0.000	0.253
71.396	59.051	NL	0.481	0.000	0.666
71.461	53.144	NL	0.643	0.000	0.000
71.526	75.929	NL	0.711	0.000	0.000
71.591	75.929	NL	0.474	0.000	0.000
71.656	63.270	NL	0.339	0.000	0.000
71.722	80.992	NL	0.255	0.000	0.000
71.787	80.992	NL	0.000	0.000	0.000
71.852	73.115	NL	0.648	0.000	0.172
71.917	88.589	NL	0.496	0.000	0.258
71.982	88.589	NL	0.834	0.000	0.675
72.048	86.057	NL	0.814	0.000	0.000
72.113	83.525	NL	0.729	0.000	0.000
72.178	83.525	NL	0.316	0.000	0.000
72.243	92.809	NL	0.000	0.000	0.000
72.309	91.121	NL	0.000	0.000	0.000
72.374	91.121	NL	0.000	0.160	0.160
72.439	40.488	NL	0.651	0.000	0.000
72.504	81.555	NL	0.495	0.000	0.000
72.569	81.555	NL	0.161	0.000	0.000
72.634	65.801	NL	0.818	0.000	0.648
72.700	93.653	NL	0.751	0.000	0.238
72.765	93.653	NL	0.675	0.000	0.318
72.830	73.115	NL	0.830	0.481	0.172
72.895	55.675	NL	0.241	0.241	0.257
72.960	55.675	NL	0.323	0.160	0.515
73.026	70.865	NL	0.487	0.487	0.487
73.091	70.865	NL	0.727	0.243	0.727
73.156	60.738	NL	0.485	0.162	0.647
73.221	89.996	NL	0.689	0.000	0.000
73.286	89.996	NL	0.520	0.000	0.000
73.352	83.525	NL	0.680	0.000	0.000
73.417	67.489	NL	0.343	0.000	0.171
73.482	67.489	NL	0.514	0.244	0.256

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
73.547	78.460	NL	0.672	0.163	0.513
73.612	73.115	NL	0.473	0.000	0.000
73.678	73.115	NL	0.237	0.000	0.238
73.743	65.801	NL	0.158	0.000	0.159
73.808	93.653	NL	0.821	0.000	0.480
73.873	93.653	NL	0.497	0.000	0.240
73.938	78.742	NL	0.160	0.000	0.160
74.004	65.801	NL	0.988	0.000	0.000
74.069	65.801	NL	0.499	0.000	0.000
74.134	68.333	NL	0.679	0.000	0.000
74.199	78.742	NL	0.847	0.000	0.169
74.264	78.742	NL	1.510	0.000	0.254
74.330	65.801	NL	1.685	0.000	0.508
74.395	63.270	NL	0.000	0.000	0.169
74.460	63.270	NL	0.239	0.239	0.254
74.525	91.121	NL	0.320	0.159	0.000
74.590	64.676	NL	0.341	0.000	0.000
74.656	64.676	NL	0.255	0.236	0.000
74.721	55.675	NL	0.667	0.157	0.000
74.786	55.675	NL	0.342	0.000	0.000
74.851	60.738	NL	0.259	0.000	0.000
74.916	81.555	NL	0.834	0.000	0.000
74.982	81.555	NL	0.000	0.000	0.000
75.047	48.081	NL	0.000	0.000	0.000
75.112	75.929	NL	0.000	0.000	0.000
75.177	75.929	NL	0.483	0.000	0.173
75.243	78.742	NL	0.242	0.000	0.000
75.308	83.525	NL	0.161	0.000	0.000
75.373	83.525	NL	1.321	0.000	0.000
75.438	78.460	NL	1.253	0.000	0.000
75.503	59.051	NL	1.009	0.000	0.000
75.568	59.051	NL	0.663	0.000	0.000
75.634	96.186	NL	0.748	0.000	0.000
75.699	75.929	NL	0.326	0.000	0.000
75.764	75.929	NL	0.820	0.000	0.168
75.829	78.460	NL	0.987	0.000	0.252
75.894	73.397	NL	0.830	0.000	0.158
75.960	73.397	NL	1.118	0.000	0.000
76.025	73.115	NL	0.729	0.000	0.000
76.090	80.992	NL	0.987	0.000	0.000
76.155	80.992	NL	0.000	0.000	0.338
76.220	55.675	NL	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
76.286	78.742	NL	0.000	0.000	0.000
76.351	78.742	NL	0.508	0.000	0.171
76.416	55.675	NL	0.256	0.000	0.736
76.481	55.675	NL	0.512	0.000	0.990
76.547	96.186	NL	0.647	0.000	0.340
76.612	92.809	NL	0.495	0.000	0.000
76.677	92.809	NL	0.830	0.000	0.000
76.742	78.460	NL	0.000	0.172	0.172
76.807	65.801	NL	0.000	0.258	0.258
76.872	65.801	NL	0.159	0.000	0.000
76.938	88.589	NL	0.340	0.000	0.646
77.003	64.676	NL	0.748	0.000	0.493
77.068	64.676	NL	1.339	0.000	0.158
77.133	93.653	NL	0.658	0.000	0.000
77.198	73.397	NL	0.501	0.000	0.000
77.264	73.397	NL	0.321	0.000	0.000
77.329	84.369	NL	0.825	0.000	0.000
77.394	68.333	NL	0.500	0.000	0.000
77.459	68.333	NL	0.843	0.000	0.000
77.524	63.270	NL	0.653	0.000	0.171
77.590	89.996	NL	0.500	0.000	0.256
77.655	89.996	NL	0.160	0.000	0.513
77.720	75.929	NL	0.000	0.000	0.172
77.785	70.302	NL	0.000	0.245	0.259
77.851	70.302	NL	0.000	0.163	0.000
77.916	63.270	NL	0.000	0.000	0.170
77.981	59.051	NL	0.000	0.000	0.000
78.046	59.051	NL	0.000	0.000	0.000
78.111	73.397	NL	0.984	0.000	0.170
78.176	73.397	NL	1.000	0.000	0.255
78.242	53.144	NL	1.173	0.000	0.000
78.307	53.425	NL	0.338	0.000	0.000
78.372	53.425	NL	0.730	0.239	0.000
78.437	60.738	NL	0.637	0.159	0.000
78.502	70.865	NL	0.513	0.000	0.817
78.568	70.865	NL	1.006	0.000	0.495
78.633	68.333	NL	0.673	0.000	0.159
78.698	61.863	NL	0.000	0.000	0.000
78.763	61.863	NL	0.000	0.000	0.238
78.828	68.333	NL	0.000	0.000	0.159
78.894	86.057	NL	0.172	0.000	0.170
78.959	86.057	NL	0.241	0.000	0.255

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
79.024	64.676	NL	0.320	0.000	0.000
79.089	80.992	NL	0.473	0.000	0.340
79.154	80.992	NL	0.237	0.000	0.509
79.220	83.525	NL	0.158	0.000	0.509
79.285	80.992	NL	0.000	0.000	0.816
79.350	80.992	NL	0.000	0.000	0.494
79.415	81.555	NL	0.000	0.000	0.159
79.480	70.865	NL	0.172	0.000	0.000
79.546	70.865	NL	0.000	0.000	0.000
79.611	73.397	NL	0.161	0.000	0.000
79.676	64.676	NL	1.004	0.171	0.000
79.741	64.676	NL	1.017	0.000	0.000
79.806	78.460	NL	0.836	0.000	0.000
79.872	78.460	NL	0.172	0.000	0.347
79.937	67.489	NL	0.502	0.000	0.260
80.002	75.929	NL	0.325	0.000	0.000
80.067	75.929	NL	0.515	0.000	0.000
80.132	55.675	NL	0.240	0.000	0.000
80.198	67.489	NL	0.160	0.000	0.000
80.263	67.489	NL	0.000	0.000	0.479
80.328	73.397	NL	0.506	0.000	0.239
80.393	70.865	NL	0.509	0.000	0.160
80.458	70.865	NL	1.466	0.000	0.000
80.524	89.996	NL	0.981	0.000	0.000
80.589	63.270	NL	0.821	0.000	0.000
80.654	63.270	NL	0.506	0.000	0.947
80.719	70.865	NL	0.238	0.000	0.473
80.785	59.051	NL	0.159	0.000	0.476
80.850	59.051	NL	0.000	0.000	0.000
80.915	70.865	NL	0.568	0.000	0.000
80.980	80.992	NL	0.569	0.159	0.000
81.045	80.992	NL	0.984	0.000	0.000
81.110	70.302	NL	0.577	0.170	0.000
81.176	78.460	NL	0.666	0.000	0.000
81.241	78.460	NL	0.509	0.000	0.000
81.306	55.675	NL	0.508	0.000	0.410
81.371	73.397	NL	0.762	0.000	0.415
81.436	73.397	NL	0.981	0.000	0.000
81.502	109.693	NL	0.408	0.000	0.171
81.567	109.693	NL	0.415	0.000	0.000
81.632	65.801	NL	0.964	0.000	0.482
81.697	65.801	NL	0.482	0.173	0.241

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
81.762	65.801	NL	0.321	0.260	0.161
81.828	56.238	NL	0.000	0.520	0.486
81.893	70.865	NL	0.172	0.000	0.415
81.958	70.865	NL	0.258	0.000	0.420
82.023	68.333	NL	0.483	0.000	0.000
82.089	84.369	NL	0.414	0.000	0.000
82.154	84.369	NL	0.326	0.000	0.000
82.219	58.207	NL	0.000	0.000	0.000
82.284	87.182	NL	0.238	0.238	0.238
82.349	87.182	NL	0.159	0.322	0.159
82.414	68.333	NL	0.000	0.000	0.000
82.480	73.115	NL	0.169	0.000	0.000
82.545	73.115	NL	0.254	0.000	0.000
82.610	70.865	NL	0.000	0.000	0.482
82.675	70.865	NL	0.648	0.000	0.241
82.740	70.865	NL	0.572	0.000	0.161
82.806	67.489	NL	0.474	0.474	0.000
82.871	63.270	NL	0.407	0.237	0.000
82.936	63.270	NL	0.158	0.317	0.000
83.001	58.207	NL	0.477	0.000	0.477
83.066	65.801	NL	0.406	0.000	0.239
83.132	65.801	NL	0.569	0.000	0.159
83.197	64.676	NL	0.502	0.000	0.000
83.262	64.676	NL	0.000	0.000	0.000
83.327	58.207	NL	0.159	0.000	0.000
83.392	65.801	NL	0.963	0.000	0.000
83.458	65.801	NL	0.481	0.000	0.000
83.523	109.693	NL	0.321	0.000	0.000
83.588	68.333	NL	0.000	0.000	0.000
83.653	68.333	NL	0.677	0.000	0.000
83.718	70.865	NL	0.764	0.000	0.000
83.784	56.238	NL	0.503	0.000	0.000
83.849	56.238	NL	0.340	0.000	0.000
83.914	80.992	NL	0.254	0.000	0.000
83.979	78.460	NL	0.000	0.000	0.000
84.044	78.460	NL	0.000	0.000	0.242
84.110	48.081	NL	0.000	0.000	0.161
84.175	73.115	NL	0.981	0.000	0.490
84.240	73.115	NL	0.829	0.000	0.245
84.305	73.397	NL	0.580	0.000	0.163
84.370	75.929	NL	0.488	0.488	0.000
84.436	75.929	NL	0.993	0.244	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
84.501	63.270	NL	1.243	0.163	0.000
84.566	95.623	NL	1.512	0.477	0.000
84.631	95.623	NL	1.051	0.239	0.000
84.696	45.550	NL	1.461	0.159	0.000
84.762	63.270	NL	0.505	0.000	0.000
84.827	63.270	NL	0.740	0.000	0.000
84.892	61.863	NL	0.912	0.000	0.000
84.957	61.863	NL	1.004	0.000	0.000
85.022	55.675	NL	0.000	0.000	0.168
85.088	73.397	NL	0.000	0.000	0.000
85.153	73.397	NL	0.474	0.000	0.000
85.218	81.555	NL	0.406	0.000	0.000
85.283	60.738	NL	0.316	0.000	0.000
85.348	60.738	NL	0.000	0.000	0.000
85.414	83.525	NL	0.335	0.000	0.169
85.479	118.980	NL	0.413	0.000	0.253
85.544	118.980	NL	0.506	0.000	0.506
85.609	84.369	NL	0.238	0.000	0.238
85.674	91.121	NL	0.159	0.000	0.159
85.740	91.121	NL	0.477	0.000	0.000
85.805	91.121	NL	0.919	0.000	0.000
85.870	67.489	NL	1.244	0.000	0.000
85.935	67.489	NL	2.470	0.000	0.000
86.000	91.121	NL	0.891	0.000	0.000
86.066	101.251	NL	0.480	0.000	0.000
86.131	101.251	NL	0.478	0.000	0.000
86.196	83.525	NL	0.409	0.000	0.000
86.261	53.425	NL	0.577	0.000	0.000
86.326	53.425	NL	0.000	0.000	0.000
86.392	53.144	NL	0.994	0.000	0.239
86.457	56.238	NL	0.999	0.000	0.159
86.522	56.238	NL	1.038	0.000	0.000
86.587	80.992	NL	0.653	0.000	0.168
86.652	80.992	NL	0.807	0.000	0.161
86.718	86.057	NL	0.000	0.000	0.000
86.783	81.555	NL	0.165	0.000	0.000
86.848	81.555	NL	0.405	0.000	0.000
86.913	50.613	NL	0.494	0.000	0.000
86.978	48.081	NL	0.336	0.237	0.167
87.044	48.081	NL	0.504	0.158	0.000
87.109	83.525	NL	0.978	0.000	0.000
87.174	68.333	NL	0.474	0.000	0.171

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
87.239	68.333	NL	0.316	0.000	0.257
87.304	88.589	NL	0.481	0.000	0.000
87.370	80.992	NL	0.478	0.000	0.167
87.435	80.992	NL	0.319	0.000	0.250
87.500	91.121	NL	0.000	0.000	0.976
87.565	68.333	NL	0.000	0.000	0.238
87.631	68.333	NL	0.156	0.156	0.314
87.696	56.238	NL	0.000	0.000	0.000
87.761	96.186	NL	0.000	0.000	0.000
87.826	96.186	NL	0.000	0.000	0.000
87.891	70.865	NL	0.000	0.000	0.000
87.956	83.525	NL	0.455	0.000	0.000
88.022	83.525	NL	0.456	0.000	0.000
88.087	73.397	NL	0.000	0.000	0.000
88.152	78.460	NL	0.200	0.000	0.000
88.217	78.460	NL	0.454	0.000	0.000
88.282	73.397	NL	0.000	0.000	0.463
88.348	73.397	NL	0.621	0.000	0.232
88.413	65.801	NL	0.932	0.158	0.154
88.478	88.589	NL	3.159	0.000	0.000
88.543	88.589	NL	1.172	0.000	0.000
88.608	73.397	NL	0.959	0.000	0.163
88.674	75.929	NL	0.640	0.000	0.000
88.739	75.929	NL	0.475	0.000	0.000
88.804	86.057	NL	0.317	0.000	0.000
88.869	61.863	NL	0.954	0.000	0.000
88.934	61.863	NL	0.870	0.202	0.317
89.000	58.207	NL	0.713	0.000	0.476
89.065	60.738	NL	0.476	0.000	0.952
89.130	60.738	NL	0.510	0.000	0.460
89.195	75.929	NL	0.685	0.000	0.307
89.260	86.057	NL	0.459	0.459	0.000
89.326	86.057	NL	0.411	0.230	0.409
89.391	80.992	NL	0.578	0.153	0.423
89.456	88.589	NL	0.000	0.000	0.000
89.521	88.589	NL	0.221	0.215	0.000
89.586	88.589	NL	0.332	0.000	0.000
89.652	70.865	NL	0.000	0.000	0.000
89.717	70.865	NL	0.223	0.000	0.221
89.782	65.801	NL	0.334	0.000	0.000
89.847	83.525	NL	0.669	0.000	0.000
89.912	83.525	NL	0.240	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
89.978	87.182	NL	0.160	0.000	0.000
90.043	87.182	NL	0.000	0.000	0.000
90.108	86.057	NL	-9999.990	-9999.990	-9999.990
90.173	70.865	NL	-9999.990	-9999.990	-9999.990
90.238	70.865	NL	-9999.990	-9999.990	-9999.990
90.304	63.270	NL	-9999.990	-9999.990	-9999.990
90.369	55.675	NL	-9999.990	-9999.990	-9999.990
90.434	55.675	NL	-9999.990	-9999.990	-9999.990
90.499	83.525	NL	-9999.990	-9999.990	-9999.990
90.564	75.929	NL	-9999.990	-9999.990	-9999.990
90.630	75.929	NL	-9999.990	-9999.990	-9999.990
90.695	60.738	NL	-9999.990	-9999.990	-9999.990
90.760	50.613	NL	-9999.990	-9999.990	-9999.990
90.825	50.613	NL	-9999.990	-9999.990	-9999.990
90.890	98.718	NL	-9999.990	-9999.990	-9999.990
90.956	80.992	NL	-9999.990	-9999.990	-9999.990
91.021	80.992	NL	-9999.990	-9999.990	-9999.990
91.086	70.302	NL	-9999.990	-9999.990	-9999.990
91.151	73.397	NL	-9999.990	-9999.990	-9999.990
91.216	73.397	NL	-9999.990	-9999.990	-9999.990
91.282	91.121	NL	-9999.990	-9999.990	-9999.990
91.347	37.957	NL	-9999.990	-9999.990	-9999.990
91.412	37.957	NL	-9999.990	-9999.990	-9999.990
91.477	50.613	NL	-9999.990	-9999.990	-9999.990
91.542	75.730	NL	-9999.990	-9999.990	-9999.990
91.608	75.730	NL	-9999.990	-9999.990	-9999.990
91.673	77.967	NL	-9999.990	-9999.990	-9999.990

Notes

NL - not logged due to steel casing
-9999.99 - no data
API - American Petroleum Institute
cps - counts per second
mS/m - milliSiemens per meter

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
2.349	82.745	-9999.990	-9999.990	-9999.990	-9999.990
2.414	80.992	-9999.990	-9999.990	-9999.990	-9999.990
2.479	80.992	-9999.990	-9999.990	-9999.990	-9999.990
2.545	74.723	-9999.990	-9999.990	-9999.990	-9999.990
2.610	87.006	-9999.990	-9999.990	-9999.990	-9999.990
2.675	87.006	-9999.990	-9999.990	-9999.990	-9999.990
2.740	75.929	-9999.990	-9999.990	-9999.990	-9999.990
2.805	67.489	-9999.990	-9999.990	-9999.990	-9999.990
2.871	67.489	-9999.990	-9999.990	-9999.990	-9999.990
2.936	84.971	-9999.990	-9999.990	-9999.990	-9999.990
3.001	86.479	-9999.990	-9999.990	-9999.990	-9999.990
3.066	86.479	196.125	-9999.990	-9999.990	-9999.990
3.131	75.929	120.247	-9999.990	-9999.990	-9999.990
3.197	90.699	70.469	-9999.990	-9999.990	-9999.990
3.262	90.699	70.469	-9999.990	-9999.990	-9999.990
3.327	87.615	39.858	-9999.990	-9999.990	-9999.990
3.392	87.615	39.858	-9999.990	-9999.990	-9999.990
3.457	107.582	21.009	-9999.990	-9999.990	-9999.990
3.523	61.160	6.839	-9999.990	-9999.990	-9999.990
3.588	61.160	6.839	-9999.990	-9999.990	-9999.990
3.653	73.819	-0.763	-9999.990	-9999.990	-9999.990
3.718	101.251	-6.261	-9999.990	-9999.990	-9999.990
3.783	101.251	-6.261	-9999.990	-9999.990	-9999.990
3.849	103.783	-9.001	-9999.990	-9999.990	-9999.990
3.914	89.740	-11.274	-9999.990	-9999.990	-9999.990
3.979	89.740	-11.274	-9999.990	-9999.990	-9999.990
4.044	85.136	-13.212	-9999.990	-9999.990	-9999.990
4.109	108.158	-13.059	0.289	0.388	0.388
4.174	108.158	-13.059	0.401	0.393	0.643
4.240	129.112	-15.592	0.737	0.152	0.170
4.305	80.992	-13.420	1.152	0.000	0.000
4.370	80.992	-13.420	0.922	0.000	0.000
4.435	124.046	-15.440	0.298	0.000	0.000
4.501	108.849	-16.046	0.000	0.000	0.000
4.566	108.849	-16.046	0.000	0.000	0.000
4.631	98.718	-13.925	0.000	0.000	0.000
4.696	124.046	-16.955	0.493	0.000	0.000
4.761	124.046	-16.955	1.246	0.000	0.000
4.826	129.112	-16.955	0.831	0.000	0.000
4.892	101.251	-16.501	1.171	0.000	0.000
4.957	101.251	-16.501	1.247	0.000	0.000
5.022	103.783	-18.470	0.671	0.000	0.165
5.087	103.783	-18.470	1.469	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
5.153	124.046	-18.975	0.498	0.253	0.000
5.218	129.394	-17.410	0.332	0.169	0.000
5.283	129.394	-17.410	0.311	0.000	0.155
5.348	124.046	-18.975	0.714	0.000	0.233
5.413	109.693	-17.410	0.798	0.000	0.000
5.478	109.693	-17.410	0.472	0.000	0.000
5.544	101.251	-18.470	0.470	0.000	0.000
5.609	131.646	-19.228	1.103	0.000	0.000
5.674	131.646	-19.228	0.632	0.000	0.000
5.739	106.879	-16.450	0.956	0.000	0.000
5.805	141.779	-19.228	0.634	0.000	0.000
5.870	141.779	-19.228	0.473	0.158	0.158
5.935	113.914	-18.470	1.223	0.000	0.238
6.000	154.729	-17.410	0.988	0.000	0.475
6.065	154.729	-17.410	0.620	0.000	0.626
6.130	164.584	-18.470	1.419	0.000	1.183
6.196	167.118	-18.470	0.961	0.000	1.905
6.261	167.118	-18.470	0.316	0.000	0.159
6.326	144.313	-16.955	0.963	0.000	0.238
6.391	129.394	-17.460	0.798	0.000	0.164
6.457	129.394	-17.460	0.811	0.000	0.495
6.522	136.712	-17.965	1.208	0.000	0.247
6.587	146.846	-16.046	1.127	0.000	0.165
6.652	146.846	-16.046	0.314	0.000	0.156
6.717	116.447	-17.460	0.236	0.000	0.496
6.783	116.447	-17.460	0.800	0.000	0.494
6.848	149.099	-17.460	2.906	0.160	0.000
6.913	103.783	-15.592	1.939	0.240	0.000
6.978	103.783	-15.592	1.466	0.479	0.166
7.043	106.316	-17.460	0.000	0.000	0.497
7.109	129.394	-16.046	0.000	0.000	0.496
7.174	129.394	-16.046	0.333	0.000	0.331
7.239	126.579	-16.955	0.000	0.000	0.000
7.304	121.513	-17.864	0.251	0.000	0.251
7.369	121.513	-17.864	0.334	0.000	0.167
7.434	129.394	-14.935	0.662	0.000	0.159
7.500	98.718	-17.864	0.490	0.000	0.491
7.565	98.718	-17.864	0.812	0.000	0.646
7.630	0.000	-16.955	0.809	0.000	0.000
7.695	123.765	-15.137	0.720	0.000	0.000
7.760	123.765	-15.137	1.111	0.000	0.000
7.826	113.914	-16.450	1.292	0.000	0.000
7.891	89.996	-14.228	0.723	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
7.956	89.996	-14.228	0.958	0.000	0.000
8.021	88.589	-15.945	1.276	0.000	0.311
8.086	116.447	-16.501	0.955	0.243	0.000
8.152	116.447	-16.501	1.271	0.162	0.000
8.217	112.507	-13.925	0.631	0.000	0.000
8.282	136.712	-15.945	0.711	0.000	0.000
8.347	136.712	-15.945	0.635	0.000	0.163
8.413	131.646	-16.501	0.642	0.159	0.000
8.478	131.646	-16.501	0.485	0.238	0.000
8.543	116.447	-14.430	0.324	0.476	0.000
8.608	101.251	-16.450	0.650	0.000	0.000
8.673	101.251	-16.450	0.726	0.000	0.244
8.738	80.992	-16.955	0.327	0.000	0.163
8.804	88.589	-14.935	0.813	0.158	0.000
8.869	88.589	-14.935	0.969	0.237	0.000
8.934	111.381	-16.955	1.130	0.163	0.000
8.999	101.251	-16.501	0.805	0.000	0.000
9.064	101.251	-16.501	0.484	0.000	0.000
9.130	86.057	-14.430	0.807	0.000	0.000
9.195	93.653	-16.955	0.479	0.000	0.000
9.260	93.653	-16.955	0.725	0.000	0.247
9.325	120.950	-15.945	0.645	0.000	0.165
9.391	103.783	-14.228	0.161	0.000	0.496
9.456	103.783	-14.228	0.000	0.000	0.747
9.521	91.121	-15.440	0.168	0.000	0.498
9.586	89.996	-15.440	1.468	0.000	0.000
9.651	89.996	-15.440	1.457	0.000	0.000
9.716	118.980	-13.774	1.942	0.000	0.000
9.782	86.057	-14.935	1.133	0.000	0.159
9.847	86.057	-14.935	1.214	0.000	0.238
9.912	89.996	-14.228	1.451	0.000	0.476
9.977	98.718	-15.945	0.954	0.000	0.625
10.043	98.718	-15.945	0.477	0.000	0.704
10.108	92.809	-16.501	0.328	0.166	0.471
10.173	92.809	-16.501	0.654	0.000	0.157
10.238	80.992	-13.420	0.248	0.000	0.243
10.303	58.207	-16.955	0.328	0.000	0.162
10.368	58.207	-16.955	1.123	0.000	0.000
10.434	70.302	-16.450	0.721	0.000	0.000
10.499	86.057	-15.137	1.114	0.000	0.000
10.564	86.057	-15.137	0.624	0.000	0.000
10.629	118.980	-16.450	0.484	0.000	0.000
10.694	106.316	-16.955	0.799	0.000	0.325

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
10.760	106.316	-16.955	0.315	0.000	0.000
10.825	101.251	-15.592	0.965	0.000	0.000
10.890	83.525	-17.460	0.329	0.000	0.165
10.955	83.525	-17.460	0.474	0.000	0.000
11.021	73.397	-16.955	0.243	0.000	0.000
11.086	91.121	-15.440	0.162	0.000	0.162
11.151	91.121	-15.440	0.479	0.000	0.159
11.216	56.238	-17.864	0.964	0.000	0.000
11.281	70.865	-16.955	1.282	0.000	0.000
11.346	70.865	-16.955	0.470	0.000	0.000
11.412	78.460	-16.046	0.250	0.000	0.000
11.477	104.065	-16.450	0.167	0.000	0.000
11.542	104.065	-16.450	0.160	0.000	0.000
11.607	80.992	-15.592	0.487	0.000	0.000
11.673	78.460	-16.450	0.165	0.000	0.000
11.738	78.460	-16.450	0.323	0.000	0.000
11.803	86.057	-16.955	0.734	0.000	0.000
11.868	86.057	-16.955	0.167	0.000	0.000
11.933	73.115	-14.430	0.826	0.000	0.000
11.998	88.589	-16.501	0.493	0.000	0.000
12.064	88.589	-16.501	0.169	0.000	0.000
12.129	56.238	-16.450	0.313	0.000	0.310
12.194	83.525	-14.430	0.982	0.000	0.000
12.259	83.525	-14.430	0.972	0.000	0.000
12.325	96.186	-16.501	0.788	0.000	0.158
12.390	106.879	-15.945	0.946	0.000	0.237
12.455	106.879	-15.945	0.471	0.000	0.000
12.520	83.525	-15.137	0.471	0.000	0.000
12.585	88.589	-16.450	0.949	0.000	0.000
12.650	88.589	-16.450	0.793	0.000	0.000
12.716	75.929	-15.137	1.620	0.000	0.000
12.781	86.057	-16.450	1.203	0.000	0.247
12.846	86.057	-16.450	2.073	0.000	0.165
12.911	96.186	-16.450	0.158	0.000	0.156
12.976	112.507	-14.683	0.238	0.000	0.000
13.042	112.507	-14.683	0.162	0.000	0.000
13.107	98.718	-15.945	0.315	0.489	0.000
13.172	93.653	-15.945	0.964	0.244	0.000
13.237	93.653	-15.945	0.801	0.163	0.000
13.302	91.121	-13.774	0.316	0.000	0.000
13.368	98.437	-15.440	0.481	0.000	0.000
13.433	98.437	-15.440	0.327	0.000	0.000
13.498	80.992	-15.440	0.815	0.000	0.160

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
13.563	80.992	-15.440	0.488	0.000	0.486
13.628	111.381	-13.774	0.165	0.000	0.328
13.694	78.460	-15.440	0.804	0.000	0.000
13.759	78.460	-15.440	1.703	0.000	0.000
13.824	101.251	-16.046	1.302	0.000	0.000
13.889	103.783	-13.925	0.477	0.000	0.000
13.955	103.783	-13.925	0.964	0.000	0.000
14.020	98.718	-16.501	1.288	0.000	0.000
14.085	67.489	-16.450	0.479	0.000	0.160
14.150	67.489	-16.450	0.490	0.000	0.240
14.215	108.849	-15.592	0.333	0.000	0.479
14.280	101.251	-17.460	1.674	0.505	0.818
14.346	101.251	-17.460	0.997	0.252	0.723
14.411	112.507	-17.460	0.505	0.168	0.630
14.476	111.381	-16.501	0.000	0.158	0.159
14.541	111.381	-16.501	0.000	0.000	0.731
14.606	115.321	-17.965	0.000	0.000	0.806
14.672	73.397	-16.955	0.311	0.000	0.000
14.737	73.397	-16.955	0.715	0.000	0.000
14.802	65.801	-18.470	0.786	0.000	0.165
14.867	98.437	-19.228	1.118	0.000	0.000
14.932	98.437	-19.228	1.196	0.000	0.000
14.998	83.525	-17.460	1.270	0.000	0.000
15.063	80.992	-19.682	1.281	0.000	0.000
15.128	80.992	-19.682	0.956	0.000	0.000
15.193	80.992	-19.480	1.273	0.000	0.000
15.258	80.992	-19.480	0.488	0.000	0.000
15.324	78.742	-17.460	0.244	0.000	0.000
15.389	98.718	-20.137	0.163	0.000	0.000
15.454	98.718	-20.137	0.467	0.000	0.000
15.519	101.251	-19.985	0.700	0.000	0.000
15.584	88.589	-18.975	1.561	0.000	0.000
15.650	88.589	-18.975	1.282	0.159	0.000
15.715	87.182	-20.591	1.205	0.238	0.000
15.780	78.460	-20.995	1.442	0.476	0.000
15.845	78.460	-20.995	1.923	0.000	0.156
15.910	103.783	-19.228	1.677	0.000	0.234
15.976	75.929	-20.995	0.495	0.000	0.000
16.041	75.929	-20.995	1.135	0.000	0.159
16.106	111.381	-19.682	0.977	0.000	0.000
16.171	93.653	-21.500	1.458	0.000	0.000
16.236	93.653	-21.500	2.137	0.000	0.000
16.302	95.623	-20.995	1.712	0.000	0.249

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
16.367	98.718	-19.682	0.666	0.000	0.333
16.432	98.718	-19.682	0.631	0.000	0.000
16.497	86.057	-21.500	0.731	0.000	0.000
16.563	89.996	-21.955	0.811	0.000	0.000
16.628	89.996	-21.955	0.314	0.000	0.000
16.693	70.865	-19.985	0.722	0.000	0.000
16.758	75.929	-21.955	1.110	0.000	0.000
16.823	75.929	-21.955	0.641	0.000	0.156
16.889	81.555	-21.500	0.477	0.000	0.235
16.954	81.555	-21.500	0.796	0.000	0.634
17.019	108.849	-20.137	1.278	0.000	0.000
17.084	106.879	-21.500	0.962	0.000	0.000
17.149	106.879	-21.500	0.799	0.000	0.000
17.215	80.992	-20.137	0.807	0.000	0.157
17.280	75.929	-21.500	1.206	0.000	0.235
17.345	75.929	-21.500	0.491	0.000	0.000
17.410	80.992	-21.500	0.468	0.000	0.983
17.475	70.302	-18.975	0.467	0.000	0.491
17.541	70.302	-18.975	0.000	0.000	0.328
17.606	68.333	-21.500	1.132	0.159	0.000
17.671	93.653	-21.046	0.732	0.000	0.000
17.736	93.653	-21.046	0.654	0.000	0.000
17.801	101.251	-17.965	0.626	0.000	0.000
17.866	89.996	-20.995	0.938	0.000	0.000
17.932	89.996	-20.995	0.938	0.000	0.000
17.997	75.929	-21.500	0.476	0.000	0.000
18.062	98.718	-18.975	0.962	0.000	0.000
18.127	98.718	-18.975	0.328	0.000	0.000
18.192	98.437	-20.490	0.317	0.000	0.491
18.258	88.589	-21.046	0.239	0.000	0.245
18.323	88.589	-21.046	0.000	0.000	0.164
18.388	75.929	-18.975	0.975	0.000	0.000
18.453	68.333	-21.046	0.724	0.000	0.000
18.518	68.333	-21.046	0.973	0.000	0.336
18.584	75.929	-21.500	0.660	0.000	0.992
18.649	75.929	-21.500	0.495	0.000	0.496
18.714	73.397	-19.228	0.659	0.000	0.331
18.779	96.186	-20.995	0.949	0.000	0.505
18.844	96.186	-20.995	0.957	0.000	0.252
18.910	87.182	-19.228	0.164	0.000	0.332
18.975	80.992	-18.975	0.467	0.000	0.157
19.040	80.992	-18.975	0.465	0.000	0.000
19.105	78.742	-18.773	0.624	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
19.170	121.513	-18.470	0.643	0.000	0.156
19.236	121.513	-18.470	0.723	0.000	0.233
19.301	93.653	-21.500	0.492	0.000	0.000
19.366	73.115	-19.985	1.123	0.000	0.649
19.431	73.115	-19.985	0.956	0.000	0.246
19.497	103.783	-21.500	0.635	0.000	0.164
19.562	80.992	-22.005	0.157	0.000	0.313
19.627	80.992	-22.005	0.000	0.000	0.481
19.692	88.589	-23.015	0.000	0.000	0.164
19.757	70.302	-21.955	0.313	0.000	0.313
19.822	70.302	-21.955	0.470	0.000	0.470
19.888	96.186	-19.480	0.472	0.000	0.472
19.953	80.992	-21.500	0.803	0.000	0.649
20.018	80.992	-21.500	0.712	0.000	0.492
20.083	70.302	-16.501	0.790	0.000	0.328
20.148	93.653	-19.985	1.014	0.159	0.000
20.214	93.653	-19.985	1.204	0.238	0.000
20.279	70.865	-22.005	0.484	0.477	0.000
20.344	70.865	-22.005	0.000	0.000	0.159
20.409	60.738	-21.955	0.248	0.000	0.238
20.475	59.051	-25.035	0.165	0.000	0.477
20.540	59.051	-25.035	0.000	0.158	0.000
20.605	101.251	-23.318	0.000	0.237	0.000
20.670	116.447	-22.510	0.000	0.000	0.000
20.735	116.447	-22.510	0.319	0.159	0.000
20.801	115.321	-21.046	0.487	0.239	0.000
20.866	116.447	-19.985	0.166	0.000	0.000
20.931	116.447	-19.985	0.481	0.000	0.000
20.996	93.653	-26.500	0.241	0.000	0.000
21.061	75.929	-30.085	0.000	0.000	0.167
21.126	75.929	-30.085	1.314	0.000	0.000
21.192	98.718	-25.591	1.216	0.000	0.000
21.257	93.653	-26.045	0.499	0.000	0.000
21.322	93.653	-26.045	0.962	0.000	0.000
21.387	109.693	-22.409	0.716	0.000	0.000
21.452	93.653	-24.530	0.637	0.000	0.000
21.518	93.653	-24.530	0.801	0.000	0.156
21.583	58.207	-26.500	0.722	0.000	0.478
21.648	81.555	-28.065	0.957	0.000	0.631
21.713	81.555	-28.065	1.273	0.000	0.000
21.778	98.718	-28.772	1.435	0.000	0.000
21.844	70.865	-19.985	2.059	0.000	0.000
21.909	70.865	-19.985	0.497	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
21.974	70.302	-15.440	0.989	0.000	0.000
22.039	70.302	-15.440	0.659	0.000	0.000
22.104	68.333	-18.773	0.157	0.000	0.157
22.170	86.057	-15.440	0.236	0.000	0.236
22.235	86.057	-15.440	0.000	0.000	0.000
22.300	98.718	-18.975	0.647	0.000	0.000
22.365	73.115	-19.682	0.481	0.000	0.000
22.431	73.115	-19.682	0.328	0.000	0.000
22.496	60.738	-5.845	0.646	0.000	0.000
22.561	65.801	-9.380	0.481	0.000	0.000
22.626	65.801	-9.380	0.637	0.000	0.000
22.691	60.738	-21.046	0.816	0.161	0.000
22.756	53.425	-25.035	0.728	0.241	0.000
22.822	53.425	-25.035	1.138	0.482	0.000
22.887	65.801	-15.592	0.317	0.000	0.000
22.952	63.270	-14.430	0.476	0.000	0.000
23.017	63.270	-14.430	0.951	0.000	0.000
23.082	68.333	-14.683	0.000	0.000	0.000
23.148	28.115	-20.490	0.000	0.000	0.000
23.213	28.115	-20.490	0.000	0.000	0.000
23.278	65.801	-22.864	0.503	0.158	0.158
23.343	56.238	-17.965	0.500	0.000	0.000
23.408	56.238	-17.965	0.662	0.000	0.000
23.474	70.865	-17.864	0.312	0.000	0.158
23.539	81.555	-18.470	0.235	0.000	0.237
23.604	81.555	-18.470	0.162	0.000	0.475
23.669	60.738	-18.319	0.806	0.000	0.156
23.734	60.738	-18.319	0.245	0.000	0.234
23.800	68.333	-20.995	0.163	0.000	0.469
23.865	53.144	-19.682	0.311	0.000	0.000
23.930	53.144	-19.682	0.000	0.000	0.000
23.995	47.800	-21.500	0.000	0.000	0.000
24.061	50.613	-18.773	1.297	0.000	0.000
24.126	50.613	-18.773	0.728	0.000	0.000
24.191	45.550	-19.985	0.490	0.000	0.000
24.256	55.675	-22.409	0.494	0.000	0.000
24.321	55.675	-22.409	0.492	0.000	0.000
24.386	56.238	-20.995	0.328	0.000	0.000
24.452	60.738	-16.955	0.800	0.000	0.000
24.517	60.738	-16.955	0.475	0.000	0.000
24.582	65.801	-21.500	0.163	0.000	0.000
24.647	64.676	-18.975	0.800	0.000	0.000
24.712	64.676	-18.975	0.722	0.000	0.243

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
24.778	78.460	-18.975	0.488	0.000	0.162
24.843	58.207	-24.682	0.474	0.000	0.648
24.908	58.207	-24.682	0.966	0.000	0.482
24.973	75.929	-26.550	1.131	0.000	0.163
25.038	84.369	-25.136	1.310	0.000	0.000
25.104	84.369	-25.136	0.498	0.000	0.000
25.169	75.929	-26.550	0.499	0.000	0.000
25.234	65.801	-24.682	1.665	0.000	0.000
25.299	65.801	-24.682	1.241	0.000	0.000
25.365	78.742	-25.540	0.671	0.000	0.000
25.430	78.742	-25.540	0.974	0.000	0.000
25.495	86.057	-26.954	0.724	0.000	0.000
25.560	91.121	-20.490	0.640	0.000	0.169
25.625	91.121	-20.490	1.127	0.000	0.000
25.691	47.800	-23.773	1.188	0.000	0.000
25.756	68.333	-25.035	1.730	0.000	0.000
25.821	68.333	-25.035	1.279	0.000	0.000
25.886	91.121	-24.227	1.436	0.000	0.000
25.951	75.929	-26.550	0.330	0.000	0.000
26.016	75.929	-26.550	0.000	0.000	0.000
26.082	111.381	-22.409	0.493	0.000	0.000
26.147	108.849	-24.530	0.490	0.000	0.000
26.212	108.849	-24.530	0.804	0.000	0.643
26.277	75.929	-26.500	0.488	0.000	0.478
26.342	78.460	-23.015	0.326	0.000	0.796
26.408	78.460	-23.015	0.467	0.156	0.469
26.473	55.675	-26.045	0.000	0.000	0.470
26.538	93.653	-26.500	0.164	0.000	0.471
26.603	93.653	-26.500	0.474	0.000	0.000
26.669	75.929	-23.520	0.710	0.000	0.000
26.734	78.460	-27.055	1.421	0.000	0.163
26.799	78.460	-27.055	0.924	0.000	0.000
26.864	70.865	-25.591	1.195	0.000	0.000
26.929	78.460	-22.005	1.732	0.000	0.000
26.994	78.460	-22.005	1.131	0.000	0.158
27.060	92.809	-24.682	0.487	0.000	0.236
27.125	92.809	-24.682	0.491	0.000	0.000
27.190	98.718	-24.530	1.155	0.000	0.321
27.255	88.589	-21.046	0.737	0.000	0.240
27.320	88.589	-21.046	1.301	0.000	0.479
27.386	106.316	-25.540	0.815	0.000	0.000
27.451	64.676	-23.318	0.734	0.000	0.000
27.516	64.676	-23.318	0.498	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
27.581	118.980	-22.510	0.466	0.000	0.000
27.646	96.186	-23.773	1.200	0.000	0.000
27.712	96.186	-23.773	0.803	0.000	0.000
27.777	115.321	-22.510	1.810	0.000	0.499
27.842	88.589	-24.682	0.984	0.000	0.249
27.907	88.589	-24.682	0.970	0.000	0.166
27.972	70.302	-24.530	0.157	0.000	0.000
28.038	116.447	-21.955	0.478	0.000	0.000
28.103	116.447	-21.955	0.162	0.000	0.000
28.168	96.186	-19.480	1.795	0.000	0.653
28.233	78.742	-22.409	1.457	0.000	0.247
28.299	78.742	-22.409	1.617	0.000	0.165
28.364	86.057	-23.520	0.157	0.157	0.000
28.429	91.121	-23.318	0.483	0.000	0.000
28.494	91.121	-23.318	0.165	0.000	0.000
28.559	96.186	-21.500	0.487	0.157	0.000
28.624	101.251	-23.015	0.244	0.000	0.000
28.690	101.251	-23.015	0.162	0.000	0.000
28.755	83.525	-22.864	0.974	0.000	0.000
28.820	83.525	-22.864	0.487	0.000	0.000
28.885	83.525	-20.490	0.488	0.000	0.000
28.950	86.057	-22.864	0.934	0.000	0.000
29.016	86.057	-22.864	1.410	0.000	0.000
29.081	70.302	-22.005	2.031	0.000	0.163
29.146	65.801	-20.490	0.468	0.000	0.000
29.211	65.801	-20.490	0.946	0.000	0.000
29.276	93.653	-22.864	1.566	0.000	0.000
29.342	96.186	-21.500	0.157	0.000	0.488
29.407	96.186	-21.500	0.000	0.000	0.244
29.472	84.369	-20.137	0.166	0.000	0.163
29.537	80.992	-20.995	0.662	0.000	0.000
29.603	80.992	-20.995	0.498	0.000	0.000
29.668	86.057	-19.228	1.163	0.000	0.000
29.733	78.460	-20.490	1.131	0.000	0.000
29.798	78.460	-20.490	0.971	0.000	0.000
29.863	92.809	-21.046	0.812	0.000	0.000
29.929	80.992	-18.470	0.479	0.158	0.000
29.994	80.992	-18.470	0.484	0.237	0.000
30.059	101.251	-20.591	0.166	0.474	0.000
30.124	96.186	-20.490	0.656	0.000	0.812
30.189	96.186	-20.490	0.485	0.000	0.719
30.254	83.525	-18.773	0.331	0.000	0.634
30.320	75.929	-19.985	1.442	0.000	0.156

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
30.385	75.929	-19.985	0.722	0.000	0.234
30.450	98.718	-19.228	0.490	0.000	0.000
30.515	98.718	-19.228	0.000	0.000	0.000
30.580	106.316	-20.490	0.000	0.000	0.000
30.646	81.555	-20.591	0.161	0.000	0.000
30.711	81.555	-20.591	0.158	0.000	0.487
30.776	98.718	-18.470	0.000	0.000	0.243
30.841	70.865	-20.137	0.000	0.000	0.162
30.906	70.865	-20.137	0.468	0.000	0.489
30.972	78.460	-19.985	0.946	0.000	0.245
31.037	101.251	-18.319	1.263	0.000	0.163
31.102	101.251	-18.319	0.648	0.000	0.155
31.167	78.460	-19.985	0.734	0.000	0.000
31.233	101.251	-19.985	0.652	0.000	0.000
31.298	101.251	-19.985	1.304	0.000	0.000
31.363	113.914	-16.955	0.966	0.000	0.000
31.428	89.996	-18.470	1.435	0.000	0.000
31.493	89.996	-18.470	0.317	0.000	0.000
31.558	88.589	-17.965	0.980	0.248	0.000
31.624	118.980	-17.864	0.495	0.165	0.000
31.689	118.980	-17.864	2.259	0.000	0.156
31.754	78.460	-20.490	1.458	0.000	0.248
31.819	109.693	-19.228	1.769	0.000	0.165
31.884	109.693	-19.228	0.812	0.000	0.000
31.950	83.525	-20.490	0.484	0.000	0.000
32.015	98.718	-21.046	0.806	0.000	0.000
32.080	98.718	-21.046	0.159	0.000	0.000
32.145	75.929	-18.470	0.487	0.000	0.000
32.210	75.929	-20.591	0.642	0.000	0.000
32.276	53.144	-20.591	0.997	0.000	0.000
32.341	101.251	-20.490	0.498	0.000	0.000
32.406	101.251	-20.490	0.499	0.000	0.000
32.471	84.369	-18.773	0.646	0.000	0.000
32.537	91.121	-19.480	0.973	0.000	0.000
32.602	91.121	-19.480	0.649	0.000	0.164
32.667	81.555	-18.319	0.974	0.000	0.156
32.732	96.186	-19.985	0.976	0.000	0.000
32.797	96.186	-19.985	0.651	0.000	0.000
32.862	103.783	-19.682	0.310	0.000	0.000
32.928	101.251	-17.965	0.466	0.000	0.000
32.993	101.251	-17.965	0.000	0.000	0.000
33.058	89.996	-20.591	0.962	0.000	0.000
33.123	83.525	-20.995	0.962	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
33.188	83.525	-20.995	1.121	0.000	0.000
33.254	75.929	-18.773	0.000	0.000	0.157
33.319	93.653	-19.480	0.000	0.000	0.235
33.384	93.653	-19.480	0.000	0.000	0.470
33.449	92.809	-19.480	0.933	0.000	0.154
33.514	96.186	-18.319	0.706	0.000	0.000
33.580	96.186	-18.319	0.501	0.000	0.000
33.645	58.207	-13.925	0.622	0.000	0.000
33.710	91.121	-15.592	0.960	0.000	0.000
33.775	91.121	-15.592	1.428	0.000	0.000
33.840	92.809	-16.955	0.467	0.000	0.313
33.906	92.809	-15.945	0.711	0.000	0.232
33.971	98.718	-15.945	0.954	0.000	0.463
34.036	70.865	-14.683	0.158	0.000	0.650
34.101	70.865	-14.683	0.731	0.000	0.484
34.167	86.057	-18.470	0.804	0.000	0.163
34.232	78.742	-19.682	0.649	0.000	0.000
34.297	78.742	-19.682	0.972	0.000	0.000
34.362	63.270	-16.450	0.498	0.000	0.000
34.427	121.513	-12.865	0.476	0.000	0.000
34.492	121.513	-12.865	0.235	0.000	0.000
34.558	75.929	-8.875	0.800	0.000	0.000
34.623	113.914	-10.138	1.141	0.160	0.000
34.688	113.914	-10.138	0.722	0.240	0.000
34.753	73.397	-11.905	0.784	0.000	0.000
34.819	109.693	-16.501	1.130	0.000	0.000
34.884	109.693	-16.501	0.487	0.000	0.000
34.949	98.718	-12.915	0.489	0.000	0.165
35.014	81.555	-12.410	0.157	0.000	0.000
35.079	81.555	-12.410	0.235	0.000	0.000
35.145	73.397	-13.319	0.471	0.000	0.000
35.210	73.397	-10.390	1.293	0.000	0.000
35.275	73.397	-10.390	0.733	0.000	0.000
35.340	98.718	-12.410	0.977	0.000	0.000
35.405	75.929	-4.684	0.157	0.000	0.000
35.471	75.929	-4.684	0.000	0.000	0.000
35.536	68.333	-6.350	0.163	0.000	0.000
35.601	68.333	-15.137	0.484	0.000	0.000
35.666	91.121	-15.137	0.735	0.000	0.000
35.731	98.718	-12.915	0.986	0.000	0.000
35.796	98.718	-12.915	0.921	0.000	0.489
35.862	92.809	-15.137	1.406	0.000	0.244
35.927	83.525	-3.825	0.322	0.000	0.163

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
35.992	83.525	-3.825	0.962	0.000	0.314
36.057	111.381	-5.845	1.207	0.000	0.236
36.122	111.381	-8.774	1.125	0.000	0.472
36.188	111.381	-8.774	0.312	0.000	0.000
36.253	70.302	-10.390	0.480	0.000	0.000
36.318	121.513	-11.047	0.330	0.000	0.000
36.383	121.513	-11.047	0.000	0.000	0.000
36.448	101.251	-9.885	0.000	0.000	0.248
36.514	103.783	-13.774	0.000	0.166	0.166
36.579	103.783	-13.774	1.135	0.000	0.000
36.644	64.676	-11.905	0.726	0.000	0.000
36.709	96.186	-9.683	0.494	0.000	0.000
36.775	96.186	-9.683	0.975	0.155	0.156
36.840	124.046	-10.390	0.736	0.233	0.234
36.905	95.623	-7.411	0.499	0.465	0.000
36.970	95.623	-7.411	0.311	0.000	0.000
37.035	103.783	-2.815	0.235	0.000	0.248
37.100	137.838	-4.229	0.000	0.000	0.165
37.166	137.838	-4.229	0.629	0.000	0.158
37.231	111.381	-2.815	0.714	0.000	0.000
37.296	111.381	8.952	0.962	0.000	0.000
37.361	106.316	8.952	2.603	0.000	0.156
37.426	144.313	14.355	1.709	0.000	0.000
37.492	144.313	14.355	1.301	0.162	0.000
37.557	116.447	13.850	1.302	0.000	0.159
37.622	101.251	20.769	1.455	0.000	0.239
37.687	101.251	20.769	1.460	0.000	0.477
37.752	101.251	23.950	1.436	0.155	0.000
37.818	108.849	28.950	0.948	0.233	0.000
37.883	108.849	28.950	0.790	0.628	0.161
37.948	88.589	25.970	0.472	0.000	0.000
38.013	108.849	29.859	0.244	0.000	0.244
38.078	108.849	29.859	0.326	0.000	0.163
38.144	91.121	37.585	1.103	0.000	0.153
38.209	101.251	30.515	1.652	0.000	0.230
38.274	101.251	30.515	1.581	0.000	0.000
38.339	118.980	30.313	0.317	0.000	0.155
38.405	73.397	37.131	0.476	0.000	0.245
38.470	73.397	37.131	0.488	0.000	0.163
38.535	80.992	20.415	0.811	0.000	0.000
38.600	96.186	26.677	0.728	0.000	0.000
38.665	96.186	26.677	0.328	0.000	0.000
38.730	80.992	24.859	0.476	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
38.796	134.179	30.313	0.238	0.000	0.000
38.861	134.179	30.313	0.475	0.000	0.000
38.926	116.447	29.505	0.636	0.000	0.317
38.991	116.447	34.404	1.209	0.000	0.240
39.056	126.579	34.404	0.327	0.000	0.000
39.122	108.849	39.858	0.310	0.000	0.807
39.187	108.849	39.858	0.710	0.000	0.247
39.252	104.065	35.565	0.319	0.000	0.165
39.317	80.992	40.312	0.627	0.000	0.471
39.382	80.992	40.312	0.472	0.000	0.236
39.448	53.144	38.494	0.315	0.000	0.157
39.513	96.186	46.675	0.154	0.000	0.158
39.578	96.186	46.675	0.231	0.000	0.000
39.643	65.801	51.725	0.000	0.000	0.000
39.708	58.207	54.402	0.310	0.000	0.000
39.774	58.207	54.402	0.465	0.000	0.000
39.839	91.121	63.845	0.155	0.000	0.156
39.904	96.186	57.583	1.103	0.473	0.473
39.969	96.186	57.583	0.942	0.237	0.237
40.034	91.121	52.584	0.627	0.158	0.158
40.100	75.929	61.825	0.468	0.156	0.000
40.165	75.929	61.825	0.709	0.234	0.000
40.230	45.550	65.310	0.788	0.468	0.000
40.295	78.460	66.875	0.000	0.000	0.315
40.360	78.460	66.875	0.234	0.000	0.000
40.426	75.929	55.765	0.313	0.000	0.000
40.491	83.525	58.492	0.945	0.000	0.316
40.556	83.525	58.492	0.953	0.000	0.238
40.621	70.865	59.300	1.107	0.000	0.476
40.687	70.865	55.765	0.790	0.476	0.476
40.752	83.525	55.765	0.946	0.238	0.238
40.817	68.333	59.856	0.943	0.159	0.159
40.882	68.333	59.856	0.000	0.000	0.477
40.947	83.525	48.190	0.000	0.000	0.238
41.013	70.865	40.767	0.000	0.000	0.159
41.078	70.865	40.767	0.481	0.000	0.000
41.143	93.653	52.584	0.722	0.000	0.000
41.208	108.849	57.785	0.483	0.160	0.000
41.273	108.849	57.785	0.478	0.157	0.000
41.339	106.316	58.947	0.478	0.235	0.000
41.404	86.057	57.129	0.794	0.000	0.000
41.469	86.057	57.129	0.635	0.000	0.478
41.534	87.182	59.300	0.476	0.000	0.239

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
41.599	113.914	56.220	0.159	0.000	0.159
41.664	113.914	56.220	0.629	0.000	0.470
41.730	116.447	56.220	0.711	0.000	0.235
41.795	103.783	77.480	0.792	0.000	0.312
41.860	103.783	77.480	1.089	0.000	0.317
41.925	75.929	67.582	0.704	0.000	0.239
41.990	96.186	60.310	0.310	0.000	0.000
42.056	96.186	60.310	0.156	0.157	0.000
42.121	116.447	58.795	0.234	0.236	0.000
42.186	118.980	61.219	0.157	0.472	0.000
42.251	118.980	61.219	0.794	0.000	0.000
42.317	80.992	59.300	0.711	0.234	0.234
42.382	80.992	60.310	0.631	0.156	0.156
42.447	106.316	60.310	0.944	0.000	0.160
42.512	103.783	66.370	0.944	0.000	0.239
42.577	103.783	66.370	0.469	0.000	0.634
42.643	118.980	59.856	1.248	0.000	0.161
42.708	103.783	58.290	1.178	0.232	0.241
42.773	103.783	58.290	1.586	0.155	0.797
42.838	96.186	62.583	0.159	0.000	0.162
42.903	106.316	61.219	0.239	0.000	0.243
42.968	106.316	61.219	0.000	0.000	0.486
43.034	106.316	64.855	0.324	0.000	0.329
43.099	103.783	62.128	0.485	0.000	0.245
43.164	103.783	62.128	1.129	0.000	0.000
43.229	98.718	64.855	1.589	0.000	0.000
43.294	88.589	63.845	1.198	0.000	0.000
43.360	88.589	63.845	1.127	0.000	0.000
43.425	93.653	63.492	0.166	0.000	0.000
43.490	93.653	65.310	0.730	0.000	0.000
43.555	93.653	65.310	0.819	0.000	0.000
43.620	93.653	63.845	0.321	0.000	0.000
43.686	112.507	64.855	0.709	0.000	0.000
43.751	112.507	64.855	0.313	0.000	0.154
43.816	78.460	62.330	0.326	0.000	0.162
43.881	91.121	61.219	0.000	0.000	0.243
43.947	91.121	61.219	0.000	0.000	0.156
44.012	111.381	62.128	0.160	0.000	0.000
44.077	111.381	60.310	0.471	0.000	0.463
44.142	121.513	60.310	0.634	0.000	0.308
44.207	103.783	60.765	0.320	0.472	0.160
44.272	103.783	60.765	0.707	0.236	0.000
44.338	103.783	58.492	0.466	0.157	0.155

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
44.403	63.270	59.300	0.161	0.000	0.000
44.468	63.270	59.300	0.241	0.000	0.000
44.533	96.186	59.856	0.000	0.000	0.000
44.598	88.589	58.290	0.320	0.000	0.326
44.664	88.589	58.290	0.717	0.000	0.480
44.729	88.589	59.856	0.788	0.000	0.158
44.794	80.992	57.785	0.630	0.000	0.934
44.859	80.992	57.785	0.947	0.000	0.467
44.924	118.980	57.583	1.114	0.000	0.311
44.990	78.460	59.805	0.933	0.000	0.000
45.055	78.460	59.805	0.699	0.000	0.000
45.120	91.121	57.129	0.622	0.000	0.156
45.185	83.525	58.492	0.827	0.000	0.000
45.250	83.525	58.492	0.497	0.000	0.000
45.316	91.121	56.775	1.150	0.000	0.314
45.381	83.525	56.674	0.486	0.000	0.000
45.446	83.525	56.674	0.730	0.000	0.000
45.511	98.718	58.947	0.972	0.000	0.000
45.576	98.718	57.785	0.000	0.000	0.166
45.642	98.718	57.785	0.000	0.000	0.249
45.707	93.653	59.856	0.000	0.000	0.000
45.772	93.653	59.300	1.125	0.000	0.000
45.837	95.623	59.300	0.972	0.235	0.000
45.902	68.333	58.947	1.142	0.157	0.156
45.968	68.333	58.947	1.606	0.000	0.471
46.033	78.460	63.037	0.959	0.000	0.236
46.098	78.460	62.330	1.604	0.000	0.157
46.163	78.460	62.330	0.636	0.000	0.161
46.228	98.718	64.855	0.481	0.000	0.477
46.294	65.801	63.946	0.158	0.000	0.796
46.359	65.801	63.946	2.183	0.163	0.162
46.424	88.589	65.360	0.929	0.245	0.000
46.489	58.207	67.582	0.777	0.489	0.157
46.555	58.207	67.582	0.792	0.000	0.486
46.620	106.316	66.875	0.953	0.000	0.488
46.685	88.589	68.946	0.800	0.000	0.489
46.750	88.589	68.946	0.634	0.000	0.000
46.815	73.397	67.885	0.479	0.000	0.000
46.881	108.849	68.037	0.643	0.000	0.000
46.946	108.849	68.037	1.251	0.626	0.000
47.011	48.081	70.410	1.419	0.475	0.000
47.076	70.865	68.946	1.902	0.155	0.154
47.141	70.865	68.946	1.287	0.000	0.327

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
47.206	106.316	70.764	1.221	0.000	0.244
47.272	78.460	69.400	0.797	0.000	0.489
47.337	78.460	69.400	0.818	0.000	0.473
47.402	96.186	69.400	1.221	0.000	0.237
47.467	96.186	71.673	0.970	0.000	0.158
47.532	75.929	71.673	0.163	0.000	0.165
47.598	88.589	70.410	0.484	0.000	0.247
47.663	88.589	70.410	0.318	0.000	0.494
47.728	88.589	72.127	0.000	0.000	0.499
47.793	103.783	70.410	0.474	0.000	0.735
47.858	103.783	70.410	0.316	0.000	0.655
47.924	98.718	70.309	0.324	0.000	0.163
47.989	70.302	72.582	0.485	0.000	0.244
48.054	70.302	72.582	0.483	0.000	0.158
48.119	93.653	70.915	0.000	0.000	0.163
48.185	63.270	73.036	0.234	0.000	0.244
48.250	63.270	73.036	0.465	0.000	0.000
48.315	80.992	71.218	0.163	0.000	0.000
48.380	96.186	72.430	0.245	0.000	0.000
48.445	96.186	72.430	0.644	0.000	0.000
48.510	80.992	74.854	0.485	0.000	0.164
48.576	91.121	74.400	0.482	0.000	0.000
48.641	91.121	74.400	1.122	0.000	0.000
48.706	70.865	78.490	0.162	0.000	0.487
48.771	73.397	77.581	0.000	0.000	0.731
48.836	73.397	77.581	0.000	0.000	0.489
48.902	93.653	78.995	0.327	0.000	0.635
48.967	86.057	83.035	0.724	0.000	0.481
49.032	86.057	83.035	0.311	0.000	0.157
49.097	91.121	83.035	0.324	0.000	0.000
49.162	75.929	86.217	0.955	0.000	0.000
49.228	75.929	86.217	0.802	0.000	0.000
49.293	65.801	85.762	0.653	0.163	0.463
49.358	65.801	85.762	0.244	0.244	0.466
49.423	83.525	87.580	0.000	0.000	0.311
49.488	101.251	89.853	0.329	0.000	0.000
49.554	101.251	89.853	0.962	0.000	0.000
49.619	75.929	88.590	0.805	0.000	0.000
49.684	103.783	90.307	0.166	0.000	0.165
49.749	103.783	90.307	0.724	0.000	0.000
49.815	116.447	88.489	0.316	0.000	0.000
49.880	113.914	88.590	1.292	0.000	0.000
49.945	113.914	88.590	1.704	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
50.010	101.251	89.398	2.444	0.000	0.000
50.075	140.653	88.035	0.652	0.000	0.160
50.140	140.653	88.035	0.723	0.000	0.239
50.206	126.579	89.600	0.637	0.000	0.638
50.271	101.251	87.126	0.330	0.000	0.631
50.336	101.251	87.126	0.495	0.000	0.234
50.401	111.381	87.075	0.496	0.000	0.156
50.466	106.316	89.398	0.328	0.000	0.164
50.532	106.316	89.398	0.491	0.000	0.246
50.597	80.992	86.671	1.137	0.000	0.491
50.662	88.589	89.853	0.951	0.000	0.650
50.727	88.589	89.853	1.197	0.000	0.731
50.792	103.783	88.590	0.802	0.157	0.978
50.858	86.057	89.853	0.652	0.000	0.467
50.923	86.057	89.853	0.732	0.000	0.234
50.988	101.251	88.085	1.131	0.000	0.156
51.053	101.251	88.085	0.164	0.000	0.000
51.118	98.718	88.489	0.246	0.000	0.233
51.184	68.333	90.610	0.492	0.000	0.310
51.249	68.333	90.610	0.000	0.000	0.162
51.314	101.251	88.489	0.465	0.000	0.243
51.379	73.397	89.095	0.310	0.000	0.487
51.444	73.397	89.095	0.791	0.000	0.000
51.510	113.914	91.216	0.712	0.236	0.000
51.575	101.251	89.600	0.468	0.157	0.000
51.640	101.251	89.600	0.962	0.000	0.465
51.705	101.251	91.671	0.729	0.000	0.233
51.770	101.251	89.853	0.313	0.000	0.155
51.836	101.251	89.853	0.165	0.167	0.000
51.901	108.849	90.610	0.248	0.251	0.000
51.966	98.718	92.125	0.654	0.000	0.000
52.031	98.718	92.125	1.134	0.000	0.163
52.097	106.316	90.762	1.451	0.000	0.000
52.162	118.980	93.135	1.301	0.000	0.000
52.227	118.980	93.135	0.806	0.000	0.000
52.292	75.929	91.671	0.237	0.000	0.000
52.357	91.121	94.852	0.317	0.000	0.000
52.423	91.121	94.852	0.633	0.000	0.164
52.488	118.980	94.145	0.478	0.000	0.245
52.553	111.381	94.852	0.643	0.000	0.000
52.618	111.381	94.852	0.162	0.000	0.465
52.683	86.057	98.034	0.243	0.000	0.233
52.749	86.057	98.034	0.486	0.000	0.155

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
52.814	106.316	98.690	0.000	0.000	0.000
52.879	106.316	100.760	0.232	0.000	0.000
52.944	106.316	100.760	0.309	0.000	0.000
53.009	96.186	100.710	0.326	0.000	0.164
53.074	98.718	101.670	0.479	0.000	0.000
53.140	98.718	101.670	0.157	0.000	0.000
53.205	101.251	103.942	0.648	0.000	0.163
53.270	124.046	103.740	1.192	0.000	0.244
53.335	124.046	103.740	1.433	0.000	0.000
53.400	106.316	105.305	1.597	0.000	0.472
53.466	121.513	104.245	0.961	0.000	0.236
53.531	121.513	104.245	1.447	0.000	0.313
53.596	126.579	104.396	0.960	0.000	0.000
53.661	83.525	107.275	0.960	0.000	0.464
53.727	83.525	107.275	0.799	0.000	0.310
53.792	121.513	105.305	1.426	0.000	0.000
53.857	121.513	107.123	1.203	0.000	0.000
53.922	121.513	107.123	1.295	0.156	0.156
53.987	103.783	106.265	0.000	0.000	0.473
54.053	93.653	106.215	0.000	0.000	0.473
54.118	93.653	106.215	0.000	0.000	0.316
54.183	134.179	108.790	0.166	0.000	0.000
54.248	118.980	106.215	0.000	0.000	0.000
54.313	118.980	106.215	0.000	0.000	0.000
54.378	123.765	108.487	1.286	0.000	0.000
54.444	123.765	108.487	0.965	0.000	0.000
54.509	124.046	105.760	0.793	0.000	0.000
54.574	121.513	105.305	0.487	0.000	0.000
54.639	121.513	105.305	0.240	0.000	0.000
54.704	121.513	105.760	0.313	0.000	0.157
54.770	126.579	103.235	1.121	0.165	0.163
54.835	126.579	103.235	0.969	0.000	0.244
54.900	144.313	103.488	0.642	0.000	0.488
54.965	149.380	100.205	0.960	0.000	0.329
55.030	149.380	100.205	1.206	0.000	0.480
55.096	162.050	98.943	0.803	0.000	0.155
55.161	136.712	98.488	0.488	0.000	0.325
55.226	136.712	98.488	1.421	0.000	0.000
55.291	136.712	95.155	1.423	0.000	0.000
55.356	156.982	94.852	0.813	0.000	0.000
55.422	156.982	94.852	0.731	0.000	0.000
55.487	174.721	91.115	0.491	0.000	0.000
55.552	156.982	88.035	1.090	0.000	0.165

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
55.617	156.982	88.035	1.176	0.000	0.247
55.682	141.779	88.085	0.776	0.000	0.157
55.748	189.928	82.581	0.165	0.000	0.163
55.813	189.928	82.581	0.478	0.000	0.245
55.878	113.914	81.672	0.154	0.000	0.490
55.943	194.998	76.975	0.490	0.000	0.636
56.008	194.998	76.975	0.249	0.000	0.237
56.074	136.712	73.036	0.498	0.000	0.158
56.139	136.712	73.036	0.668	0.000	0.000
56.204	121.513	72.935	1.239	0.000	0.237
56.269	149.380	67.582	2.163	0.000	0.158
56.334	149.380	67.582	0.642	0.168	0.164
56.400	151.914	66.673	0.237	0.000	0.246
56.465	126.579	62.330	0.319	0.000	0.493
56.530	126.579	62.330	0.663	0.000	0.000
56.595	144.313	59.401	0.745	0.000	0.000
56.660	149.380	59.401	0.497	0.000	0.000
56.726	149.380	59.401	0.646	0.000	0.164
56.791	118.980	55.765	0.960	0.000	0.245
56.856	78.460	55.765	0.632	0.000	0.491
56.921	78.460	55.765	0.163	0.000	0.000
56.986	101.251	52.129	0.245	0.000	0.235
57.052	98.718	50.715	0.489	0.000	0.157
57.117	98.718	50.715	0.000	0.000	0.000
57.182	96.186	50.766	0.232	0.000	0.000
57.247	131.646	48.039	0.628	0.000	0.000
57.312	131.646	48.039	0.631	0.000	0.000
57.378	91.121	49.705	0.234	0.000	0.000
57.443	68.333	46.221	0.468	0.000	0.156
57.508	68.333	46.221	0.000	0.000	0.164
57.573	61.863	46.170	0.000	0.000	0.246
57.638	65.801	47.130	0.155	0.000	0.493
57.704	65.801	47.130	0.162	0.000	0.000
57.769	91.121	44.655	0.243	0.000	0.000
57.834	91.121	44.655	0.000	0.000	0.000
57.899	65.801	46.221	0.000	0.000	0.000
57.965	70.865	43.948	0.000	0.000	0.235
58.030	70.865	43.948	0.157	0.000	0.157
58.095	64.676	44.150	0.165	0.000	0.000
58.160	68.333	45.312	0.713	0.000	0.000
58.225	68.333	45.312	0.310	0.000	0.000
58.290	106.316	43.645	0.475	0.000	0.475
58.356	75.929	44.857	0.474	0.000	0.237

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
58.421	75.929	44.857	0.316	0.000	0.158
58.486	80.992	42.585	0.635	0.000	0.000
58.551	61.863	43.140	0.963	0.000	0.000
58.616	61.863	43.140	0.639	0.000	0.000
58.682	83.525	44.403	1.113	0.000	0.000
58.747	68.333	42.130	0.474	0.000	0.000
58.812	68.333	42.130	0.316	0.000	0.000
58.877	59.051	43.494	0.640	0.166	0.000
58.942	73.397	40.767	0.723	0.000	0.000
59.008	73.397	40.767	0.473	0.000	0.000
59.073	78.742	42.585	0.638	0.000	0.000
59.138	63.270	41.120	0.482	0.000	0.232
59.203	63.270	41.120	0.648	0.000	0.311
59.268	59.051	39.403	0.160	0.000	0.000
59.334	68.333	41.625	0.478	0.000	0.000
59.399	68.333	41.625	0.158	0.000	0.000
59.464	75.929	38.494	0.000	0.000	0.000
59.529	75.929	38.494	0.000	0.000	0.000
59.594	65.801	39.858	0.000	0.000	0.000
59.660	59.051	37.585	0.164	0.000	0.470
59.725	59.051	37.585	0.246	0.000	0.235
59.790	70.865	37.131	0.000	0.000	0.157
59.855	55.675	38.494	0.801	0.000	0.000
59.920	55.675	38.494	0.963	0.000	0.000
59.986	75.929	36.070	1.298	0.000	0.000
60.051	78.742	37.131	0.322	0.000	0.159
60.116	78.742	37.131	0.239	0.000	0.239
60.181	60.738	35.565	0.632	0.000	0.477
60.246	73.397	35.313	1.094	0.000	0.000
60.312	73.397	35.313	0.711	0.000	0.000
60.377	78.742	37.080	0.310	0.000	0.000
60.442	63.270	35.313	0.165	0.000	0.000
60.507	63.270	35.313	0.247	0.000	0.000
60.572	48.081	36.575	0.000	0.000	0.158
60.638	65.801	36.676	0.495	0.000	0.166
60.703	65.801	36.676	0.733	0.000	0.249
60.768	61.863	31.222	0.656	0.158	0.497
60.833	83.525	30.515	0.164	0.000	0.167
60.898	83.525	30.515	0.246	0.000	0.000
60.964	65.801	30.768	0.652	0.000	0.000
61.029	95.623	35.313	0.162	0.000	0.162
61.094	95.623	35.313	0.481	0.000	0.243
61.159	60.738	35.565	0.645	0.000	0.487

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
61.224	60.738	35.565	0.957	0.000	0.000
61.290	56.238	34.858	0.713	0.000	0.233
61.355	65.801	36.676	0.469	0.000	0.156
61.420	65.801	36.676	0.960	0.000	0.000
61.485	53.144	34.050	0.724	0.000	0.000
61.550	95.623	37.131	0.157	0.000	0.000
61.616	95.623	37.131	0.000	0.162	0.000
61.681	60.738	40.767	0.000	0.243	0.000
61.746	73.397	43.140	0.000	0.485	0.000
61.811	73.397	43.140	0.631	0.000	0.000
61.876	92.809	41.221	0.478	0.000	0.000
61.942	73.397	38.090	0.156	0.000	0.000
62.007	73.397	38.090	0.958	0.000	0.000
62.072	70.865	38.949	0.727	0.000	0.000
62.137	70.302	38.090	0.963	0.000	0.000
62.202	70.302	38.090	0.328	0.000	0.163
62.268	55.675	38.040	0.716	0.000	0.245
62.333	70.865	38.494	0.804	0.000	0.490
62.398	70.865	38.494	0.000	0.000	0.000
62.463	68.333	34.555	0.000	0.000	0.000
62.528	87.182	35.313	0.000	0.000	0.000
62.594	87.182	35.313	0.468	0.000	0.165
62.659	58.207	35.565	0.234	0.000	0.247
62.724	75.929	35.767	0.156	0.000	0.494
62.789	75.929	35.767	0.500	0.000	0.167
62.854	53.425	37.131	0.749	0.000	0.250
62.920	53.425	37.131	0.501	0.000	0.501
62.985	78.460	36.070	1.786	0.000	0.000
63.050	55.675	37.131	1.218	0.000	0.238
63.115	55.675	37.131	1.795	0.000	0.316
63.180	70.302	35.565	1.290	0.000	0.330
63.246	96.186	35.767	0.973	0.000	0.000
63.311	96.186	35.767	1.464	0.000	0.000
63.376	75.929	37.585	0.164	0.000	0.000
63.441	55.675	36.575	0.715	0.000	0.000
63.507	55.675	36.575	0.962	0.000	0.000
63.572	55.675	38.040	0.328	0.000	0.165
63.637	78.742	36.222	0.247	0.000	0.247
63.702	78.742	36.222	0.495	0.000	0.495
63.767	63.270	36.575	0.000	0.000	0.000
63.833	48.081	38.040	0.000	0.000	0.000
63.898	48.081	38.040	0.000	0.000	0.000
63.963	53.425	36.222	0.633	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
64.028	65.801	39.100	0.706	0.000	0.000
64.093	65.801	39.100	0.471	0.000	0.000
64.158	91.121	37.131	0.794	0.465	0.000
64.224	65.801	37.585	0.713	0.233	0.000
64.289	65.801	37.585	0.961	0.155	0.000
64.354	95.623	40.312	0.163	0.163	0.000
64.419	83.525	38.090	0.245	0.000	0.000
64.484	83.525	38.090	0.490	0.000	0.000
64.550	65.801	40.312	0.324	0.000	0.000
64.615	65.801	40.312	0.954	0.000	0.000
64.680	95.623	40.615	0.466	0.000	0.000
64.745	88.589	40.312	0.000	0.000	0.166
64.811	88.589	40.312	0.000	0.000	0.249
64.876	73.397	41.221	0.000	0.000	0.000
64.941	75.929	39.858	0.166	0.000	0.000
65.006	75.929	39.858	0.720	0.000	0.000
65.071	78.460	41.676	0.474	0.000	0.000
65.136	83.525	40.767	0.164	0.000	0.000
65.202	83.525	40.767	0.000	0.000	0.000
65.267	70.302	42.585	0.159	0.000	0.000
65.332	73.397	42.543	0.647	0.000	0.000
65.397	73.397	42.543	0.727	0.000	0.000
65.462	63.270	41.676	0.477	0.000	0.000
65.528	53.425	43.494	0.642	0.000	0.478
65.593	53.425	43.494	0.486	0.000	0.239
65.658	86.057	41.717	0.159	0.000	0.316
65.723	75.929	43.948	0.000	0.000	0.164
65.788	75.929	43.948	0.000	0.000	0.246
65.854	88.589	44.196	0.000	0.000	0.000
65.919	86.057	43.039	0.000	0.000	0.000
65.984	86.057	43.039	0.695	0.000	0.000
66.049	67.489	45.022	0.773	0.155	0.000
66.114	78.460	45.436	0.962	0.165	0.000
66.180	78.460	45.436	0.480	0.000	0.000
66.245	55.675	44.609	0.157	0.000	0.155
66.310	55.675	44.609	0.955	0.000	0.164
66.375	73.115	46.262	0.956	0.000	0.000
66.440	83.525	47.054	1.111	0.000	0.000
66.506	83.525	47.054	0.467	0.000	0.000
66.571	78.460	47.501	0.938	0.000	0.000
66.636	70.865	48.328	0.000	0.000	0.000
66.701	70.865	48.328	0.763	0.163	0.000
66.766	81.555	47.724	0.465	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
66.832	58.207	48.423	0.699	0.000	0.000
66.897	58.207	48.423	0.623	0.000	0.165
66.962	63.270	48.423	0.000	0.000	0.000
67.027	75.929	49.822	0.000	0.000	0.000
67.092	75.929	49.822	0.000	0.165	0.000
67.158	95.623	48.773	0.000	0.248	0.000
67.223	53.144	48.773	0.238	0.000	0.000
67.288	53.144	48.773	0.816	0.000	0.000
67.353	68.333	49.122	0.975	0.000	0.000
67.418	47.800	49.705	1.240	0.000	0.000
67.484	47.800	49.705	0.489	0.000	0.000
67.549	48.081	50.210	0.249	0.000	0.000
67.614	87.182	49.453	0.000	0.000	0.000
67.679	87.182	49.453	0.164	0.000	0.163
67.744	60.738	50.463	0.000	0.000	0.723
67.810	65.801	50.418	0.471	0.000	0.729
67.875	65.801	50.418	0.796	0.000	0.159
67.940	73.115	49.958	0.488	0.000	0.000
68.005	73.115	49.958	0.489	0.000	0.000
68.071	86.057	51.220	0.646	0.000	0.000
68.136	44.988	50.571	0.489	0.000	0.000
68.201	44.988	50.571	1.955	0.000	0.000
68.266	65.801	51.633	0.161	0.233	0.000
68.331	70.865	50.232	0.155	0.155	0.155
68.396	70.865	50.232	0.000	0.000	0.000
68.462	58.207	51.418	0.337	0.000	0.237
68.527	61.863	-9999.990	0.506	0.000	0.158
68.592	61.863	-9999.990	0.521	0.000	0.000
68.657	91.121	-9999.990	0.158	0.000	0.000
68.722	86.057	-9999.990	0.394	0.000	0.000
68.788	86.057	-9999.990	0.000	0.000	0.000
68.853	70.302	-9999.990	0.880	0.000	0.033
68.918	83.525	-9999.990	0.824	0.000	0.050
68.983	83.525	-9999.990	0.000	0.000	0.000
69.049	35.426	-9999.990	-9999.990	-9999.990	-9999.990
69.114	55.675	-9999.990	-9999.990	-9999.990	-9999.990
69.179	55.675	-9999.990	-9999.990	-9999.990	-9999.990
69.244	61.863	-9999.990	-9999.990	-9999.990	-9999.990
69.309	68.333	-9999.990	-9999.990	-9999.990	-9999.990
69.374	68.333	-9999.990	-9999.990	-9999.990	-9999.990
69.440	53.144	-9999.990	-9999.990	-9999.990	-9999.990
69.505	115.321	-9999.990	-9999.990	-9999.990	-9999.990
69.570	115.321	-9999.990	-9999.990	-9999.990	-9999.990

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
69.635	65.801	-9999.990	-9999.990	-9999.990	-9999.990
69.700	65.801	-9999.990	-9999.990	-9999.990	-9999.990
69.766	78.230	-9999.990	-9999.990	-9999.990	-9999.990
69.831	62.119	-9999.990	-9999.990	-9999.990	-9999.990
69.896	62.119	-9999.990	-9999.990	-9999.990	-9999.990
69.961	71.325	-9999.990	-9999.990	-9999.990	-9999.990
70.026	40.066	-9999.990	-9999.990	-9999.990	-9999.990
70.092	40.066	-9999.990	-9999.990	-9999.990	-9999.990
70.157	89.740	-9999.990	-9999.990	-9999.990	-9999.990
70.222	81.772	-9999.990	-9999.990	-9999.990	-9999.990
70.287	81.772	-9999.990	-9999.990	-9999.990	-9999.990
70.353	67.489	-9999.990	-9999.990	-9999.990	-9999.990
70.418	84.369	-9999.990	-9999.990	-9999.990	-9999.990
70.483	84.369	-9999.990	-9999.990	-9999.990	-9999.990
70.548	79.546	-9999.990	-9999.990	-9999.990	-9999.990

Notes
-9999.99 - no data
API - American Petroleum Institute
cps - counts per second
mS/m - milliSiemens per meter

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
2.165	72.312	NL	-9999.990	-9999.990	-9999.990
2.230	79.093	NL	-9999.990	-9999.990	-9999.990
2.295	79.093	NL	-9999.990	-9999.990	-9999.990
2.360	62.525	NL	-9999.990	-9999.990	-9999.990
2.426	72.764	NL	-9999.990	-9999.990	-9999.990
2.491	72.764	NL	-9999.990	-9999.990	-9999.990
2.556	79.824	NL	-9999.990	-9999.990	-9999.990
2.621	73.627	NL	-9999.990	-9999.990	-9999.990
2.686	73.627	NL	-9999.990	-9999.990	-9999.990
2.752	71.325	NL	-9999.990	-9999.990	-9999.990
2.817	62.119	NL	-9999.990	-9999.990	-9999.990
2.882	62.119	NL	-9999.990	-9999.990	-9999.990
2.947	80.532	NL	-9999.990	-9999.990	-9999.990
3.012	71.325	NL	-9999.990	-9999.990	-9999.990
3.078	71.325	NL	-9999.990	-9999.990	-9999.990
3.143	85.136	NL	-9999.990	-9999.990	-9999.990
3.208	85.136	NL	-9999.990	-9999.990	-9999.990
3.273	73.627	NL	-9999.990	-9999.990	-9999.990
3.338	75.929	NL	-9999.990	-9999.990	-9999.990
3.404	75.929	NL	-9999.990	-9999.990	-9999.990
3.469	66.722	NL	-9999.990	-9999.990	-9999.990
3.534	73.627	NL	-9999.990	-9999.990	-9999.990
3.599	73.627	NL	-9999.990	-9999.990	-9999.990
3.664	86.057	NL	-9999.990	-9999.990	-9999.990
3.730	75.929	NL	-9999.990	-9999.990	-9999.990
3.795	75.929	NL	-9999.990	-9999.990	-9999.990
3.860	63.270	NL	-9999.990	-9999.990	-9999.990
3.925	92.809	NL	-9999.990	-9999.990	-9999.990
3.990	92.809	NL	-9999.990	-9999.990	-9999.990
4.056	44.988	NL	-9999.990	-9999.990	-9999.990
4.121	67.489	NL	0.606	0.000	0.000
4.186	67.489	NL	0.118	0.010	0.099
4.251	64.676	NL	0.220	0.006	0.032
4.316	59.051	NL	0.861	0.000	0.000
4.381	59.051	NL	1.168	0.000	0.165
4.447	67.489	NL	1.361	0.000	0.248
4.512	59.051	NL	0.000	0.000	0.000
4.577	59.051	NL	0.678	0.000	0.000
4.642	75.929	NL	1.017	0.000	0.000
4.707	92.809	NL	1.500	0.000	0.000
4.773	92.809	NL	0.581	0.000	0.000
4.838	89.996	NL	0.418	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
4.903	89.996	NL	0.000	0.000	0.000
4.968	75.929	NL	0.592	0.000	0.422
5.033	63.270	NL	0.424	0.000	0.422
5.099	63.270	NL	0.510	0.000	0.000
5.164	81.555	NL	0.343	0.000	0.000
5.229	67.489	NL	0.000	0.000	0.000
5.294	67.489	NL	0.502	0.000	0.000
5.360	84.369	NL	0.251	0.000	0.251
5.425	75.929	NL	0.333	0.000	0.333
5.490	75.929	NL	2.482	0.000	0.000
5.555	84.369	NL	1.410	0.000	0.247
5.620	84.369	NL	1.247	0.000	0.164
5.686	84.369	NL	1.001	0.000	0.000
5.751	78.742	NL	1.652	0.168	0.000
5.816	89.996	NL	1.407	0.000	0.000
5.881	89.996	NL	0.502	0.000	0.000
5.946	86.057	NL	0.582	0.000	0.167
6.011	75.929	NL	0.416	0.000	0.250
6.077	75.929	NL	0.000	0.000	0.500
6.142	61.863	NL	0.168	0.000	0.000
6.207	78.742	NL	0.000	0.000	0.000
6.272	78.742	NL	0.000	0.000	0.490
6.337	87.182	NL	0.507	0.000	0.245
6.403	84.369	NL	0.761	0.000	0.163
6.468	84.369	NL	1.000	0.000	0.491
6.533	78.742	NL	0.580	0.000	0.413
6.598	78.742	NL	0.164	0.000	0.327
6.663	70.302	NL	0.494	0.000	0.000
6.729	87.182	NL	0.659	0.000	0.168
6.794	87.182	NL	0.580	0.000	0.252
6.859	78.460	NL	0.000	0.000	0.000
6.924	81.555	NL	0.170	0.000	0.000
6.990	81.555	NL	0.255	0.000	0.165
7.055	53.425	NL	0.492	0.000	0.000
7.120	70.302	NL	0.496	0.000	0.169
7.185	70.302	NL	0.331	0.000	0.000
7.250	95.623	NL	0.509	0.000	0.000
7.316	47.800	NL	0.505	0.250	0.169
7.381	47.800	NL	0.336	0.167	0.421
7.446	87.182	NL	1.015	0.000	0.000
7.511	89.996	NL	1.099	0.000	0.000
7.576	89.996	NL	0.927	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
7.642	67.489	NL	0.506	0.000	0.000
7.707	81.555	NL	0.335	0.000	0.674
7.772	81.555	NL	0.667	0.000	0.667
7.837	81.555	NL	1.481	0.000	0.501
7.902	73.115	NL	0.996	0.000	0.000
7.967	73.115	NL	1.086	0.000	0.165
8.033	92.809	NL	0.998	0.000	0.493
8.098	101.251	NL	0.414	0.000	0.246
8.163	101.251	NL	0.328	0.000	0.328
8.228	56.238	NL	0.252	0.000	0.496
8.293	56.238	NL	0.246	0.000	0.494
8.359	78.742	NL	0.659	0.000	0.330
8.424	53.144	NL	0.000	0.493	0.493
8.489	53.144	NL	0.249	0.246	0.246
8.554	75.929	NL	0.335	0.164	0.500
8.619	87.182	NL	0.739	0.000	0.504
8.685	87.182	NL	0.997	0.246	0.000
8.750	61.863	NL	0.493	0.164	0.335
8.815	81.555	NL	0.252	0.000	0.751
8.880	81.555	NL	0.504	0.000	0.753
8.945	87.182	NL	0.338	0.000	0.330
9.011	67.489	NL	1.004	0.000	0.993
9.076	67.489	NL	0.756	0.000	0.496
9.141	73.115	NL	1.158	0.000	0.331
9.206	89.996	NL	1.483	0.000	0.000
9.271	89.996	NL	1.491	0.000	0.000
9.337	116.447	NL	0.664	0.000	0.000
9.402	104.065	NL	0.252	0.000	1.005
9.467	104.065	NL	0.000	0.000	0.757
9.532	87.182	NL	0.337	0.169	0.505
9.597	79.093	NL	0.505	0.253	0.000
9.663	79.093	NL	0.253	0.506	0.000
9.728	104.065	NL	0.843	0.000	0.171
9.793	95.623	NL	1.269	0.000	0.256
9.858	95.623	NL	0.765	0.000	0.512
9.924	56.238	NL	0.168	0.000	0.000
9.989	56.238	NL	1.483	0.000	0.000
10.054	92.809	NL	0.991	0.000	0.000
10.119	56.238	NL	1.651	0.000	0.165
10.184	56.238	NL	1.485	0.000	0.000
10.249	88.589	NL	2.708	0.000	0.000
10.315	87.182	NL	0.667	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
10.380	87.182	NL	0.499	0.000	0.493
10.445	95.623	NL	1.244	0.000	0.246
10.510	75.929	NL	0.496	0.000	0.330
10.575	75.929	NL	1.243	0.000	0.495
10.641	78.742	NL	0.741	0.245	0.248
10.706	75.929	NL	1.491	0.164	0.496
10.771	75.929	NL	0.250	0.000	0.000
10.836	67.489	NL	0.500	0.000	0.000
10.901	75.929	NL	0.000	0.000	0.000
10.967	75.929	NL	0.000	0.000	0.491
11.032	65.801	NL	0.246	0.000	0.246
11.097	75.929	NL	0.665	0.164	0.164
11.162	75.929	NL	1.248	0.000	0.000
11.227	67.489	NL	0.740	0.000	0.000
11.293	67.489	NL	0.824	0.000	0.000
11.358	67.489	NL	0.495	0.000	0.000
11.423	75.929	NL	0.499	0.000	0.251
11.488	81.555	NL	0.668	0.000	0.334
11.554	81.555	NL	0.494	0.000	0.494
11.619	53.425	NL	0.247	0.000	0.247
11.684	53.425	NL	0.165	0.000	0.165
11.749	42.176	NL	0.508	0.000	0.000
11.814	56.238	NL	0.254	0.000	0.000
11.879	56.238	NL	0.671	0.169	0.000
11.945	39.363	NL	0.253	0.000	0.000
12.010	75.929	NL	0.507	0.000	0.505
12.075	75.929	NL	0.504	0.000	0.504
12.140	73.115	NL	0.253	0.000	0.000
12.205	59.051	NL	0.506	0.000	0.253
12.271	59.051	NL	0.333	0.000	0.169
12.336	44.988	NL	0.500	0.000	0.000
12.401	33.739	NL	0.999	0.000	0.000
12.466	33.739	NL	0.499	0.000	0.164
12.531	63.270	NL	0.246	0.000	0.246
12.597	75.929	NL	0.493	0.000	0.493
12.662	75.929	NL	0.662	0.000	0.000
12.727	67.489	NL	0.499	0.000	0.000
12.792	70.302	NL	0.000	0.000	0.000
12.857	70.302	NL	0.333	0.000	0.167
12.923	70.302	NL	0.744	0.000	0.251
12.988	50.613	NL	0.749	0.000	0.000
13.053	50.613	NL	0.164	0.000	0.661

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
13.118	56.238	NL	0.000	0.000	0.000
13.184	53.425	NL	0.000	0.000	0.000
13.249	53.425	NL	0.167	0.000	0.166
13.314	68.333	NL	0.746	0.000	0.000
13.379	68.333	NL	0.248	0.000	0.247
13.444	53.425	NL	0.330	0.000	0.165
13.510	61.863	NL	0.000	0.000	0.000
13.575	61.863	NL	0.000	0.000	0.000
13.640	59.051	NL	0.000	0.168	0.168
13.705	44.988	NL	0.000	0.253	0.253
13.770	44.988	NL	0.501	0.000	0.000
13.836	53.425	NL	0.334	0.169	0.165
13.901	39.363	NL	0.495	0.253	0.000
13.966	39.363	NL	0.500	0.506	0.000
14.031	47.800	NL	0.504	0.000	0.510
14.096	50.613	NL	0.000	0.000	0.254
14.161	50.613	NL	0.000	0.000	0.000
14.227	47.800	NL	0.167	0.000	0.000
14.292	22.491	NL	0.000	0.000	0.000
14.357	22.491	NL	0.000	0.000	0.000
14.422	59.051	NL	0.667	0.000	0.167
14.488	50.613	NL	1.246	0.000	0.251
14.553	50.613	NL	0.749	0.000	0.749
14.618	53.425	NL	0.330	0.000	0.165
14.683	64.676	NL	0.000	0.000	0.000
14.748	64.676	NL	0.000	0.000	0.000
14.814	59.051	NL	0.335	0.000	0.000
14.879	53.425	NL	0.744	0.000	0.000
14.944	53.425	NL	0.247	0.000	0.000
15.009	37.957	NL	0.497	0.000	0.169
15.074	37.957	NL	1.251	0.000	0.254
15.139	53.425	NL	0.499	0.000	0.000
15.205	59.051	NL	0.333	0.000	0.166
15.270	59.051	NL	0.493	0.000	0.000
15.335	36.551	NL	0.246	0.000	0.000
15.400	75.929	NL	0.329	0.000	0.000
15.465	75.929	NL	0.000	0.000	0.000
15.531	42.176	NL	0.000	0.000	0.000
15.596	64.676	NL	0.165	0.000	0.000
15.661	64.676	NL	0.000	0.000	0.000
15.726	36.551	NL	0.000	0.000	0.000
15.791	60.738	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
15.857	60.738	NL	0.000	0.000	0.000
15.922	56.238	NL	0.000	0.000	0.000
15.987	67.489	NL	0.166	0.000	0.000
16.052	67.489	NL	0.499	0.000	0.000
16.118	33.739	NL	0.250	0.000	0.000
16.183	53.425	NL	0.673	0.000	0.167
16.248	53.425	NL	0.509	0.000	0.000
16.313	61.863	NL	0.509	0.000	0.000
16.378	59.051	NL	0.169	0.000	0.000
16.443	59.051	NL	1.257	0.000	0.502
16.509	64.676	NL	1.008	0.000	0.251
16.574	64.676	NL	0.675	0.000	0.167
16.639	64.676	NL	0.258	0.000	0.000
16.704	70.302	NL	0.506	0.000	0.000
16.769	70.302	NL	0.338	0.000	0.000
16.835	53.425	NL	0.491	0.000	0.000
16.900	64.676	NL	0.492	0.000	0.000
16.965	64.676	NL	0.494	0.000	0.000
17.030	56.238	NL	0.491	0.000	0.000
17.095	64.676	NL	0.246	0.000	0.000
17.161	64.676	NL	0.493	0.000	0.000
17.226	47.800	NL	0.737	0.000	0.000
17.291	95.623	NL	0.740	0.000	0.000
17.356	95.623	NL	0.331	0.000	0.168
17.421	58.207	NL	0.000	0.000	0.000
17.487	64.676	NL	0.000	0.000	0.000
17.552	64.676	NL	0.333	0.000	0.328
17.617	67.489	NL	0.499	0.000	0.247
17.682	73.115	NL	0.504	0.000	0.249
17.747	73.115	NL	0.500	0.000	0.166
17.813	73.115	NL	0.498	0.000	0.000
17.878	87.182	NL	0.247	0.247	0.000
17.943	87.182	NL	0.664	0.165	0.000
18.008	67.489	NL	0.500	0.000	0.000
18.073	53.425	NL	0.245	0.000	0.000
18.139	53.425	NL	0.667	0.000	0.000
18.204	27.834	NL	0.250	0.000	0.000
18.269	67.489	NL	0.500	0.000	0.000
18.334	67.489	NL	0.673	0.000	0.000
18.399	75.929	NL	0.513	0.000	0.000
18.465	75.929	NL	1.026	0.000	0.000
18.530	75.929	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
18.595	64.676	NL	0.000	0.000	0.000
18.660	64.676	NL	0.000	0.000	0.000
18.726	61.863	NL	0.167	0.000	0.000
18.791	75.929	NL	0.251	0.000	0.499
18.856	75.929	NL	0.749	0.000	0.498
18.921	92.809	NL	0.165	0.000	0.332
18.986	53.425	NL	0.000	0.000	0.000
19.052	53.425	NL	0.247	0.000	0.000
19.117	73.115	NL	0.664	0.000	0.000
19.182	73.115	NL	0.750	0.982	0.491
19.247	73.115	NL	0.998	0.491	0.245
19.312	64.676	NL	0.668	0.493	0.164
19.377	39.363	NL	0.499	0.248	0.000
19.443	39.363	NL	0.748	0.000	0.000
19.508	87.182	NL	0.496	0.000	0.167
19.573	65.801	NL	0.250	0.000	0.250
19.638	65.801	NL	0.247	0.000	0.247
19.703	67.489	NL	0.164	0.000	0.329
19.769	78.742	NL	0.000	0.000	0.000
19.834	78.742	NL	0.000	0.000	0.000
19.899	78.742	NL	0.167	0.167	0.000
19.964	64.676	NL	0.250	0.745	0.000
20.029	64.676	NL	0.502	0.247	0.000
20.095	73.115	NL	0.502	0.165	0.000
20.160	73.115	NL	0.000	0.000	0.000
20.225	47.800	NL	0.000	0.000	0.000
20.290	47.800	NL	0.334	0.000	0.166
20.355	47.800	NL	0.000	0.000	0.249
20.421	55.675	NL	0.000	0.000	0.498
20.486	59.051	NL	0.498	0.000	0.000
20.551	59.051	NL	0.250	0.000	0.000
20.616	44.988	NL	0.000	0.000	0.000
20.681	67.489	NL	0.666	0.000	0.169
20.747	67.489	NL	1.265	0.000	0.253
20.812	47.800	NL	1.269	0.000	0.000
20.877	53.425	NL	1.177	0.000	0.000
20.942	53.425	NL	0.498	0.000	0.000
21.007	42.176	NL	0.499	0.000	0.000
21.073	59.051	NL	1.003	0.000	0.000
21.138	59.051	NL	0.999	0.000	0.000
21.203	75.929	NL	0.996	0.000	0.000
21.268	59.051	NL	0.664	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
21.333	59.051	NL	0.000	0.000	0.497
21.399	47.800	NL	0.000	0.000	0.249
21.464	39.363	NL	0.166	0.000	0.166
21.529	39.363	NL	0.742	0.000	0.000
21.594	39.363	NL	0.246	0.000	0.000
21.660	53.425	NL	0.328	0.000	0.000
21.725	53.425	NL	0.973	0.000	0.000
21.790	50.613	NL	0.487	0.000	0.000
21.855	50.613	NL	0.324	0.000	0.000
21.920	45.550	NL	0.000	0.000	0.000
21.986	50.613	NL	0.000	0.000	0.000
22.051	50.613	NL	0.165	0.000	0.000
22.116	39.363	NL	0.000	0.000	0.000
22.181	50.613	NL	0.000	0.000	0.000
22.246	50.613	NL	0.166	0.000	0.000
22.312	61.863	NL	0.000	0.000	0.000
22.377	56.238	NL	0.000	0.000	0.000
22.442	56.238	NL	0.326	0.000	0.000
22.507	64.676	NL	0.000	0.000	0.000
22.572	44.988	NL	0.000	0.000	0.000
22.637	44.988	NL	0.499	0.000	0.000
22.703	65.801	NL	0.251	0.000	0.000
22.768	56.238	NL	0.249	0.000	0.000
22.833	56.238	NL	0.665	0.000	0.168
22.898	56.238	NL	0.000	0.000	0.252
22.963	33.739	NL	0.251	0.000	0.504
23.029	33.739	NL	0.668	0.000	0.000
23.094	59.051	NL	0.251	0.000	0.000
23.159	47.800	NL	0.252	0.000	0.000
23.224	47.800	NL	0.673	0.000	0.000
23.289	64.676	NL	0.508	0.000	0.000
23.355	75.929	NL	1.016	0.000	0.000
23.420	75.929	NL	0.170	0.167	0.000
23.485	39.363	NL	0.000	0.250	0.000
23.550	39.363	NL	0.000	0.000	0.000
23.615	61.863	NL	0.656	0.164	0.167
23.681	42.176	NL	0.246	0.246	0.251
23.746	42.176	NL	0.492	0.492	0.000
23.811	42.176	NL	0.331	0.000	0.166
23.876	50.613	NL	0.497	0.000	0.248
23.941	50.613	NL	0.994	0.000	0.497
24.007	42.176	NL	0.000	0.164	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
24.072	42.176	NL	0.000	0.000	0.000
24.137	42.176	NL	0.000	0.000	0.000
24.202	60.738	NL	0.416	0.000	0.165
24.267	44.988	NL	0.415	0.000	0.248
24.333	44.988	NL	0.496	0.000	0.496
24.398	50.613	NL	0.245	0.000	0.000
24.463	36.551	NL	0.163	0.000	0.000
24.528	36.551	NL	0.000	0.000	0.000
24.593	50.613	NL	0.000	0.000	0.000
24.659	53.425	NL	0.000	0.000	0.000
24.724	53.425	NL	0.000	0.000	0.498
24.789	36.551	NL	0.000	0.000	0.414
24.854	78.742	NL	0.164	0.000	0.413
24.919	78.742	NL	0.000	0.000	0.000
24.985	48.081	NL	0.498	0.000	0.000
25.050	73.115	NL	0.495	0.165	0.000
25.115	73.115	NL	0.985	0.000	0.000
25.180	47.800	NL	0.247	0.000	0.000
25.245	47.800	NL	0.000	0.000	0.000
25.311	33.739	NL	0.000	0.000	0.000
25.376	50.613	NL	0.662	0.000	0.000
25.441	50.613	NL	0.993	0.000	0.000
25.506	59.051	NL	0.000	0.000	0.000
25.572	64.676	NL	0.336	0.000	0.334
25.637	64.676	NL	0.000	0.000	0.501
25.702	44.988	NL	0.000	0.000	1.003
25.767	78.742	NL	0.329	0.000	0.000
25.832	78.742	NL	0.494	0.000	0.000
25.897	81.555	NL	0.000	0.000	0.000
25.963	61.863	NL	0.000	0.000	0.667
26.028	61.863	NL	0.000	0.000	0.502
26.093	70.302	NL	0.000	0.000	0.000
26.158	64.676	NL	0.328	0.000	0.000
26.223	64.676	NL	0.197	0.000	0.016
26.289	35.426	NL	0.000	0.000	0.000
26.354	44.988	NL	0.411	0.000	0.000
26.419	44.988	NL	0.164	0.000	0.000
26.484	28.115	NL	0.492	0.000	0.000
26.550	70.302	NL	0.246	0.000	0.166
26.615	70.302	NL	0.329	0.000	0.249
26.680	53.425	NL	0.493	0.000	0.498
26.745	25.303	NL	0.577	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
26.810	25.303	NL	0.995	0.000	0.000
26.875	53.425	NL	0.987	0.000	0.000
26.941	53.425	NL	0.742	0.000	0.000
27.006	50.613	NL	1.070	0.000	0.000
27.071	60.738	NL	0.990	0.000	0.000
27.136	60.738	NL	0.167	0.000	0.166
27.201	56.238	NL	0.414	0.000	0.249
27.267	39.363	NL	0.000	0.000	0.497
27.332	39.363	NL	0.167	0.000	0.167
27.397	53.425	NL	0.251	0.000	0.251
27.462	44.988	NL	0.000	0.000	0.502
27.527	44.988	NL	0.756	0.000	0.000
27.593	44.988	NL	0.674	0.000	0.000
27.658	47.800	NL	0.509	0.000	0.000
27.723	47.800	NL	0.000	0.000	0.000
27.788	47.800	NL	0.166	0.000	0.000
27.854	44.988	NL	0.000	0.000	0.000
27.919	44.988	NL	0.000	0.000	0.167
27.984	50.613	NL	0.000	0.000	0.250
28.049	47.800	NL	0.495	0.000	0.000
28.114	47.800	NL	0.248	0.000	0.000
28.179	50.613	NL	0.165	0.000	0.000
28.245	36.551	NL	0.000	0.000	0.000
28.310	36.551	NL	0.411	0.000	0.000
28.375	14.057	NL	0.411	0.000	0.000
28.440	56.238	NL	0.984	0.000	0.000
28.506	56.238	NL	0.820	0.000	0.000
28.571	33.739	NL	0.574	0.000	0.000
28.636	33.739	NL	0.000	0.000	0.000
28.701	65.801	NL	0.415	0.000	0.000
28.766	59.051	NL	0.165	0.000	0.000
28.831	59.051	NL	0.491	0.000	0.000
28.897	44.988	NL	0.907	0.000	0.165
28.962	64.676	NL	0.495	0.000	0.163
29.027	64.676	NL	0.000	0.000	0.000
29.092	73.115	NL	0.000	0.000	0.000
29.157	75.929	NL	0.000	0.000	0.000
29.223	75.929	NL	0.000	0.000	0.490
29.288	63.270	NL	0.409	0.000	0.410
29.353	67.489	NL	0.163	0.000	0.163
29.418	67.489	NL	0.000	0.000	0.000
29.483	56.238	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
29.549	78.742	NL	0.000	0.000	0.000
29.614	78.742	NL	0.000	0.000	0.000
29.679	25.303	NL	0.969	0.154	0.154
29.744	87.182	NL	0.993	0.000	0.000
29.809	87.182	NL	0.998	0.000	0.000
29.875	84.369	NL	0.664	0.000	0.166
29.940	53.425	NL	0.748	0.000	0.000
30.005	53.425	NL	1.164	0.000	0.000
30.070	61.863	NL	0.000	0.000	0.000
30.135	64.676	NL	0.246	0.000	0.000
30.201	64.676	NL	0.330	0.000	0.000
30.266	59.051	NL	0.490	0.000	0.000
30.331	59.051	NL	0.732	0.000	0.000
30.396	81.555	NL	1.135	0.000	0.000
30.462	81.555	NL	0.499	0.000	0.164
30.527	81.555	NL	0.500	0.000	0.245
30.592	59.051	NL	0.167	0.000	0.491
30.657	40.488	NL	0.494	0.000	0.000
30.722	40.488	NL	0.247	0.000	0.247
30.787	50.613	NL	0.165	0.000	0.165
30.853	53.425	NL	0.334	0.000	0.496
30.918	53.425	NL	0.247	0.000	0.248
30.983	67.489	NL	0.494	0.000	0.165
31.048	87.182	NL	0.000	0.000	0.000
31.113	87.182	NL	0.248	0.000	0.000
31.179	73.115	NL	0.655	0.000	0.000
31.244	36.551	NL	0.333	0.000	0.000
31.309	36.551	NL	0.746	0.000	0.000
31.374	60.738	NL	0.664	0.000	0.000
31.440	56.238	NL	0.494	0.000	0.164
31.505	56.238	NL	0.247	0.000	0.246
31.570	78.742	NL	0.327	0.000	0.000
31.635	53.425	NL	1.144	0.167	0.000
31.700	53.425	NL	0.982	0.250	0.000
31.765	33.739	NL	0.655	0.500	0.000
31.831	70.302	NL	0.164	0.000	0.000
31.896	70.302	NL	0.498	0.000	0.000
31.961	53.425	NL	0.168	0.000	0.000
32.026	53.425	NL	0.835	0.000	0.000
32.091	53.425	NL	0.252	0.000	0.000
32.157	53.425	NL	0.168	0.000	0.000
32.222	53.425	NL	0.829	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
32.287	56.238	NL	0.996	0.000	0.246
32.352	59.051	NL	0.164	0.166	0.164
32.417	59.051	NL	0.330	0.000	0.170
32.483	75.929	NL	0.744	0.000	0.000
32.548	70.302	NL	1.321	0.000	0.000
32.613	70.302	NL	0.329	0.000	0.167
32.678	50.613	NL	0.243	0.000	0.000
32.743	75.929	NL	0.164	0.000	0.000
32.809	75.929	NL	0.655	0.000	0.000
32.874	50.613	NL	0.739	0.000	0.000
32.939	59.051	NL	0.327	0.000	0.165
33.004	59.051	NL	0.000	0.000	0.000
33.069	87.182	NL	0.163	0.000	0.408
33.135	59.051	NL	0.000	0.000	0.409
33.200	59.051	NL	0.000	0.000	0.000
33.265	42.176	NL	0.493	0.000	0.000
33.330	68.333	NL	0.740	0.000	0.000
33.396	68.333	NL	0.493	0.000	0.000
33.461	56.238	NL	0.325	0.000	0.000
33.526	56.238	NL	0.487	0.000	0.000
33.591	56.238	NL	0.480	0.000	0.000
33.656	42.176	NL	0.000	0.000	0.000
33.721	42.176	NL	0.000	0.000	0.000
33.787	44.988	NL	0.488	0.000	0.000
33.852	47.800	NL	1.232	0.000	0.163
33.917	47.800	NL	1.158	0.000	0.245
33.982	64.676	NL	0.990	0.000	0.990
34.048	32.895	NL	0.250	0.000	0.580
34.113	32.895	NL	0.167	0.000	0.662
34.178	50.613	NL	0.495	0.000	0.990
34.243	47.800	NL	0.581	0.000	0.000
34.308	47.800	NL	0.665	0.000	0.000
34.373	44.988	NL	1.496	0.000	0.496
34.439	42.176	NL	0.415	0.249	0.248
34.504	42.176	NL	0.165	0.166	0.165
34.569	61.863	NL	0.000	0.000	0.000
34.634	39.363	NL	0.000	0.000	0.000
34.699	39.363	NL	0.167	0.000	0.000
34.765	64.676	NL	0.000	0.000	0.000
34.830	47.800	NL	0.569	0.000	0.245
34.895	47.800	NL	0.649	0.000	0.325
34.960	25.303	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
35.026	61.863	NL	0.165	0.000	0.000
35.091	61.863	NL	0.247	0.000	0.000
35.156	44.988	NL	0.494	0.000	0.000
35.221	78.460	NL	0.000	0.000	0.000
35.286	78.460	NL	0.000	0.000	0.000
35.351	50.613	NL	0.000	0.000	0.000
35.417	50.613	NL	0.245	0.000	0.000
35.482	47.800	NL	0.163	0.000	0.000
35.547	42.176	NL	0.000	0.000	0.494
35.612	42.176	NL	0.164	0.000	0.247
35.678	75.929	NL	0.408	0.000	0.650
35.743	87.182	NL	0.000	0.000	0.000
35.808	87.182	NL	0.497	0.000	0.250
35.873	59.051	NL	0.496	0.000	0.166
35.938	53.144	NL	0.000	0.000	0.000
36.003	53.144	NL	0.734	0.000	0.000
36.069	61.863	NL	1.391	0.000	0.000
36.134	78.742	NL	0.972	0.000	0.000
36.199	78.742	NL	0.576	0.000	0.166
36.264	59.051	NL	0.163	0.000	0.164
36.329	47.800	NL	0.000	0.499	0.000
36.395	47.800	NL	0.169	0.249	0.000
36.460	42.176	NL	0.253	0.166	0.000
36.525	50.613	NL	0.506	0.000	0.000
36.590	50.613	NL	0.413	0.000	0.413
36.655	61.863	NL	0.407	0.000	0.407
36.721	59.051	NL	0.492	0.000	0.000
36.786	59.051	NL	0.909	0.000	0.177
36.851	53.144	NL	0.742	0.000	0.000
36.916	44.285	NL	0.000	0.000	0.495
36.981	44.285	NL	0.571	0.000	0.496
37.047	53.144	NL	0.658	0.000	0.330
37.112	53.144	NL	0.000	0.000	0.000
37.177	67.489	NL	0.478	0.000	0.000
37.242	61.863	NL	0.718	0.000	0.163
37.307	61.863	NL	1.928	0.000	0.000
37.373	59.051	NL	0.729	0.167	0.000
37.438	61.863	NL	0.638	0.000	0.000
37.503	61.863	NL	0.473	0.000	0.000
37.568	36.551	NL	0.000	0.000	0.000
37.633	81.555	NL	0.164	0.000	0.000
37.699	81.555	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
37.764	53.144	NL	0.659	0.000	0.000
37.829	56.238	NL	0.328	0.000	0.000
37.894	56.238	NL	0.000	0.000	0.000
37.959	47.800	NL	0.163	0.000	0.163
38.025	84.369	NL	0.245	0.000	0.244
38.090	84.369	NL	0.000	0.000	0.488
38.155	87.182	NL	0.000	0.000	0.247
38.220	92.809	NL	0.000	0.000	0.165
38.285	92.809	NL	0.000	0.000	0.000
38.351	59.051	NL	0.323	0.000	0.161
38.416	80.992	NL	0.485	0.000	0.241
38.481	80.992	NL	0.978	0.000	0.483
38.546	56.238	NL	0.657	0.000	0.163
38.611	98.437	NL	0.573	0.000	0.244
38.677	98.437	NL	0.000	0.000	0.496
38.742	73.115	NL	0.573	0.000	0.660
38.807	73.115	NL	0.575	0.000	0.577
38.872	78.742	NL	0.000	0.000	0.492
38.938	81.555	NL	0.000	0.000	0.000
39.003	81.555	NL	0.000	0.000	0.000
39.068	101.251	NL	0.000	0.000	0.000
39.133	80.992	NL	0.000	0.000	0.000
39.198	80.992	NL	0.339	0.000	0.000
39.264	81.555	NL	0.500	0.000	0.500
39.329	61.863	NL	0.730	0.000	0.571
39.394	61.863	NL	1.049	0.000	0.569
39.459	53.144	NL	0.491	0.000	0.000
39.524	61.863	NL	0.000	0.000	0.000
39.589	61.863	NL	0.000	0.000	0.000
39.655	59.051	NL	0.000	0.000	0.000
39.720	40.488	NL	0.321	0.000	0.640
39.785	40.488	NL	0.000	0.000	0.960
39.850	64.676	NL	0.000	0.000	0.965
39.916	50.613	NL	0.649	0.000	0.000
39.981	50.613	NL	0.000	0.000	0.000
40.046	50.613	NL	0.000	0.000	0.000
40.111	78.742	NL	0.000	0.000	0.000
40.176	78.742	NL	0.000	0.000	0.000
40.241	93.653	NL	0.000	0.000	0.000
40.307	56.238	NL	0.000	0.000	0.000
40.372	56.238	NL	0.000	0.000	0.000
40.437	47.800	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
40.502	47.800	NL	0.342	0.012	0.357
40.568	53.144	NL	0.228	0.172	0.505
40.633	64.676	NL	0.000	0.000	0.000
40.698	64.676	NL	0.160	0.000	0.000
40.763	44.988	NL	0.405	0.000	0.000
40.828	45.550	NL	0.000	0.000	0.000
40.893	45.550	NL	0.162	0.000	0.000
40.959	36.551	NL	0.405	0.000	0.000
41.024	61.863	NL	0.000	0.000	0.000
41.089	61.863	NL	0.328	0.000	0.000
41.154	44.988	NL	0.492	0.000	0.000
41.219	53.144	NL	0.984	0.000	0.000
41.285	53.144	NL	0.243	0.164	0.000
41.350	47.800	NL	0.162	0.246	0.000
41.415	53.425	NL	0.000	0.000	0.000
41.480	53.425	NL	0.157	0.000	0.157
41.545	50.613	NL	0.396	0.000	0.236
41.611	65.801	NL	0.000	0.000	0.000
41.676	65.801	NL	0.720	0.000	0.162
41.741	53.425	NL	0.401	0.000	0.402
41.806	61.863	NL	0.000	0.000	0.487
41.871	61.863	NL	0.319	0.000	0.000
41.937	45.550	NL	0.240	0.000	0.000
42.002	42.176	NL	0.000	0.000	0.000
42.067	42.176	NL	0.162	0.000	0.000
42.132	53.144	NL	0.243	0.000	0.000
42.197	53.144	NL	0.485	0.000	0.000
42.263	30.927	NL	0.000	0.000	0.000
42.328	47.800	NL	0.000	0.000	0.000
42.393	47.800	NL	0.000	0.000	0.000
42.458	50.613	NL	0.000	0.000	0.000
42.523	43.019	NL	0.000	0.000	0.000
42.589	43.019	NL	0.481	0.000	0.000
42.654	61.863	NL	0.241	0.000	0.000
42.719	32.895	NL	0.160	0.000	0.000
42.784	32.895	NL	0.000	0.000	0.000
42.849	39.363	NL	0.485	0.000	0.237
42.915	56.238	NL	0.242	0.000	0.158
42.980	56.238	NL	0.485	0.000	0.000
43.045	48.081	NL	0.163	0.000	0.000
43.110	47.800	NL	0.406	0.000	0.000
43.175	47.800	NL	0.000	0.000	0.484

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
43.241	33.739	NL	0.162	0.000	0.404
43.306	47.800	NL	0.243	0.000	0.404
43.371	47.800	NL	0.490	0.000	0.000
43.436	45.550	NL	0.245	0.000	0.000
43.501	28.115	NL	0.163	0.000	0.000
43.567	28.115	NL	0.962	0.000	0.000
43.632	42.176	NL	0.642	0.000	0.161
43.697	22.491	NL	0.887	0.000	0.404
43.762	22.491	NL	0.000	0.000	0.000
43.827	45.550	NL	0.323	0.000	0.000
43.893	45.550	NL	0.645	0.000	0.160
43.958	39.363	NL	0.483	0.000	0.000
44.023	22.773	NL	0.000	0.000	0.000
44.088	22.773	NL	0.000	0.000	0.000
44.153	36.551	NL	0.000	0.000	0.475
44.219	33.739	NL	0.162	0.000	0.238
44.284	33.739	NL	0.242	0.000	0.158
44.349	25.303	NL	0.485	0.000	0.000
44.414	36.551	NL	0.241	0.000	0.000
44.479	36.551	NL	0.161	0.000	0.000
44.545	39.363	NL	0.000	0.473	0.000
44.610	25.303	NL	0.161	0.237	0.000
44.675	25.303	NL	0.000	0.158	0.000
44.740	56.238	NL	0.475	0.000	0.000
44.806	30.927	NL	0.401	0.000	0.236
44.871	30.927	NL	0.403	0.000	0.157
44.936	17.712	NL	0.000	0.000	0.000
45.001	33.739	NL	0.000	0.000	0.000
45.066	33.739	NL	0.000	0.000	0.000
45.131	32.895	NL	0.478	0.000	0.000
45.197	16.868	NL	0.404	0.000	0.164
45.262	16.868	NL	0.318	0.000	0.000
45.327	42.176	NL	0.000	0.000	0.000
45.392	33.739	NL	0.164	0.000	0.000
45.458	33.739	NL	0.000	0.000	0.000
45.523	45.550	NL	1.465	0.000	0.000
45.588	45.550	NL	0.733	0.000	0.000
45.653	33.739	NL	0.488	0.000	0.000
45.718	22.491	NL	0.000	0.000	0.000
45.783	22.491	NL	0.161	0.000	0.000
45.849	73.115	NL	0.403	0.000	0.000
45.914	37.957	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
45.979	37.957	NL	0.161	0.158	0.161
46.044	30.927	NL	0.398	0.237	0.000
46.109	36.551	NL	0.000	0.474	0.000
46.175	36.551	NL	0.237	0.000	0.163
46.240	60.738	NL	0.318	0.000	0.000
46.305	25.303	NL	0.000	0.000	0.000
46.370	25.303	NL	0.324	0.000	0.163
46.436	50.613	NL	0.486	0.000	0.245
46.501	55.675	NL	0.490	0.000	0.970
46.566	55.675	NL	0.000	0.000	0.240
46.631	33.739	NL	0.000	0.000	0.160
46.696	33.739	NL	0.000	0.000	0.000
46.761	33.739	NL	0.158	0.000	0.000
46.827	50.613	NL	0.000	0.000	0.000
46.892	67.489	NL	0.000	0.000	0.000
46.957	67.489	NL	0.164	0.000	0.000
47.022	35.426	NL	0.000	0.000	0.000
47.088	44.988	NL	0.475	0.000	0.000
47.153	44.988	NL	0.400	0.000	0.000
47.218	28.115	NL	0.158	0.000	0.000
47.283	28.115	NL	0.000	0.000	0.000
47.348	40.488	NL	0.402	0.000	0.165
47.413	56.238	NL	0.405	0.000	0.247
47.479	56.238	NL	0.971	0.000	0.494
47.544	50.613	NL	0.481	0.000	0.000
47.609	37.957	NL	0.320	0.000	0.163
47.674	37.957	NL	0.000	0.000	0.000
47.739	47.800	NL	0.741	0.000	0.000
47.805	56.238	NL	0.661	0.000	0.000
47.870	56.238	NL	0.000	0.000	0.000
47.935	59.051	NL	0.492	0.000	0.164
48.000	50.613	NL	0.650	0.000	0.246
48.065	50.613	NL	1.467	0.000	0.000
48.131	33.739	NL	0.242	0.000	0.240
48.196	53.425	NL	0.162	0.000	0.160
48.261	53.425	NL	0.948	0.000	0.000
48.326	44.988	NL	0.474	0.000	0.000
48.391	50.613	NL	0.316	0.000	0.000
48.457	50.613	NL	0.000	0.000	0.474
48.522	28.115	NL	0.165	0.000	0.237
48.587	32.895	NL	0.247	0.000	0.158
48.652	32.895	NL	0.494	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
48.717	42.176	NL	0.491	0.000	0.000
48.783	30.927	NL	0.247	0.000	0.000
48.848	30.927	NL	0.971	0.000	0.000
48.913	35.426	NL	0.238	0.000	0.237
48.978	47.800	NL	0.159	0.000	0.158
49.043	47.800	NL	0.000	0.000	0.000
49.109	56.238	NL	0.000	0.000	0.000
49.174	56.238	NL	0.000	0.000	0.000
49.239	32.895	NL	0.000	0.000	0.000
49.304	30.927	NL	0.403	0.000	0.000
49.369	30.927	NL	0.408	0.000	0.000
49.435	47.800	NL	0.501	0.000	0.000
49.500	65.801	NL	0.167	0.000	0.000
49.565	65.801	NL	0.251	0.000	0.000
49.630	53.425	NL	0.000	0.000	0.000
49.695	53.425	NL	0.000	0.000	0.000
49.761	53.425	NL	0.000	0.000	0.000
49.826	50.613	NL	0.000	0.000	0.000
49.891	75.929	NL	0.338	0.000	0.000
49.956	75.929	NL	0.411	0.000	0.000
50.021	53.425	NL	0.977	0.000	0.000
50.087	75.929	NL	0.746	0.000	0.000
50.152	75.929	NL	0.411	0.000	0.000
50.217	53.425	NL	0.506	0.000	0.000
50.282	50.613	NL	0.240	0.000	0.000
50.347	50.613	NL	0.319	0.000	0.000
50.413	53.425	NL	0.476	0.000	0.000
50.478	59.051	NL	0.641	0.000	0.166
50.543	59.051	NL	0.315	0.000	0.249
50.608	68.333	NL	0.000	0.000	0.000
50.674	59.051	NL	0.167	0.000	0.000
50.739	59.051	NL	0.000	0.000	0.000
50.804	56.238	NL	0.466	0.000	0.000
50.869	56.238	NL	0.233	0.000	0.403
50.934	81.555	NL	0.155	0.000	0.568
50.999	43.019	NL	0.000	0.473	0.504
51.065	43.019	NL	0.000	0.404	0.166
51.130	89.996	NL	0.156	0.408	0.000
51.195	56.238	NL	0.000	0.501	0.473
51.260	56.238	NL	0.403	0.000	0.574
51.326	55.675	NL	0.565	0.000	0.663
51.391	70.302	NL	0.000	0.467	1.011

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
51.456	70.302	NL	0.168	0.469	0.000
51.521	61.863	NL	0.156	0.313	0.000
51.586	53.144	NL	0.000	0.000	0.000
51.651	53.144	NL	0.342	0.000	0.000
51.717	47.800	NL	0.259	0.000	0.000
51.782	75.929	NL	0.517	0.000	0.000
51.847	75.929	NL	0.000	0.000	0.000
51.912	73.397	NL	0.000	0.000	0.000
51.978	56.238	NL	0.479	0.000	0.000
52.043	56.238	NL	0.410	0.000	0.413
52.108	39.363	NL	0.416	0.000	0.160
52.173	59.051	NL	0.965	0.000	0.000
52.238	59.051	NL	0.482	0.000	0.000
52.303	61.863	NL	0.322	0.000	0.000
52.369	60.738	NL	0.000	0.000	0.000
52.434	60.738	NL	0.238	0.000	0.000
52.499	53.425	NL	0.158	0.000	0.000
52.564	53.425	NL	0.000	0.000	0.000
52.629	73.115	NL	0.233	0.000	0.000
52.695	50.613	NL	0.309	0.000	0.000
52.760	50.613	NL	0.470	0.000	0.000
52.825	50.613	NL	0.574	0.000	0.000
52.890	67.489	NL	0.409	0.000	0.000
52.956	67.489	NL	0.000	0.000	0.000
53.021	61.863	NL	0.236	0.000	0.171
53.086	40.488	NL	0.469	0.000	0.256
53.151	40.488	NL	0.000	0.000	0.000
53.216	70.302	NL	0.170	0.000	0.000
53.282	67.489	NL	0.413	0.000	0.000
53.347	67.489	NL	0.975	0.000	0.000
53.412	40.488	NL	0.406	0.000	0.000
53.477	47.800	NL	0.571	0.000	0.000
53.542	47.800	NL	0.000	0.000	0.000
53.607	78.742	NL	0.406	0.000	0.000
53.673	73.397	NL	0.412	0.000	0.157
53.738	73.397	NL	0.000	0.000	0.000
53.803	47.800	NL	0.170	0.000	0.000
53.868	50.613	NL	0.255	0.000	0.000
53.933	50.613	NL	0.979	0.000	0.000
53.999	55.675	NL	0.234	0.000	0.000
54.064	56.238	NL	0.315	0.000	0.000
54.129	56.238	NL	0.476	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
54.194	75.929	NL	0.583	0.000	0.000
54.259	75.929	NL	0.579	0.000	0.000
54.325	70.302	NL	0.489	0.000	0.000
54.390	53.425	NL	0.244	0.000	0.170
54.455	53.425	NL	0.163	0.000	0.413
54.520	55.675	NL	0.474	0.000	0.000
54.586	64.676	NL	0.818	0.000	0.167
54.651	64.676	NL	1.146	0.158	0.251
54.716	64.676	NL	0.473	0.000	0.974
54.781	70.302	NL	0.406	0.000	0.406
54.846	70.302	NL	0.158	0.000	0.158
54.912	64.676	NL	0.468	0.000	0.000
54.977	75.929	NL	0.406	0.000	0.172
55.042	75.929	NL	0.414	0.000	0.258
55.107	61.863	NL	0.517	0.000	0.517
55.172	70.302	NL	0.168	0.000	0.000
55.238	70.302	NL	0.154	0.000	0.000
55.303	65.801	NL	0.466	0.000	0.000
55.368	70.302	NL	0.572	0.000	0.000
55.433	70.302	NL	0.663	0.000	0.000
55.498	50.613	NL	1.015	0.000	0.000
55.563	45.550	NL	0.339	0.000	0.000
55.629	45.550	NL	0.413	0.000	0.158
55.694	78.742	NL	0.000	0.000	0.000
55.759	59.051	NL	0.233	0.000	0.168
55.824	59.051	NL	0.155	0.000	0.000
55.889	80.992	NL	0.000	0.000	0.000
55.955	80.992	NL	0.000	0.000	0.000
56.020	59.051	NL	0.155	0.000	0.000
56.085	53.425	NL	0.000	0.000	0.000
56.150	53.425	NL	0.412	0.000	0.171
56.216	65.801	NL	0.417	0.000	0.257
56.281	50.613	NL	0.000	0.000	0.000
56.346	50.613	NL	0.171	0.237	0.173
56.411	61.863	NL	0.000	0.158	0.259
56.476	61.863	NL	0.000	0.000	0.000
56.542	61.863	NL	0.754	0.000	0.000
56.607	78.460	NL	0.833	0.000	0.000
56.672	61.863	NL	0.521	0.000	0.481
56.737	61.863	NL	0.239	0.000	0.241
56.802	67.489	NL	0.159	0.000	0.160
56.868	70.302	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
56.933	70.302	NL	0.169	0.169	0.168
56.998	64.676	NL	0.156	0.000	0.252
57.063	37.957	NL	0.000	0.000	0.462
57.128	37.957	NL	0.000	0.000	0.865
57.194	56.238	NL	0.157	0.000	0.717
57.259	70.302	NL	0.000	0.000	0.000
57.324	70.302	NL	0.169	0.000	0.169
57.389	63.270	NL	0.254	0.000	0.254
57.454	64.676	NL	0.508	0.000	0.508
57.520	64.676	NL	0.340	0.000	0.171
57.585	64.676	NL	0.157	0.000	0.257
57.650	64.676	NL	0.000	0.000	0.000
57.715	58.207	NL	0.170	0.000	0.171
57.780	70.302	NL	0.409	0.000	0.256
57.846	70.302	NL	0.000	0.000	0.513
57.911	39.363	NL	0.403	0.000	0.405
57.976	63.270	NL	0.410	0.000	0.413
58.041	63.270	NL	0.000	0.000	0.513
58.106	59.051	NL	0.235	0.000	0.000
58.172	67.489	NL	0.470	0.000	0.000
58.237	67.489	NL	0.000	0.000	0.000
58.302	83.525	NL	0.582	0.000	0.000
58.367	67.489	NL	0.676	0.000	0.000
58.432	67.489	NL	0.945	0.000	0.000
58.498	50.613	NL	0.880	0.172	0.000
58.563	64.676	NL	0.473	0.258	0.157
58.628	64.676	NL	0.957	0.000	0.000
58.693	68.333	NL	0.478	0.000	0.240
58.758	64.676	NL	0.644	0.000	0.160
58.824	64.676	NL	0.000	0.000	0.000
58.889	81.555	NL	0.344	0.000	0.000
58.954	75.929	NL	0.674	0.000	0.000
59.019	75.929	NL	0.993	0.000	0.000
59.084	78.742	NL	0.648	0.000	0.000
59.150	101.251	NL	0.508	0.000	0.000
59.215	101.251	NL	0.319	0.000	0.000
59.280	104.065	NL	0.340	0.000	0.343
59.345	104.065	NL	0.258	0.000	0.515
59.410	53.425	NL	0.000	0.000	0.515
59.476	67.489	NL	0.641	0.000	0.000
59.541	67.489	NL	0.488	0.000	0.238
59.606	78.460	NL	0.157	0.000	0.159

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
59.671	44.988	NL	0.975	0.000	0.170
59.736	44.988	NL	0.739	0.000	0.254
59.801	60.738	NL	0.659	0.000	0.000
59.867	75.929	NL	0.000	0.000	0.638
59.932	75.929	NL	0.000	0.000	0.234
59.997	75.929	NL	0.000	0.000	0.156
60.062	70.302	NL	0.000	0.000	0.000
60.127	70.302	NL	0.000	0.000	0.000
60.193	70.865	NL	0.000	0.000	0.000
60.258	75.929	NL	0.676	0.000	0.000
60.323	75.929	NL	0.758	0.000	0.000
60.388	68.333	NL	0.509	0.000	0.000
60.454	87.182	NL	0.342	0.000	0.000
60.519	87.182	NL	0.257	0.000	0.000
60.584	78.742	NL	0.158	0.000	0.000
60.649	50.613	NL	0.000	0.000	0.000
60.714	50.613	NL	0.000	0.000	0.000
60.780	68.333	NL	0.000	0.000	0.000
60.845	50.613	NL	0.857	0.000	0.000
60.910	50.613	NL	0.259	0.000	0.242
60.975	78.742	NL	0.000	0.000	0.161
61.040	78.742	NL	0.479	0.173	0.173
61.105	70.302	NL	0.481	0.000	0.000
61.171	70.865	NL	0.321	0.000	0.000
61.236	70.865	NL	0.171	0.000	0.000
61.301	53.425	NL	0.256	0.000	0.000
61.366	56.238	NL	0.000	0.158	0.000
61.431	56.238	NL	0.000	0.000	0.171
61.497	89.996	NL	0.000	0.000	0.257
61.562	65.801	NL	0.156	0.000	0.514
61.627	65.801	NL	0.640	0.000	0.169
61.692	64.676	NL	0.727	0.000	0.000
61.757	56.238	NL	0.315	0.000	0.000
61.823	56.238	NL	0.800	0.000	0.000
61.888	59.051	NL	0.738	0.000	0.000
61.953	65.801	NL	0.154	0.000	0.000
62.018	65.801	NL	0.000	0.000	0.171
62.084	56.238	NL	0.000	0.000	0.000
62.149	64.676	NL	0.000	0.000	0.000
62.214	64.676	NL	0.647	0.000	1.117
62.279	78.460	NL	0.496	0.000	0.728
62.344	53.425	NL	0.158	0.000	0.824

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
62.410	53.425	NL	0.639	0.000	0.000
62.475	39.363	NL	0.235	0.000	0.000
62.540	70.865	NL	0.157	0.000	0.000
62.605	70.865	NL	0.171	0.000	0.344
62.670	59.051	NL	0.256	0.000	0.494
62.736	59.051	NL	0.000	0.000	0.673
62.801	56.238	NL	0.475	0.171	0.475
62.866	58.207	NL	0.238	0.257	0.238
62.931	58.207	NL	0.158	0.000	0.158
62.996	59.051	NL	0.172	0.000	0.000
63.062	40.488	NL	0.258	0.000	0.000
63.127	40.488	NL	0.675	0.000	0.000
63.192	44.988	NL	0.171	0.000	0.000
63.257	25.303	NL	0.498	0.000	0.241
63.322	25.303	NL	0.161	0.160	0.161
63.388	73.115	NL	0.339	0.000	0.172
63.453	56.238	NL	0.508	0.000	0.000
63.518	56.238	NL	0.507	0.000	0.000
63.583	27.834	NL	0.980	0.000	0.000
63.648	28.115	NL	0.236	0.000	0.000
63.714	28.115	NL	0.157	0.000	0.000
63.779	33.739	NL	0.000	0.000	0.000
63.844	28.115	NL	0.000	0.000	0.000
63.909	28.115	NL	0.000	0.000	0.000
63.974	7.590	NL	0.167	0.000	0.335
64.039	30.927	NL	0.000	0.000	0.000
64.105	30.927	NL	0.000	0.000	0.000
64.170	19.680	NL	0.000	0.000	0.000
64.235	17.712	NL	0.000	0.000	0.000
64.300	17.712	NL	0.000	0.000	0.000
64.366	33.739	NL	0.000	0.000	0.337
64.431	33.739	NL	0.000	0.000	0.506
64.496	36.551	NL	0.156	0.000	0.503
64.561	22.773	NL	0.169	0.000	0.000
64.626	22.773	NL	0.253	0.000	0.000
64.691	19.680	NL	0.506	0.000	0.000
64.757	22.491	NL	0.000	0.000	0.171
64.822	22.491	NL	0.000	0.000	0.257
64.887	25.303	NL	0.000	0.000	0.514
64.952	33.739	NL	0.000	0.000	0.000
65.018	33.739	NL	0.000	0.000	0.000
65.083	44.988	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
65.148	27.834	NL	0.000	0.000	0.000
65.213	27.834	NL	0.000	0.000	0.000
65.278	47.800	NL	0.000	0.000	0.000
65.344	25.303	NL	0.000	0.000	0.000
65.409	25.303	NL	0.000	0.000	0.241
65.474	25.303	NL	0.000	0.000	0.161
65.539	25.303	NL	0.000	0.000	0.000
65.604	25.303	NL	0.000	0.000	0.000
65.670	44.988	NL	0.000	0.000	0.000
65.735	25.303	NL	0.000	0.000	0.000
65.800	25.303	NL	0.000	0.000	0.000
65.865	44.988	NL	0.000	0.000	0.000
65.930	28.115	NL	0.470	0.000	0.000
65.995	28.115	NL	0.235	0.000	0.000
66.061	22.773	NL	0.157	0.000	0.000
66.126	22.773	NL	0.170	0.000	0.000
66.191	33.739	NL	0.256	0.000	0.000
66.256	10.121	NL	0.000	0.000	0.000
66.322	10.121	NL	0.636	0.000	0.000
66.387	19.680	NL	0.489	0.000	0.000
66.452	19.680	NL	0.667	0.000	0.157
66.517	19.680	NL	0.000	0.000	0.000
66.582	15.181	NL	0.000	0.000	0.000
66.648	19.680	NL	0.000	0.000	0.000
66.713	19.680	NL	0.171	0.000	0.000
66.778	14.057	NL	0.491	0.000	0.000
66.843	27.834	NL	0.000	0.000	0.000
66.908	27.834	NL	0.157	0.000	0.000
66.973	30.927	NL	0.000	0.000	0.000
67.039	22.491	NL	0.000	0.000	0.000
67.104	22.491	NL	0.000	0.171	0.000
67.169	27.834	NL	0.000	0.257	0.000
67.234	19.680	NL	0.000	0.000	0.000
67.299	19.680	NL	0.158	0.000	0.000
67.365	30.927	NL	0.000	0.000	0.000
67.430	8.434	NL	0.000	0.000	0.241
67.495	8.434	NL	0.000	0.000	0.161
67.560	20.242	NL	0.000	0.000	0.000
67.626	16.868	NL	0.000	0.000	0.000
67.691	16.868	NL	0.000	0.000	0.171
67.756	8.434	NL	0.000	0.000	0.257
67.821	8.434	NL	0.000	0.000	0.513

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
67.886	16.868	NL	0.168	0.000	0.000
67.951	16.868	NL	0.733	0.000	0.000
68.017	16.868	NL	0.241	0.000	0.000
68.082	32.895	NL	0.161	0.000	0.000
68.147	28.115	NL	0.000	0.000	0.000
68.212	28.115	NL	0.000	0.000	0.000
68.277	28.115	NL	0.168	0.000	0.168
68.343	53.144	NL	0.252	0.000	0.000
68.408	53.144	NL	0.234	0.000	0.000
68.473	22.491	NL	0.156	0.000	0.169
68.538	36.551	NL	0.000	0.000	0.253
68.604	36.551	NL	0.236	0.000	0.506
68.669	30.365	NL	0.325	0.000	0.000
68.734	33.739	NL	0.252	0.000	0.000
68.799	33.739	NL	0.000	0.000	0.000
68.864	56.238	NL	0.168	0.000	0.000
68.930	22.773	NL	0.252	0.000	0.000
68.995	22.773	NL	0.505	0.000	0.000
69.060	44.988	NL	0.169	0.000	0.000
69.125	53.425	NL	0.465	0.000	0.000
69.190	53.425	NL	0.232	0.000	0.000
69.256	37.957	NL	0.325	0.000	0.158
69.321	56.238	NL	0.255	0.000	0.000
69.386	56.238	NL	0.000	0.000	0.000
69.451	50.613	NL	0.000	0.000	0.000
69.516	50.613	NL	0.000	0.000	0.000
69.582	53.144	NL	0.000	0.000	0.000
69.647	81.555	NL	0.000	0.171	0.172
69.712	81.555	NL	0.000	0.256	0.000
69.777	56.238	NL	0.000	0.000	0.000
69.842	56.238	NL	0.160	0.000	0.000
69.908	56.238	NL	0.000	0.000	0.000
69.973	50.613	NL	0.000	0.000	0.000
70.038	59.051	NL	0.000	0.000	0.000
70.103	59.051	NL	0.000	0.000	0.000
70.168	59.051	NL	0.235	0.000	0.000
70.233	78.742	NL	0.824	0.000	0.000
70.299	78.742	NL	0.507	0.000	0.000
70.364	43.019	NL	0.743	0.000	0.000
70.429	59.051	NL	0.156	0.000	0.000
70.494	59.051	NL	0.000	0.000	0.000
70.560	59.051	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
70.625	59.051	NL	0.000	0.000	0.168
70.690	59.051	NL	0.468	0.000	0.252
70.755	45.550	NL	0.234	0.000	0.503
70.820	75.929	NL	0.651	0.000	0.000
70.886	75.929	NL	0.000	0.000	0.000
70.951	65.801	NL	0.000	0.000	0.000
71.016	59.051	NL	0.167	0.000	0.000
71.081	59.051	NL	0.000	0.000	0.473
71.146	75.929	NL	0.000	0.000	0.237
71.212	75.929	NL	0.158	0.000	0.316
71.277	68.333	NL	0.470	0.000	0.000
71.342	78.742	NL	0.235	0.000	0.000
71.407	78.742	NL	0.327	0.000	0.000
71.472	106.879	NL	0.000	0.000	0.000
71.537	58.207	NL	0.000	0.000	0.000
71.603	58.207	NL	0.339	0.000	0.000
71.668	75.929	NL	0.509	0.000	0.000
71.733	33.739	NL	0.508	0.000	0.000
71.798	33.739	NL	0.159	0.173	0.000
71.864	45.550	NL	0.486	0.259	0.000
71.929	47.800	NL	0.243	0.518	0.000
71.994	47.800	NL	0.673	0.000	0.000
72.059	81.555	NL	0.986	0.000	0.000
72.124	28.115	NL	0.752	0.000	0.000
72.190	28.115	NL	0.328	0.000	0.159
72.255	47.800	NL	0.000	0.000	0.000
72.320	75.929	NL	0.238	0.000	0.000
72.385	75.929	NL	0.327	0.169	0.000
72.450	75.929	NL	0.723	0.254	0.470
72.515	59.051	NL	0.235	0.507	0.235
72.581	59.051	NL	0.482	0.000	0.157
72.646	44.988	NL	0.000	0.000	0.000
72.711	53.144	NL	0.000	0.000	0.000
72.776	53.144	NL	0.490	0.000	0.324
72.841	70.302	NL	0.968	0.000	0.253
72.907	70.302	NL	0.739	0.000	0.506
72.972	73.397	NL	0.311	0.000	0.000
73.037	64.676	NL	0.468	0.000	0.000
73.102	64.676	NL	0.234	0.000	0.000
73.168	53.425	NL	0.326	0.000	0.000
73.233	43.019	NL	0.255	0.000	0.000
73.298	43.019	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
73.363	44.988	NL	0.168	0.156	0.000
73.428	47.800	NL	0.947	0.000	0.000
73.493	47.800	NL	0.473	0.000	0.000
73.559	53.144	NL	0.316	0.000	0.155
73.624	75.929	NL	0.934	0.000	0.000
73.689	75.929	NL	0.467	0.000	0.000
73.754	73.115	NL	0.482	0.000	0.000
73.820	78.460	NL	0.475	0.000	0.000
73.885	78.460	NL	0.237	0.237	0.000
73.950	56.238	NL	0.499	0.158	0.000
74.015	53.425	NL	0.258	0.000	0.479
74.080	53.425	NL	0.515	0.000	0.239
74.146	53.144	NL	0.000	0.000	0.160
74.211	61.863	NL	0.480	0.000	0.000
74.276	61.863	NL	0.479	0.000	0.000
74.341	64.676	NL	0.490	0.000	0.171
74.406	64.676	NL	0.257	0.000	0.257
74.471	64.676	NL	0.513	0.000	0.513
74.537	61.863	NL	0.659	0.000	0.000
74.602	61.863	NL	0.750	0.000	0.000
74.667	60.738	NL	1.499	0.000	0.000
74.732	47.800	NL	0.000	0.000	0.170
74.798	47.800	NL	0.000	0.000	0.000
74.863	50.613	NL	0.233	0.000	0.233
74.928	45.550	NL	0.155	0.000	0.155
74.993	45.550	NL	0.000	0.000	0.000
75.058	73.115	NL	0.234	0.000	0.000
75.124	33.739	NL	0.325	0.000	0.325
75.189	33.739	NL	0.941	0.000	0.252
75.254	65.801	NL	0.471	0.000	0.503
75.319	61.863	NL	0.976	0.000	0.157
75.384	61.863	NL	0.971	0.000	0.000
75.450	75.929	NL	0.233	0.000	0.000
75.515	63.270	NL	0.156	0.000	0.000
75.580	63.270	NL	0.000	0.000	0.000
75.645	59.051	NL	0.234	0.000	0.000
75.710	55.675	NL	0.156	0.000	0.170
75.775	55.675	NL	0.000	0.000	1.205
75.841	70.302	NL	0.000	0.000	0.710
75.906	56.238	NL	0.171	0.000	0.473
75.971	56.238	NL	0.257	0.000	0.470
76.036	80.992	NL	0.753	0.000	0.235

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
76.102	70.302	NL	0.328	0.000	0.157
76.167	70.302	NL	0.254	0.000	0.000
76.232	59.051	NL	0.745	0.000	0.000
76.297	59.051	NL	0.158	0.000	0.000
76.362	50.613	NL	0.000	0.000	0.000
76.428	73.397	NL	0.000	0.000	0.000
76.493	73.397	NL	0.344	0.170	0.173
76.558	53.425	NL	0.515	0.000	0.259
76.623	67.489	NL	0.759	0.000	0.518
76.688	67.489	NL	0.319	0.000	0.000
76.754	70.302	NL	0.000	0.000	0.000
76.819	44.988	NL	0.000	0.000	0.235
76.884	44.988	NL	0.491	0.000	0.156
76.949	75.929	NL	0.719	0.000	0.000
77.014	64.676	NL	0.469	0.000	0.000
77.079	64.676	NL	0.313	0.000	0.000
77.145	78.742	NL	0.000	0.000	0.470
77.210	58.207	NL	0.000	0.000	0.235
77.275	58.207	NL	0.155	0.000	0.325
77.340	53.425	NL	0.000	0.000	0.253
77.406	73.397	NL	0.000	0.000	0.505
77.471	73.397	NL	0.337	0.166	0.000
77.536	75.929	NL	0.723	0.000	0.000
77.601	61.863	NL	0.470	0.000	0.000
77.666	61.863	NL	0.820	0.000	0.000
77.731	65.801	NL	0.000	0.000	0.945
77.797	75.929	NL	0.000	0.000	0.473
77.862	75.929	NL	0.000	0.000	0.474
77.927	39.363	NL	0.000	0.000	0.000
77.992	39.363	NL	0.000	0.000	0.000
78.058	50.613	NL	0.000	0.000	0.000
78.123	78.742	NL	0.000	0.000	0.000
78.188	78.742	NL	0.000	0.235	0.000
78.253	44.988	NL	0.157	0.157	0.000
78.318	50.613	NL	0.000	0.000	0.474
78.383	50.613	NL	0.241	0.000	0.237
78.449	53.425	NL	0.674	0.000	0.158
78.514	67.489	NL	0.992	0.000	0.000
78.579	67.489	NL	0.240	0.000	0.000
78.644	63.270	NL	0.330	0.000	0.342
78.710	42.176	NL	0.255	0.000	0.731
78.775	42.176	NL	0.510	0.000	0.238

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
78.840	104.065	NL	0.169	0.000	0.159
78.905	33.739	NL	0.000	0.000	0.000
78.970	33.739	NL	0.000	0.000	0.237
79.035	84.369	NL	0.325	0.000	0.650
79.101	60.738	NL	0.251	0.000	0.251
79.166	60.738	NL	0.740	0.000	0.503
79.231	78.742	NL	0.316	0.000	0.157
79.296	65.801	NL	0.468	0.000	0.000
79.362	65.801	NL	0.467	0.000	0.000
79.427	73.115	NL	0.464	0.000	0.503
79.492	53.425	NL	0.000	0.000	0.505
79.557	53.425	NL	0.000	0.000	0.506
79.622	73.115	NL	0.491	0.157	0.336
79.688	73.115	NL	1.204	0.000	0.504
79.753	65.801	NL	1.179	0.000	0.504
79.818	73.115	NL	1.110	0.000	0.170
79.883	73.115	NL	0.251	0.000	0.255
79.948	63.270	NL	0.000	0.000	0.510
80.013	59.051	NL	0.166	0.000	0.157
80.079	59.051	NL	0.249	0.000	0.000
80.144	53.425	NL	0.497	0.000	0.000
80.209	70.865	NL	0.337	0.000	0.170
80.274	70.865	NL	0.000	0.000	0.255
80.340	53.425	NL	0.000	0.000	0.509
80.405	56.238	NL	0.000	0.000	0.000
80.470	56.238	NL	0.000	0.000	0.000
80.535	55.675	NL	0.237	0.000	0.000
80.600	50.613	NL	0.158	0.000	0.000
80.666	50.613	NL	0.000	0.000	0.000
80.731	78.460	NL	0.000	0.000	0.000
80.796	47.800	NL	0.170	0.000	0.000
80.861	47.800	NL	0.000	0.000	0.000
80.926	50.613	NL	0.000	0.000	0.000
80.992	64.676	NL	0.000	0.000	0.000
81.057	64.676	NL	0.479	0.000	0.000
81.122	73.115	NL	0.240	0.000	0.000
81.187	45.550	NL	0.484	0.000	0.157
81.252	45.550	NL	0.250	0.000	0.000
81.317	36.551	NL	0.000	0.000	0.000
81.383	36.551	NL	0.155	0.000	0.167
81.448	64.676	NL	0.470	0.470	0.250
81.513	60.738	NL	0.235	0.235	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
81.578	60.738	NL	0.325	0.157	0.168
81.644	39.363	NL	0.252	0.000	0.252
81.709	47.800	NL	0.470	0.000	0.235
81.774	47.800	NL	0.313	0.000	0.157
81.839	73.397	NL	0.471	0.000	0.000
81.904	47.800	NL	0.236	0.000	0.000
81.970	47.800	NL	0.324	0.000	0.000
82.035	64.676	NL	0.721	0.000	0.000
82.100	43.019	NL	0.236	0.233	0.000
82.165	43.019	NL	0.157	0.155	0.000
82.230	78.742	NL	0.000	0.000	0.000
82.296	58.207	NL	0.000	0.000	0.000
82.361	58.207	NL	0.514	0.000	0.000
82.426	67.489	NL	0.940	0.000	0.000
82.491	47.800	NL	0.235	0.000	0.000
82.556	47.800	NL	0.157	0.000	0.000
82.621	43.019	NL	0.471	0.000	0.000
82.687	42.176	NL	0.236	0.000	0.000
82.752	42.176	NL	0.157	0.000	0.336
82.817	47.800	NL	0.479	0.000	0.000
82.882	27.834	NL	0.479	0.000	0.000
82.948	27.834	NL	0.320	0.000	0.170
83.013	25.303	NL	0.000	0.000	0.255
83.078	25.303	NL	0.000	0.000	0.510
83.143	28.115	NL	0.000	0.000	0.000
83.208	28.115	NL	0.000	0.000	0.000
83.273	28.115	NL	0.000	0.000	0.000
83.339	35.426	NL	0.160	0.000	0.000
83.404	33.739	NL	0.469	0.000	0.000
83.469	33.739	NL	0.235	0.000	0.000
83.534	30.927	NL	0.156	0.000	0.000
83.600	16.868	NL	0.000	0.000	0.000
83.665	16.868	NL	0.000	0.000	0.000
83.730	45.550	NL	0.000	0.000	0.000
83.795	28.115	NL	0.000	0.000	0.000
83.860	28.115	NL	0.000	0.000	0.000
83.925	33.739	NL	0.167	0.000	0.000
83.991	40.488	NL	0.250	0.000	0.000
84.056	40.488	NL	0.000	0.000	0.000
84.121	33.739	NL	0.168	0.000	0.000
84.186	61.863	NL	0.252	0.000	0.000
84.251	61.863	NL	0.740	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
84.317	43.019	NL	0.313	0.000	0.000
84.382	70.302	NL	0.000	0.000	0.000
84.447	70.302	NL	0.236	0.000	0.000
84.512	68.333	NL	0.157	0.000	0.156
84.577	44.988	NL	0.468	0.000	0.000
84.643	44.988	NL	0.234	0.000	0.000
84.708	70.302	NL	0.323	0.000	0.165
84.773	70.302	NL	0.250	0.000	0.248
84.838	50.613	NL	0.501	0.000	0.000
84.904	55.675	NL	0.161	0.000	0.000
84.969	55.675	NL	0.000	0.000	0.000
85.034	64.676	NL	0.000	0.000	0.237
85.099	47.800	NL	0.159	0.000	0.158
85.164	47.800	NL	0.000	0.000	0.000
85.229	47.800	NL	0.238	0.000	0.000
85.295	61.863	NL	0.325	0.000	0.332
85.360	61.863	NL	0.953	0.000	0.248
85.425	73.115	NL	0.477	0.000	0.496
85.490	58.207	NL	0.655	0.000	0.000
85.555	58.207	NL	0.979	0.000	0.000
85.621	59.051	NL	0.236	0.000	0.000
85.686	56.238	NL	0.325	0.000	0.000
85.751	56.238	NL	0.251	0.000	0.000
85.816	45.550	NL	0.503	0.000	0.000
85.882	65.801	NL	0.000	0.000	0.166
85.947	65.801	NL	0.000	0.000	0.000
86.012	36.551	NL	0.000	0.000	0.000
86.077	30.365	NL	0.000	0.000	0.000
86.142	30.365	NL	0.468	0.000	0.000
86.208	37.957	NL	0.234	0.239	0.000
86.273	16.868	NL	0.322	0.160	0.157
86.338	16.868	NL	0.248	0.000	0.469
86.403	55.675	NL	0.000	0.000	0.468
86.468	55.675	NL	0.170	0.000	0.482
86.534	50.613	NL	0.255	0.000	0.255
86.599	67.489	NL	0.000	0.000	0.000
86.664	67.489	NL	0.000	0.000	0.341
86.729	63.270	NL	0.000	0.000	0.982
86.794	61.863	NL	0.000	0.000	1.258
86.859	61.863	NL	0.000	0.156	0.312
86.925	70.865	NL	0.472	0.000	0.000
86.990	53.425	NL	0.236	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
87.055	53.425	NL	0.653	0.000	0.000
87.120	50.613	NL	0.494	0.000	0.000
87.186	48.081	NL	0.988	0.000	0.000
87.251	48.081	NL	0.204	0.000	0.162
87.316	67.489	NL	0.307	0.000	0.244
87.381	68.333	NL	0.613	0.000	0.000
87.446	68.333	NL	0.325	0.000	0.000
87.511	70.302	NL	1.208	0.000	0.958
87.577	60.738	NL	1.217	0.000	0.479
87.642	60.738	NL	0.641	0.000	0.476
87.707	73.115	NL	0.000	0.000	0.000
87.772	78.460	NL	0.000	0.000	0.000
87.838	78.460	NL	0.163	0.000	0.151
87.903	98.437	NL	0.448	0.000	0.000
87.968	53.144	NL	0.224	0.000	0.000
88.033	53.144	NL	0.312	0.000	0.000
88.098	70.302	NL	0.698	0.000	0.000
88.164	70.302	NL	0.227	0.000	0.000
88.229	58.207	NL	0.313	0.000	0.000
88.294	53.425	NL	0.243	0.000	0.000
88.359	53.425	NL	0.486	0.000	0.000
88.424	50.613	NL	0.159	0.000	0.320
88.490	68.333	NL	0.239	0.000	0.480
88.555	68.333	NL	0.228	0.000	0.482
88.620	61.863	NL	0.463	0.000	0.161
88.685	43.019	NL	0.242	0.000	0.242
88.750	43.019	NL	0.000	0.000	0.000
88.815	68.333	NL	0.000	0.162	0.000
88.881	53.144	NL	0.000	0.244	0.452
88.946	53.144	NL	0.227	0.000	0.226
89.011	73.115	NL	0.151	0.160	0.151
89.076	68.333	NL	0.000	0.000	0.000
89.142	68.333	NL	0.000	0.228	0.000
89.207	55.675	NL	0.622	0.152	0.462
89.272	50.613	NL	0.481	0.000	0.240
89.337	50.613	NL	1.421	0.000	0.481
89.402	88.589	NL	0.815	0.000	0.000
89.468	70.865	NL	1.226	0.000	0.464
89.533	70.865	NL	1.757	0.000	0.232
89.598	67.489	NL	0.465	0.000	0.317
89.663	87.438	NL	0.000	0.000	0.000
89.728	87.438	NL	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
89.793	80.992	NL	0.484	0.000	0.000
89.859	80.992	NL	0.263	0.000	0.466
89.924	75.929	NL	0.525	0.000	0.233
89.989	55.675	NL	0.328	0.000	0.465
90.054	55.675	NL	0.491	0.000	0.239
90.119	73.627	NL	0.000	0.000	0.477
90.185	66.722	NL	0.917	0.000	0.077
90.250	66.722	NL	1.016	0.000	0.000
90.315	96.646	NL	0.621	0.000	0.000
90.380	90.699	NL	0.410	0.010	0.168
90.446	90.699	NL	0.666	0.015	0.251
90.511	69.599	NL	0.395	0.030	0.061
90.576	75.929	NL	-9999.990	-9999.990	-9999.990
90.641	75.929	NL	-9999.990	-9999.990	-9999.990
90.706	62.296	NL	-9999.990	-9999.990	-9999.990
90.771	65.379	NL	-9999.990	-9999.990	-9999.990
90.837	65.379	NL	-9999.990	-9999.990	-9999.990
90.902	60.457	NL	-9999.990	-9999.990	-9999.990
90.967	87.922	NL	-9999.990	-9999.990	-9999.990
91.032	87.922	NL	-9999.990	-9999.990	-9999.990
91.097	66.601	NL	-9999.990	-9999.990	-9999.990
91.163	86.590	NL	-9999.990	-9999.990	-9999.990
91.228	86.590	NL	-9999.990	-9999.990	-9999.990
91.293	69.266	NL	-9999.990	-9999.990	-9999.990
91.358	59.051	NL	-9999.990	-9999.990	-9999.990
91.424	59.051	NL	-9999.990	-9999.990	-9999.990
91.489	61.462	NL	-9999.990	-9999.990	-9999.990
91.554	61.462	NL	-9999.990	-9999.990	-9999.990
91.619	68.333	NL	-9999.990	-9999.990	-9999.990
91.684	70.654	NL	-9999.990	-9999.990	-9999.990
91.750	70.654	NL	-9999.990	-9999.990	-9999.990

Notes

NL - not logged due to steel casing
-9999.99 - no data
API - American Petroleum Institute
cps - counts per second
mS/m - milliSiemens per meter

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
2.249	24.284	-9999.990	-9999.990	-9999.990	-9999.990
2.314	104.173	-9999.990	-9999.990	-9999.990	-9999.990
2.380	104.173	-9999.990	-9999.990	-9999.990	-9999.990
2.445	128.606	-9999.990	-9999.990	-9999.990	-9999.990
2.510	93.254	-9999.990	-9999.990	-9999.990	-9999.990
2.575	93.254	-9999.990	-9999.990	-9999.990	-9999.990
2.640	107.582	-9999.990	-9999.990	-9999.990	-9999.990
2.706	124.468	-9999.990	-9999.990	-9999.990	-9999.990
2.771	124.468	-9999.990	-9999.990	-9999.990	-9999.990
2.836	128.690	-9999.990	-9999.990	-9999.990	-9999.990
2.901	134.179	-9999.990	-9999.990	-9999.990	-9999.990
2.966	134.179	-9999.990	-9999.990	-9999.990	-9999.990
3.032	96.646	-9999.990	-9999.990	-9999.990	-9999.990
3.097	117.368	-9999.990	-9999.990	-9999.990	-9999.990
3.162	117.368	-9999.990	-9999.990	-9999.990	-9999.990
3.227	91.121	-9999.990	-9999.990	-9999.990	-9999.990
3.292	91.121	-45.144	-9999.990	-9999.990	-9999.990
3.358	78.230	-47.624	-9999.990	-9999.990	-9999.990
3.423	113.914	-47.624	-9999.990	-9999.990	-9999.990
3.488	113.914	-40.023	-9999.990	-9999.990	-9999.990
3.553	101.251	6.144	-9999.990	-9999.990	-9999.990
3.618	111.381	6.144	-9999.990	-9999.990	-9999.990
3.684	111.381	5.024	-9999.990	-9999.990	-9999.990
3.749	91.121	12.581	-9999.990	-9999.990	-9999.990
3.814	58.207	12.581	-9999.990	-9999.990	-9999.990
3.879	58.207	13.025	-9999.990	-9999.990	-9999.990
3.944	87.182	10.492	-9999.990	-9999.990	-9999.990
4.010	-9999.990	10.492	-9999.990	-9999.990	-9999.990
4.075	-9999.990	-14.179	0.997	0.000	0.000
4.140	106.879	-40.672	1.450	0.013	0.038
4.205	84.369	-40.672	0.761	0.008	0.025
4.270	84.369	-43.784	0.000	0.000	0.000
4.336	136.712	-46.104	0.717	0.000	0.000
4.401	129.746	-46.104	0.634	0.323	0.000
4.466	129.746	-45.695	0.000	0.000	0.000
4.531	129.112	-45.695	0.251	0.000	0.000
4.596	108.849	-45.295	0.335	0.000	0.164
4.662	108.849	-45.344	0.000	0.000	0.246
4.727	140.653	-45.344	0.000	0.000	0.493
4.792	108.849	-43.250	0.503	0.000	0.000
4.857	108.849	-38.894	1.747	0.000	0.000
4.922	96.186	-38.894	1.501	0.251	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
4.988	96.186	-39.423	1.170	0.167	0.340
5.053	139.246	-43.739	0.508	0.502	0.510
5.118	121.973	-43.739	0.510	0.251	1.020
5.183	121.973	-43.339	1.177	0.167	0.332
5.248	149.380	-43.695	1.007	0.000	0.000
5.314	132.209	-43.695	0.762	0.000	0.000
5.379	132.209	-41.944	0.506	0.167	0.000
5.444	111.381	-39.694	0.251	0.251	0.000
5.509	115.321	-39.694	0.000	0.000	0.000
5.574	115.321	-42.424	0.512	0.000	0.000
5.640	126.579	-43.917	1.022	0.000	0.509
5.705	120.950	-43.917	0.764	0.000	0.255
5.770	120.950	-45.344	0.682	0.000	0.170
5.835	139.246	-46.051	0.769	0.000	0.000
5.900	104.065	-46.051	0.769	0.000	0.000
5.966	104.065	-46.851	0.841	0.000	0.169
6.031	116.447	-45.664	0.498	0.000	0.000
6.096	132.209	-45.664	1.254	0.000	0.257
6.161	132.209	-48.540	0.837	0.000	0.171
6.226	120.950	-48.540	0.248	0.000	0.000
6.292	-9999.990	-44.904	0.497	0.000	0.000
6.357	-9999.990	-44.584	0.000	0.000	0.000
6.422	140.653	-44.584	1.512	0.000	0.000
6.487	137.838	-36.716	1.507	0.000	0.250
6.552	137.838	-49.865	1.171	0.000	0.167
6.618	111.381	-49.865	0.000	0.000	0.000
6.683	111.381	-46.318	0.000	0.000	0.000
6.748	134.179	-46.264	1.335	0.000	0.000
6.813	120.950	-46.264	1.000	0.000	0.000
6.878	120.950	-46.495	1.006	0.000	0.507
6.944	111.381	-46.584	1.668	0.000	0.169
7.009	109.693	-46.584	0.495	0.000	0.000
7.074	109.693	-48.385	0.498	0.000	0.000
7.139	154.448	-50.096	0.332	0.000	0.000
7.204	84.369	-50.096	0.000	0.000	0.000
7.270	84.369	-45.162	0.000	0.000	0.000
7.335	134.179	-48.451	0.000	0.000	0.000
7.400	120.950	-48.451	1.002	0.000	0.168
7.465	120.950	-45.504	0.751	0.000	0.253
7.530	111.381	-39.917	0.334	0.000	0.505
7.596	95.623	-39.917	1.342	0.000	0.168
7.661	95.623	-19.558	2.021	0.000	0.253

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
7.726	93.653	16.986	2.196	0.000	0.000
7.791	101.251	16.986	1.018	0.000	0.000
7.856	101.251	4.446	1.022	0.000	0.000
7.922	81.555	4.446	0.169	0.000	0.000
7.987	91.121	-29.902	0.000	0.000	0.000
8.052	91.121	-21.602	0.255	0.000	0.000
8.117	92.809	-21.602	0.170	0.000	0.169
8.182	96.186	9.385	0.511	0.000	0.168
8.248	96.186	9.336	1.022	0.000	0.000
8.313	98.437	9.336	0.847	0.000	0.168
8.378	98.437	11.381	0.675	0.000	0.000
8.443	78.742	16.666	0.748	0.000	0.000
8.508	80.992	16.666	0.668	0.000	0.000
8.574	80.992	14.892	2.005	0.000	0.164
8.639	73.115	9.065	1.249	0.000	0.246
8.704	98.718	9.065	0.666	0.000	0.491
8.769	98.718	12.003	1.169	0.000	0.167
8.834	81.555	13.781	1.002	0.000	0.250
8.900	88.589	13.781	0.168	0.000	0.000
8.965	88.589	16.626	0.663	0.000	0.169
9.030	95.623	16.137	1.006	0.000	0.254
9.095	78.460	16.137	0.670	0.000	0.508
9.160	78.460	13.337	0.166	0.000	0.166
9.226	95.623	16.826	0.249	0.000	0.249
9.291	98.718	16.826	0.000	0.000	0.000
9.356	98.718	16.715	1.664	0.000	0.000
9.421	75.929	15.959	1.249	0.000	0.000
9.486	78.460	15.959	1.332	0.000	0.000
9.552	78.460	17.546	0.338	0.000	0.000
9.617	84.369	17.546	0.254	0.000	0.000
9.682	98.718	17.782	0.166	0.166	0.166
9.747	98.718	19.515	0.168	0.000	0.000
9.812	58.207	19.515	0.256	0.000	0.000
9.878	75.929	18.466	0.339	0.000	0.000
9.943	75.929	17.204	1.165	0.000	0.500
10.008	68.333	17.204	0.749	0.000	0.250
10.073	68.333	20.938	0.333	0.000	0.167
10.138	89.996	22.147	0.339	0.172	0.000
10.204	91.121	22.147	0.509	0.254	0.000
10.269	91.121	16.582	0.674	0.169	0.000
10.334	89.996	20.667	0.171	0.000	0.171
10.399	88.589	20.667	0.256	0.000	0.257

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
10.464	88.589	24.627	0.513	0.000	0.000
10.530	104.065	26.227	0.167	0.000	0.000
10.595	113.914	26.227	0.508	0.000	0.000
10.660	113.914	28.539	0.340	0.000	0.000
10.725	129.394	30.228	0.334	0.000	0.000
10.790	112.507	30.228	0.502	0.000	0.000
10.856	112.507	29.428	0.671	0.000	0.168
10.921	101.251	31.695	0.168	0.000	0.168
10.986	98.437	31.695	0.502	0.000	0.000
11.051	98.437	30.588	0.334	0.000	0.000
11.116	106.316	32.095	0.671	0.000	0.502
11.182	126.579	32.095	0.754	0.000	0.251
11.247	126.579	29.828	1.001	0.000	0.167
11.312	129.112	29.828	0.503	0.000	0.000
11.377	106.879	35.269	0.251	0.253	0.000
11.442	106.879	35.696	0.335	0.168	0.000
11.508	103.783	35.696	0.829	0.167	0.000
11.573	132.209	37.074	0.997	0.250	0.000
11.638	132.209	38.389	0.832	0.000	0.169
11.703	83.525	38.389	1.175	0.000	0.169
11.768	83.525	39.607	0.757	0.000	0.254
11.834	106.879	38.807	0.335	0.000	0.166
11.899	113.914	38.807	0.331	0.167	0.000
11.964	113.914	40.550	0.748	0.000	0.000
12.029	124.046	42.586	0.167	0.000	0.000
12.094	120.950	42.586	1.520	0.000	0.000
12.160	120.950	40.985	1.013	0.000	0.000
12.225	91.121	42.550	1.009	0.000	0.000
12.290	112.507	42.550	1.523	0.000	0.173
12.355	112.507	45.831	1.277	0.000	0.259
12.420	113.914	44.870	1.027	0.000	0.518
12.486	104.065	44.870	1.373	0.168	0.000
12.551	104.065	47.386	0.771	0.252	0.000
12.616	113.914	46.951	0.346	0.000	0.171
12.681	123.765	46.951	1.361	0.169	0.000
12.746	123.765	43.519	1.023	0.253	0.513
12.812	124.046	37.696	0.849	0.506	0.342
12.877	149.099	37.696	0.505	0.336	0.165
12.942	149.099	31.588	0.507	0.504	0.000
13.007	95.623	31.588	0.671	0.506	0.000
13.072	121.513	21.027	0.335	0.000	0.166
13.138	121.513	15.906	0.498	0.000	0.249

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
13.203	165.992	15.906	0.166	0.337	0.498
13.268	86.057	10.892	1.331	0.000	0.165
13.333	86.057	-3.857	0.747	0.000	0.247
13.398	123.765	-3.857	0.827	0.000	0.660
13.464	123.765	-6.267	0.669	0.000	0.167
13.529	96.186	-1.466	0.754	0.000	0.000
13.594	151.914	-1.466	0.333	0.167	0.000
13.659	151.914	4.091	0.998	0.168	0.000
13.724	96.186	12.865	0.499	0.251	0.252
13.790	111.381	12.865	0.333	0.000	0.335
13.855	111.381	20.138	0.829	0.000	0.664
13.920	135.023	21.693	0.748	0.000	0.749
13.985	141.779	21.693	0.672	0.000	0.831
14.050	141.779	25.027	0.335	0.000	0.000
14.116	123.765	14.181	0.251	0.000	0.249
14.181	129.112	14.181	0.165	0.000	0.166
14.246	129.112	1.957	0.170	0.169	1.183
14.311	146.283	-18.460	0.255	0.000	0.762
14.376	91.121	-18.460	0.511	0.000	0.337
14.442	91.121	-38.805	1.172	0.168	0.000
14.507	146.283	-41.023	1.011	0.252	0.000
14.572	134.179	-41.023	1.517	0.000	0.000
14.637	134.179	-41.517	0.000	0.000	0.508
14.702	111.381	-41.517	0.257	0.000	0.254
14.768	137.838	-41.028	0.171	0.000	0.169
14.833	137.838	-42.424	0.339	0.000	0.169
14.898	111.381	-42.424	0.508	0.000	0.254
14.963	129.394	-42.761	0.169	0.171	0.000
15.028	129.394	-44.864	0.674	0.000	0.685
15.094	92.809	-44.864	0.755	0.000	0.257
15.159	92.809	-44.051	0.833	0.000	0.172
15.224	103.783	-41.984	0.832	0.000	0.000
15.289	118.136	-41.984	0.751	0.000	0.000
15.354	118.136	-39.205	1.001	0.000	0.000
15.420	78.460	-43.650	0.167	0.000	0.000
15.485	89.996	-43.650	0.498	0.248	0.000
15.550	89.996	-44.024	0.666	0.165	0.168
15.615	78.460	-45.740	0.336	0.000	0.504
15.680	98.437	-45.740	0.754	0.000	0.252
15.746	98.437	-47.144	0.501	0.000	0.500
15.811	88.589	-46.807	0.167	0.000	0.668
15.876	106.879	-46.807	0.000	0.000	0.500

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
15.941	106.879	-47.340	0.334	0.167	0.167
16.006	113.914	-48.104	1.495	0.000	0.000
16.072	56.238	-48.104	1.001	0.000	0.000
16.137	56.238	-45.784	0.836	0.000	0.000
16.202	98.718	-45.962	0.333	0.000	0.000
16.267	75.929	-45.962	0.499	0.000	0.000
16.332	75.929	-46.584	0.499	0.000	0.000
16.398	96.186	-46.584	0.332	0.000	0.334
16.463	103.783	-47.024	0.996	0.000	0.249
16.528	103.783	-46.540	0.829	0.000	0.498
16.593	70.302	-46.540	0.672	0.000	0.167
16.658	93.653	-47.518	0.759	0.000	0.251
16.724	93.653	-48.024	1.010	0.000	0.000
16.789	84.369	-48.024	0.341	0.000	0.174
16.854	84.369	-47.251	0.515	0.000	0.515
16.919	68.333	-47.704	0.691	0.000	0.691
16.984	75.929	-47.704	0.168	0.000	0.000
17.050	75.929	-48.273	0.252	0.256	0.000
17.115	101.251	-49.665	0.504	0.171	0.000
17.180	84.369	-49.665	0.848	0.000	0.000
17.245	84.369	-49.385	0.757	0.000	0.000
17.310	93.653	-48.185	1.009	0.000	0.169
17.376	118.136	-48.185	0.167	0.000	0.000
17.441	118.136	-52.363	0.000	0.000	0.000
17.506	81.555	-51.474	0.168	0.000	0.000
17.571	96.186	-51.474	0.837	0.000	0.000
17.636	96.186	-51.385	1.006	0.000	0.000
17.702	106.879	-49.607	1.176	0.000	0.000
17.767	80.992	-49.607	0.327	0.000	0.000
17.832	80.992	-52.305	0.739	0.000	0.000
17.897	98.437	-52.896	0.665	0.000	0.000
17.962	83.525	-52.896	0.167	0.000	0.000
18.028	83.525	-52.985	0.753	0.000	0.000
18.093	89.996	-52.985	0.499	0.000	0.000
18.158	106.316	-54.305	0.000	0.000	0.335
18.223	106.316	-51.741	0.508	0.000	0.502
18.288	98.437	-51.741	0.506	0.000	0.502
18.354	108.849	-51.963	0.997	0.000	0.665
18.419	108.849	-51.305	0.750	0.000	0.499
18.484	75.929	-51.305	1.168	0.000	0.667
18.549	75.929	-49.785	1.005	0.000	0.168
18.614	73.115	-49.651	1.002	0.000	0.502

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
18.680	80.992	-49.651	0.835	0.000	0.838
18.745	80.992	-51.585	0.169	0.499	0.499
18.810	92.809	-51.385	0.507	0.249	0.249
18.875	113.914	-51.385	0.337	0.166	0.335
18.940	113.914	-49.696	0.846	0.169	0.000
19.006	98.437	-49.825	1.015	0.000	0.000
19.071	80.992	-49.825	1.179	0.000	0.000
19.136	80.992	-49.118	0.674	0.000	0.000
19.201	87.182	-47.424	0.760	0.000	0.000
19.266	80.992	-47.424	1.188	0.000	0.000
19.332	80.992	-46.629	0.850	0.515	0.335
19.397	101.251	-46.895	0.508	0.257	0.250
19.462	70.865	-46.895	1.012	0.172	0.170
19.527	70.865	-47.184	0.840	0.000	0.000
19.592	87.182	-45.784	1.770	0.000	0.000
19.658	83.525	-45.784	2.005	0.000	0.000
19.723	83.525	-46.184	0.332	0.000	0.496
19.788	73.115	-46.184	0.501	0.000	0.744
19.853	75.929	-46.584	0.666	0.167	0.497
19.918	75.929	-44.304	0.501	0.000	0.499
19.984	81.555	-44.304	0.756	0.000	0.249
20.049	106.879	-44.451	0.839	0.000	0.166
20.114	106.879	-43.828	0.167	0.000	0.000
20.179	83.525	-43.828	0.000	0.000	0.000
20.244	83.525	-43.944	0.000	0.000	0.000
20.310	80.992	-44.139	1.516	0.000	0.000
20.375	-9999.990	-44.139	0.752	0.000	0.000
20.440	-9999.990	-44.504	0.830	0.000	0.000
20.505	73.397	-45.073	0.835	0.167	0.502
20.570	84.369	-45.073	0.503	0.250	0.251
20.636	84.369	-46.495	0.671	0.000	0.167
20.701	98.718	-46.406	0.828	0.000	0.169
20.766	129.394	-46.406	0.750	0.000	0.506
20.831	129.394	-46.024	0.672	0.000	0.676
20.896	91.121	-46.406	0.000	0.000	0.168
20.962	86.057	-46.406	0.248	0.000	0.000
21.027	86.057	-45.784	0.331	0.000	0.000
21.092	75.929	-45.984	0.333	0.509	0.000
21.157	88.589	-45.984	0.249	0.254	0.000
21.222	88.589	-46.362	0.497	0.337	0.000
21.288	78.742	-46.704	0.170	0.000	0.506
21.353	118.980	-46.704	0.508	0.000	0.253

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
21.418	118.980	-46.984	0.679	0.000	0.340
21.483	98.437	-46.984	1.544	0.000	0.174
21.548	121.513	-47.029	1.286	0.000	0.000
21.614	121.513	-46.944	1.543	0.000	0.344
21.679	101.251	-46.944	0.000	0.676	0.509
21.744	93.653	-47.562	0.000	0.506	0.254
21.809	93.653	-48.585	0.000	0.673	0.170
21.874	115.321	-48.585	0.494	0.000	0.000
21.940	115.321	-48.896	0.742	0.000	0.000
22.005	101.251	-51.345	1.483	0.000	0.000
22.070	116.447	-51.345	0.497	0.000	0.168
22.135	116.447	-51.163	1.002	0.000	0.252
22.200	50.613	-48.851	1.495	0.000	0.000
22.266	111.381	-48.851	0.327	0.500	0.000
22.331	111.381	-49.625	0.746	0.250	0.000
22.396	87.182	-49.665	0.828	0.167	0.000
22.461	70.865	-49.665	0.995	0.000	0.000
22.526	70.865	-49.785	0.499	0.000	0.415
22.592	118.136	-49.207	0.332	0.000	0.167
22.657	68.333	-49.207	1.003	0.000	0.000
22.722	68.333	-50.585	1.001	0.000	0.000
22.787	103.783	-49.696	0.834	0.000	0.000
22.852	101.251	-49.696	0.000	0.000	0.000
22.918	101.251	-50.318	0.587	0.165	0.329
22.983	91.121	-51.563	0.752	0.248	0.494
23.048	78.742	-51.563	0.000	0.000	0.492
23.113	78.742	-53.385	0.751	0.000	0.250
23.178	91.121	-53.385	0.837	0.000	0.167
23.244	84.369	-51.341	0.503	0.000	0.000
23.309	84.369	-49.118	0.165	0.165	0.165
23.374	91.121	-49.118	0.000	0.000	0.000
23.439	109.693	-50.305	0.000	0.000	0.000
23.504	109.693	-51.563	0.423	0.000	0.168
23.570	111.381	-51.563	0.504	0.000	0.420
23.635	111.381	-50.265	1.012	0.000	0.000
23.700	98.718	-49.829	0.830	0.000	0.000
23.765	64.676	-49.829	0.823	0.000	0.000
23.830	64.676	-51.225	1.993	0.000	0.000
23.896	103.783	-47.518	0.679	0.000	0.000
23.961	81.555	-47.518	1.102	0.000	0.000
24.026	81.555	-44.006	0.509	0.000	0.000
24.091	118.136	-42.504	0.755	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
24.156	118.980	-42.504	0.921	0.170	0.000
24.222	118.980	-38.450	1.502	0.000	0.000
24.287	92.809	-39.903	0.164	0.000	0.164
24.352	86.057	-39.903	0.579	0.000	0.413
24.417	86.057	-35.783	0.493	0.502	0.493
24.482	104.065	-38.783	0.253	0.251	0.000
24.548	91.121	-38.783	0.338	0.167	0.000
24.613	91.121	-39.516	0.494	0.000	0.000
24.678	126.579	-40.272	0.416	0.000	0.000
24.743	103.783	-40.272	0.587	0.000	0.000
24.808	103.783	-42.064	0.504	0.000	0.504
24.874	137.838	-42.064	0.668	0.000	0.417
24.939	129.112	-44.851	0.750	0.000	0.582
25.004	129.112	-43.904	0.506	0.000	0.496
25.069	120.950	-43.904	1.161	0.000	0.415
25.134	159.516	-48.007	1.076	0.000	0.415
25.200	159.516	-52.141	1.000	0.000	0.497
25.265	112.507	-52.141	0.837	0.251	0.500
25.330	112.507	-50.185	0.669	0.168	0.250
25.395	154.448	-47.744	0.000	0.000	0.000
25.460	154.448	-47.744	0.835	0.000	0.417
25.526	154.448	-47.784	0.750	0.000	0.335
25.591	160.360	-48.273	2.002	0.000	0.000
25.656	167.118	-48.273	1.165	0.330	0.000
25.721	167.118	-47.984	0.923	0.000	0.000
25.786	126.579	-49.829	1.010	0.000	0.000
25.852	106.316	-49.829	0.762	0.000	0.168
25.917	106.316	-49.465	0.594	0.000	0.000
25.982	132.209	-49.207	1.538	0.000	0.000
26.047	124.046	-49.207	0.684	0.172	0.170
26.112	124.046	-49.563	0.513	0.000	0.254
26.178	109.693	-48.785	0.000	0.000	0.000
26.243	136.712	-48.785	0.336	0.000	0.168
26.308	136.712	-48.273	0.504	0.000	0.340
26.373	149.099	-48.225	1.023	0.000	0.000
26.438	129.112	-48.225	1.513	0.000	0.331
26.504	129.112	-46.807	1.433	0.000	0.497
26.569	163.176	-46.807	0.999	0.000	0.498
26.634	140.653	-46.184	1.083	0.000	0.335
26.699	140.653	-46.273	0.918	0.000	0.670
26.764	124.046	-46.273	0.000	0.000	0.503
26.830	137.838	-47.118	0.329	0.000	0.504

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
26.895	137.838	-44.224	0.659	0.000	0.336
26.960	126.579	-44.224	1.483	0.000	0.000
27.025	126.579	-47.518	1.077	0.000	0.251
27.090	141.779	-47.344	0.993	0.000	0.167
27.156	160.360	-47.344	0.999	0.000	0.506
27.221	160.360	-44.406	0.420	0.000	0.253
27.286	121.513	-45.064	0.587	0.000	0.169
27.351	109.693	-45.064	0.503	0.000	0.000
27.416	109.693	-46.406	0.999	0.000	0.167
27.482	126.579	-48.762	1.247	0.167	0.417
27.547	89.996	-48.762	0.500	0.000	0.500
27.612	89.996	-50.318	1.420	0.000	0.163
27.677	111.381	-49.985	1.664	0.000	0.245
27.742	91.121	-49.985	0.000	0.000	0.490
27.808	91.121	-49.651	0.000	0.000	0.000
27.873	70.302	-46.451	0.337	0.000	0.000
27.938	93.653	-46.451	0.503	0.000	0.000
28.003	93.653	-44.384	1.006	0.000	0.000
28.068	95.623	-44.984	1.008	0.000	0.000
28.134	118.980	-44.984	0.000	0.000	0.000
28.199	118.980	-46.464	0.167	0.000	0.336
28.264	106.879	-46.464	0.250	0.000	0.250
28.329	116.447	-41.828	0.500	0.000	0.000
28.394	116.447	-40.183	0.501	0.000	0.000
28.460	64.676	-40.183	0.501	0.000	0.000
28.525	75.929	-44.362	1.002	0.000	1.005
28.590	75.929	-43.295	0.842	0.167	0.503
28.655	118.136	-43.295	0.337	0.250	0.335
28.720	118.136	-43.704	0.000	0.500	0.000
28.786	104.065	-42.850	0.660	0.250	0.165
28.851	91.121	-42.850	0.497	0.166	0.248
28.916	91.121	-42.944	0.497	0.000	0.000
28.981	118.136	-40.503	0.000	0.000	0.164
29.046	78.460	-40.503	0.335	0.000	0.000
29.112	78.460	-28.893	0.503	0.000	0.000
29.177	89.996	-12.579	0.753	0.000	0.000
29.242	98.718	-12.579	0.669	0.167	0.000
29.307	98.718	-12.045	0.000	0.503	0.000
29.372	87.182	-10.045	0.168	0.417	0.000
29.438	96.186	-10.045	0.339	0.416	0.000
29.503	96.186	-7.138	0.000	0.496	0.500
29.568	83.525	-10.445	0.327	0.000	0.498

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
29.633	106.879	-10.445	0.491	0.000	0.000
29.698	106.879	-11.739	0.000	0.000	0.000
29.764	106.316	-11.823	1.000	0.334	0.000
29.829	118.136	-11.823	0.501	0.501	0.000
29.894	118.136	-9.200	1.002	1.002	0.000
29.959	101.251	-9.200	0.000	0.000	0.000
30.024	120.950	-7.689	0.000	0.000	0.000
30.090	120.950	-7.538	0.000	0.000	0.000
30.155	98.718	-7.538	0.000	0.000	0.334
30.220	126.579	-2.088	0.000	0.000	0.000
30.285	126.579	-1.777	0.000	0.000	0.000
30.350	118.980	-1.777	0.944	0.012	0.356
30.416	118.980	-1.110	1.271	0.000	0.000
30.481	108.849	-0.017	1.534	0.000	0.000
30.546	115.321	-0.017	1.181	0.171	0.168
30.611	115.321	0.312	1.006	0.000	0.000
30.676	88.589	1.103	1.998	0.000	0.256
30.742	112.507	1.103	0.837	0.166	0.171
30.807	112.507	4.135	1.773	0.000	0.000
30.872	123.765	6.784	1.258	0.000	0.000
30.937	113.914	6.784	0.845	0.000	0.164
31.002	113.914	4.891	0.248	0.000	0.000
31.068	143.468	3.957	0.251	0.000	0.251
31.133	118.980	3.957	0.663	0.165	0.167
31.198	118.980	4.624	0.496	0.000	0.000
31.263	132.209	9.380	0.248	0.000	0.254
31.328	131.646	9.380	0.997	0.167	0.334
31.394	131.646	8.985	1.491	0.000	0.744
31.459	112.507	11.603	1.246	0.000	0.249
31.524	108.849	11.603	0.996	0.000	0.166
31.589	108.849	10.985	0.244	0.000	0.000
31.654	92.809	10.447	0.488	0.000	0.000
31.720	111.381	10.447	0.166	0.000	0.165
31.785	111.381	13.737	1.513	0.000	0.247
31.850	96.186	13.737	0.757	0.000	0.494
31.915	137.838	20.987	0.838	0.000	0.000
31.980	137.838	31.739	0.755	0.000	0.000
32.046	106.316	31.739	0.252	0.000	0.000
32.111	106.316	38.763	0.498	0.000	0.000
32.176	101.251	36.949	0.739	0.495	0.000
32.241	88.589	36.949	0.248	0.248	0.000
32.306	88.589	32.095	0.499	0.165	0.168

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
32.372	98.437	24.005	1.253	0.502	0.000
32.437	121.513	24.005	1.001	0.251	0.000
32.502	121.513	26.107	1.175	0.167	0.167
32.567	118.136	36.763	1.531	0.000	0.251
32.632	106.316	36.763	1.789	0.000	0.000
32.698	106.316	35.469	0.846	0.000	0.338
32.763	96.186	44.630	1.017	0.513	0.506
32.828	84.369	44.630	0.256	0.256	1.013
32.893	84.369	52.712	0.669	0.171	0.165
32.958	80.992	50.720	1.252	0.000	0.505
33.024	109.693	50.720	1.508	0.000	0.253
33.089	109.693	24.267	1.180	0.330	0.168
33.154	132.209	15.426	0.753	0.495	0.504
33.219	86.057	15.426	0.252	0.493	0.252
33.284	86.057	15.648	0.335	0.000	0.500
33.350	118.136	16.866	0.250	0.000	0.247
33.415	126.579	16.866	0.500	0.000	0.495
33.480	126.579	24.272	0.661	0.000	0.164
33.545	95.623	24.272	0.000	0.502	0.247
33.610	86.057	25.867	0.506	0.251	0.493
33.676	86.057	18.493	0.664	0.167	0.327
33.741	101.251	18.493	0.739	0.000	0.243
33.806	101.251	10.825	0.248	0.000	0.000
33.871	131.646	16.537	0.833	0.000	0.328
33.936	109.693	16.537	1.003	0.000	0.492
34.002	109.693	33.740	0.993	0.000	0.983
34.067	93.653	47.871	1.161	0.164	0.000
34.132	113.914	47.871	1.244	0.000	0.000
34.197	113.914	69.079	0.743	0.000	0.000
34.262	112.507	68.834	0.167	0.000	0.167
34.328	129.112	68.834	0.000	0.000	0.000
34.393	129.112	62.278	0.000	0.000	0.000
34.458	112.507	51.476	0.497	0.000	0.165
34.523	96.186	51.476	0.251	0.000	0.000
34.588	96.186	55.299	0.502	0.000	0.000
34.654	89.996	64.194	0.166	0.000	0.163
34.719	101.251	64.194	0.249	0.000	0.245
34.784	101.251	66.323	0.248	0.000	0.489
34.849	-9999.990	61.313	0.666	0.336	0.000
34.914	101.251	61.313	0.751	0.251	0.000
34.980	101.251	65.034	0.000	0.501	0.257
35.045	-9999.990	63.353	0.335	0.000	0.500

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
35.110	112.507	63.353	0.751	0.000	0.493
35.175	112.507	66.456	0.252	0.000	0.000
35.240	111.381	66.456	0.505	0.000	0.000
35.306	109.693	60.473	1.008	0.000	0.000
35.371	109.693	59.477	0.766	0.000	0.252
35.436	141.779	59.477	0.669	0.000	0.168
35.501	141.779	68.274	0.242	0.000	0.000
35.566	80.992	68.056	0.734	0.000	0.000
35.632	92.809	68.056	0.494	0.000	0.166
35.697	92.809	69.314	0.748	0.000	0.248
35.762	118.980	61.967	1.239	0.000	0.000
35.827	58.207	61.967	1.159	0.000	0.000
35.892	58.207	53.743	1.495	0.000	0.000
35.958	81.555	33.149	1.490	0.000	0.000
36.023	93.653	33.149	1.322	0.000	0.000
36.088	93.653	33.784	0.736	0.000	0.000
36.153	91.121	41.150	1.483	0.000	0.000
36.218	83.525	41.150	0.502	0.163	0.000
36.284	83.525	37.874	0.000	0.245	0.000
36.349	80.992	48.809	0.496	0.000	0.000
36.414	70.302	48.809	0.671	0.000	0.164
36.479	70.302	55.632	0.510	0.000	0.000
36.544	63.270	53.787	1.020	0.000	0.000
36.610	80.992	53.787	0.000	0.000	0.000
36.675	80.992	37.149	0.498	0.000	0.000
36.740	88.589	10.803	0.498	0.000	0.249
36.805	78.460	10.803	0.332	0.000	0.166
36.870	78.460	12.945	0.999	0.000	0.000
36.936	64.676	12.945	0.499	0.000	0.000
37.001	113.914	26.067	0.333	0.000	0.162
37.066	113.914	11.558	0.000	0.000	0.243
37.131	68.333	11.558	0.250	0.000	0.487
37.196	68.333	11.145	0.329	0.168	0.000
37.262	70.865	13.025	0.750	0.000	0.000
37.327	91.121	13.025	0.741	0.000	0.251
37.392	91.121	18.404	0.493	0.000	0.656
37.457	70.302	13.786	0.241	0.000	0.488
37.522	106.316	13.786	0.482	0.000	0.482
37.588	106.316	22.107	0.586	0.161	0.161
37.653	87.182	16.146	0.719	0.242	0.242
37.718	91.121	16.146	0.484	0.484	0.484
37.783	91.121	3.824	0.806	0.323	0.164

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
37.848	96.186	2.424	0.725	0.242	0.000
37.914	67.489	2.424	1.206	0.000	0.000
37.979	67.489	-7.778	0.482	0.000	0.000
38.044	86.057	4.357	0.728	0.000	0.000
38.109	93.653	4.357	0.243	0.000	0.000
38.174	93.653	-2.617	0.482	0.000	0.161
38.240	70.865	1.864	0.239	0.000	0.000
38.305	63.270	1.864	0.000	0.244	0.000
38.370	63.270	18.315	0.162	0.162	0.000
38.435	112.507	26.828	0.242	0.000	0.000
38.500	68.333	26.828	0.728	0.000	0.000
38.566	68.333	22.947	0.162	0.000	0.000
38.631	88.589	22.947	0.483	0.000	0.000
38.696	101.251	6.091	0.480	0.000	0.000
38.761	101.251	11.865	0.481	0.000	0.000
38.826	78.460	11.865	0.000	0.000	0.000
38.892	78.460	21.516	0.241	0.000	0.000
38.957	75.929	32.589	0.485	0.000	0.000
39.022	121.513	32.589	0.487	0.000	0.476
39.087	121.513	37.918	0.974	0.000	0.238
39.152	91.121	34.589	0.329	0.166	0.159
39.218	106.316	34.589	0.248	0.248	0.000
39.283	106.316	16.266	0.739	0.497	0.000
39.348	88.589	-3.066	0.647	0.000	0.488
39.413	70.302	-3.066	1.709	0.000	0.487
39.478	70.302	10.665	2.911	0.000	0.000
39.544	83.525	41.870	1.068	0.000	0.577
39.609	88.589	41.870	0.828	0.000	0.412
39.674	88.589	48.898	0.000	0.000	0.490
39.739	56.238	51.632	0.812	0.000	0.489
39.804	88.589	51.632	0.326	0.000	0.326
39.870	88.589	51.432	0.000	0.000	0.000
39.935	93.653	51.952	0.162	0.000	0.159
40.000	120.950	51.952	0.160	0.000	0.239
40.065	120.950	52.676	0.000	0.000	0.478
40.130	78.460	48.991	0.561	0.000	0.000
40.196	83.525	48.991	0.559	0.000	0.000
40.261	83.525	36.589	0.954	0.000	0.000
40.326	106.879	36.589	0.241	0.000	0.000
40.391	80.992	45.608	0.323	0.000	0.162
40.456	80.992	31.068	0.000	0.000	0.000
40.522	86.057	31.068	0.323	0.000	0.402

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
40.587	86.057	36.509	0.403	0.000	0.160
40.652	88.589	45.608	1.455	0.000	0.000
40.717	88.589	45.608	0.645	0.000	0.000
40.782	88.589	57.833	0.884	0.000	0.000
40.848	59.051	55.566	0.478	0.000	0.000
40.913	73.397	55.566	0.484	0.000	0.000
40.978	73.397	53.872	0.480	0.000	0.000
41.043	83.525	46.409	0.960	0.000	0.000
41.108	96.186	46.409	1.305	0.000	0.000
41.174	96.186	31.628	1.388	0.000	0.000
41.239	75.929	18.506	0.977	0.000	0.000
41.304	95.623	18.506	0.322	0.000	0.000
41.369	95.623	39.830	0.645	0.000	0.000
41.434	91.121	42.990	0.000	0.000	0.000
41.500	93.653	42.990	0.655	0.000	0.162
41.565	93.653	38.629	0.738	0.000	0.243
41.630	83.525	57.388	1.480	0.000	0.000
41.695	73.397	57.388	0.662	0.000	0.000
41.760	73.397	60.073	0.747	0.000	0.000
41.826	59.051	63.073	1.482	0.000	0.000
41.891	65.801	63.073	1.476	0.000	0.000
41.956	65.801	65.345	1.556	0.000	0.165
42.021	92.809	65.345	0.975	0.000	0.000
42.086	106.316	69.754	0.565	0.245	0.000
42.152	106.316	70.915	0.405	0.163	0.000
42.217	83.525	70.915	0.971	0.000	0.000
42.282	83.525	74.324	0.566	0.000	0.000
42.347	84.369	74.435	0.564	0.000	0.000
42.412	78.460	74.435	0.000	0.000	0.000
42.478	78.460	74.555	0.653	0.000	0.160
42.543	80.992	73.124	0.326	0.000	0.240
42.608	56.238	73.124	0.478	0.000	0.479
42.673	56.238	68.754	0.643	0.000	0.000
42.738	75.929	70.715	0.564	0.163	0.000
42.804	78.460	70.715	0.487	0.000	0.000
42.869	78.460	48.951	0.886	0.000	0.000
42.934	98.437	27.028	1.048	0.000	0.000
42.999	96.186	27.028	0.485	0.000	0.000
43.064	96.186	14.906	0.813	0.000	0.000
43.130	78.742	13.203	0.729	0.000	0.000
43.195	73.397	13.203	0.974	0.000	0.967
43.260	73.397	11.345	0.563	0.000	0.484

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
43.325	84.369	10.003	0.643	0.000	0.322
43.390	101.251	10.003	0.964	0.000	0.000
43.456	101.251	24.827	0.491	0.000	0.163
43.521	118.136	31.828	0.655	0.000	0.000
43.586	58.207	31.828	0.000	0.000	0.000
43.651	58.207	47.551	0.572	0.167	0.000
43.716	129.112	47.551	0.577	0.250	0.000
43.782	47.800	36.589	1.000	0.000	0.000
43.847	47.800	21.027	0.578	0.166	0.000
43.912	118.980	21.027	0.827	0.249	0.000
43.977	118.980	19.987	0.992	0.498	0.000
44.042	101.251	65.074	0.412	0.000	0.828
44.108	106.316	65.074	0.165	0.000	0.578
44.173	106.316	24.716	0.975	0.000	0.491
44.238	67.489	-44.384	0.819	0.000	0.000
44.303	61.863	-44.384	0.736	0.000	0.000
44.368	61.863	-31.862	0.495	0.000	0.000
44.434	96.186	-33.560	0.646	0.000	0.166
44.499	56.238	-33.560	0.569	0.000	0.249
44.564	56.238	-32.342	0.982	0.000	0.498
44.629	80.992	-45.624	0.974	0.000	0.000
44.694	42.176	-45.624	0.321	0.000	0.000
44.760	42.176	-45.562	0.000	0.000	0.000
44.825	83.525	-39.103	0.483	0.000	0.329
44.890	98.718	-39.103	0.322	0.000	0.494
44.955	98.718	-42.464	0.000	0.000	0.987
45.020	64.676	-44.717	0.167	0.000	0.000
45.086	70.865	-44.717	0.000	0.000	0.000
45.151	70.865	-45.464	0.000	0.000	0.000
45.216	101.251	-45.740	0.331	0.000	0.000
45.281	70.865	-45.740	0.656	0.000	0.000
45.346	70.865	-44.424	0.496	0.000	0.000
45.412	98.437	-44.424	0.663	0.000	0.241
45.477	78.460	-43.473	0.747	0.000	0.161
45.542	78.460	-5.938	1.494	0.000	0.000
45.607	70.302	-5.938	0.167	0.000	0.000
45.672	70.302	2.490	0.162	0.000	0.000
45.738	75.929	-15.259	0.481	0.000	0.000
45.803	78.460	-15.259	0.576	0.242	0.000
45.868	78.460	-42.424	0.664	0.161	0.000
45.933	81.555	-0.177	0.501	0.000	0.000
45.998	58.207	-0.177	0.000	0.000	0.243

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
46.064	58.207	18.106	0.000	0.000	0.162
46.129	64.676	13.866	0.995	0.000	0.000
46.194	73.397	13.866	0.836	0.000	0.000
46.259	73.397	31.651	1.001	0.000	0.000
46.324	61.863	39.430	0.512	0.000	0.000
46.390	98.718	39.430	0.414	0.000	0.169
46.455	98.718	17.382	0.580	0.000	0.254
46.520	84.369	57.873	0.000	0.000	0.000
46.585	-9999.990	57.873	0.000	0.000	0.000
46.650	-9999.990	73.515	0.000	0.000	0.322
46.716	86.057	73.035	0.000	0.000	0.000
46.781	61.863	73.035	0.405	0.000	0.000
46.846	61.863	73.075	0.478	0.000	0.000
46.911	75.929	72.155	0.000	0.000	0.000
46.976	53.144	72.155	0.481	0.000	0.000
47.042	53.144	71.613	0.321	0.000	0.000
47.107	61.863	71.613	0.000	0.000	0.000
47.172	53.144	71.835	0.340	0.000	0.000
47.237	53.144	71.613	0.000	0.000	0.000
47.302	75.929	71.613	0.000	0.000	0.000
47.368	75.929	71.475	0.239	0.000	0.169
47.433	63.270	71.115	0.320	0.160	0.254
47.498	78.460	71.115	0.000	0.000	0.508
47.563	78.460	70.946	0.341	0.000	0.000
47.628	67.489	71.212	0.512	0.000	0.000
47.694	70.865	71.212	0.993	0.000	0.000
47.759	70.865	70.915	0.410	0.000	0.000
47.824	78.742	64.678	0.160	0.000	0.000
47.889	48.081	64.678	0.000	0.000	0.000
47.954	48.081	66.874	0.000	0.000	0.000
48.020	70.302	68.474	0.160	0.000	0.000
48.085	91.121	68.474	0.000	0.480	0.480
48.150	91.121	70.946	0.176	0.240	0.412
48.215	59.051	71.075	0.263	0.160	0.160
48.280	70.865	71.075	0.527	0.000	0.000
48.346	70.865	69.257	0.000	0.174	0.000
48.411	53.144	65.514	0.000	0.000	0.000
48.476	53.425	65.514	0.000	0.000	0.000
48.541	53.425	64.154	0.000	0.000	0.000
48.606	75.929	72.724	0.000	0.161	0.000
48.672	50.613	72.724	0.487	0.000	0.000
48.737	50.613	73.195	0.243	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
48.802	59.051	73.195	0.162	0.000	0.000
48.867	80.992	74.635	0.000	0.000	0.000
48.932	80.992	75.569	0.412	0.000	0.000
48.998	78.742	75.569	0.418	0.000	0.000
49.063	83.525	76.636	0.995	0.000	0.000
49.128	83.525	77.080	0.409	0.000	0.338
49.193	78.742	77.080	0.572	0.000	0.254
49.258	78.742	68.714	0.483	0.000	0.990
49.324	60.738	79.116	1.230	0.000	0.241
49.389	70.302	79.116	1.150	0.000	0.161
49.454	70.302	80.903	1.499	0.000	0.000
49.519	68.333	72.715	0.477	0.000	0.000
49.584	65.801	72.715	0.318	0.000	0.000
49.650	65.801	80.903	0.000	0.000	0.000
49.715	87.182	59.077	0.582	0.000	0.240
49.780	83.525	59.077	0.415	0.000	0.160
49.845	83.525	93.918	0.985	0.000	0.475
49.910	73.115	93.616	0.574	0.238	0.238
49.976	71.325	93.616	0.412	0.158	0.158
50.041	71.325	85.637	0.000	0.000	0.000
50.106	80.148	69.714	0.412	0.000	0.173
50.171	88.589	69.714	0.419	0.000	0.259
50.236	88.589	75.613	0.519	0.000	0.519
50.302	86.479	100.479	0.349	0.000	0.000
50.367	82.258	100.479	0.847	0.162	0.000
50.432	82.258	102.995	1.005	0.000	0.000
50.497	90.699	102.995	0.487	0.000	0.000
50.562	97.030	102.200	0.489	0.000	0.000
50.628	97.030	98.199	0.000	0.000	0.000
50.693	97.030	98.199	1.103	0.000	0.000
50.758	86.479	78.014	0.940	0.000	0.000
50.823	86.479	99.199	0.520	0.000	0.000
50.888	92.809	99.199	0.000	0.000	0.171
50.954	92.809	102.462	0.000	0.000	0.256
51.019	118.136	101.760	0.000	0.000	0.000
51.084	97.030	101.760	0.578	0.000	0.000
51.149	97.030	100.639	0.667	0.000	0.000
51.214	98.948	98.328	0.504	0.000	0.000
51.280	99.303	98.328	0.171	0.169	0.000
51.345	99.303	86.517	0.256	0.000	0.000
51.410	107.582	73.835	1.465	0.000	0.000
51.475	92.809	73.835	1.120	0.000	0.581

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
51.540	92.809	72.102	1.211	0.000	0.676
51.606	92.809	94.758	0.000	0.000	0.521
51.671	118.136	94.758	0.339	0.000	0.000
51.736	118.136	89.838	0.666	0.000	0.316
51.801	78.038	89.318	0.983	0.000	0.000
51.866	111.803	89.318	0.648	0.000	0.000
51.932	111.803	81.081	0.319	0.000	0.000
51.997	118.136	76.676	0.000	0.000	0.000
52.062	86.479	76.676	0.883	0.000	0.000
52.127	86.479	40.230	0.731	0.000	0.000
52.192	120.246	40.230	0.991	0.000	0.000
52.258	88.589	17.866	0.652	0.000	0.000
52.323	88.589	43.208	0.579	0.000	0.000
52.388	103.361	43.208	0.519	0.484	0.000
52.453	90.699	79.596	0.345	0.242	0.240
52.518	90.699	80.992	0.837	0.161	0.160
52.584	84.369	80.992	1.034	0.000	0.000
52.649	84.369	77.956	0.171	0.000	0.000
52.714	75.929	74.755	0.257	0.000	0.000
52.779	97.030	74.755	0.995	0.000	0.000
52.844	97.030	72.413	0.241	0.000	0.000
52.910	109.693	72.475	0.326	0.000	0.000
52.975	94.920	72.475	0.972	0.000	0.000
53.040	94.920	70.323	0.486	0.000	0.242
53.105	84.369	68.714	0.324	0.000	0.161
53.170	75.929	68.714	0.000	0.000	0.000
53.236	75.929	66.754	0.954	0.168	0.000
53.301	90.699	65.434	0.636	0.252	0.000
53.366	90.699	65.434	0.000	0.000	0.000
53.431	90.699	63.994	0.170	0.000	0.000
53.496	82.258	61.953	0.255	0.000	0.000
53.562	73.819	61.953	0.955	0.000	0.000
53.627	73.819	51.743	0.821	0.172	0.172
53.692	59.051	46.311	0.834	0.000	0.000
53.757	73.819	46.311	0.000	0.000	0.000
53.822	73.819	21.427	0.000	0.000	0.000
53.888	73.981	21.427	0.160	0.160	0.000
53.953	75.929	36.629	0.000	0.000	0.000
54.018	75.929	42.630	0.169	0.000	0.169
54.083	61.462	42.630	0.253	0.000	0.253
54.148	66.022	40.670	0.000	0.000	0.000
54.214	66.022	46.586	0.243	0.000	0.171

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
54.279	75.929	46.586	0.000	0.000	0.514
54.344	75.929	40.790	0.162	0.000	0.000
54.409	68.896	9.336	0.513	0.000	0.171
54.474	61.863	9.336	0.769	0.000	0.256
54.540	61.863	11.945	1.025	0.000	0.513
54.605	69.971	40.510	0.000	0.172	0.000
54.670	60.457	40.510	0.723	0.257	0.000
54.735	60.457	50.720	0.482	0.000	0.000
54.800	80.148	36.509	0.350	0.000	0.000
54.866	80.397	36.509	0.771	0.000	0.000
54.931	80.397	53.614	0.689	0.000	0.164
54.996	87.182	59.233	0.000	0.000	0.000
55.061	102.740	59.233	0.000	0.000	0.000
55.126	102.740	58.713	0.000	0.000	0.000
55.192	75.929	59.499	0.997	0.000	0.000
55.257	74.439	59.499	1.253	0.000	0.000
55.322	74.439	60.306	1.156	0.000	0.000
55.387	81.886	59.833	1.619	0.000	0.000
55.452	87.006	59.833	1.728	0.000	0.000
55.518	87.006	60.742	0.987	0.000	0.000
55.583	99.668	60.742	0.338	0.169	0.000
55.648	62.525	60.924	0.507	0.253	0.000
55.713	62.525	61.133	1.013	0.000	0.000
55.778	90.171	61.133	0.479	0.000	0.479
55.844	72.950	61.119	0.479	0.000	0.719
55.909	72.950	59.533	0.478	0.000	0.479
55.974	77.511	59.533	0.848	0.169	0.170
56.039	77.511	39.230	1.017	0.254	0.255
56.104	66.434	30.678	1.682	0.508	0.000
56.170	102.833	30.678	0.639	0.476	0.000
56.235	102.833	12.225	0.958	0.238	0.000
56.300	77.511	-9999.990	1.442	0.159	0.000
56.365	94.920	-9999.990	1.057	0.000	0.147
56.430	94.920	-9999.990	0.684	0.000	0.000
56.496	64.852	-9999.990	0.316	0.000	0.158
56.561	112.331	-9999.990	0.949	0.121	0.567
56.626	112.331	-9999.990	0.972	0.181	0.372
56.691	93.337	-9999.990	0.740	0.000	0.425
56.756	113.914	-9999.990	0.000	0.000	0.000
56.822	113.914	-9999.990	0.000	0.000	0.000
56.887	91.754	-9999.990	-9999.990	-9999.990	-9999.990
56.952	102.833	-9999.990	-9999.990	-9999.990	-9999.990

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
57.017	102.833	-9999.990	-9999.990	-9999.990	-9999.990
57.082	98.085	-9999.990	-9999.990	-9999.990	-9999.990
57.148	66.434	-9999.990	-9999.990	-9999.990	-9999.990
57.213	66.434	-9999.990	-9999.990	-9999.990	-9999.990
57.278	64.114	-9999.990	-9999.990	-9999.990	-9999.990
57.343	106.316	-9999.990	-9999.990	-9999.990	-9999.990
57.408	106.316	-9999.990	-9999.990	-9999.990	-9999.990
57.474	97.874	-9999.990	-9999.990	-9999.990	-9999.990
57.539	79.304	-9999.990	-9999.990	-9999.990	-9999.990
57.604	79.304	-9999.990	-9999.990	-9999.990	-9999.990
57.669	72.553	-9999.990	-9999.990	-9999.990	-9999.990
57.734	72.553	-9999.990	-9999.990	-9999.990	-9999.990
57.800	72.553	-9999.990	-9999.990	-9999.990	-9999.990
57.865	106.316	-9999.990	-9999.990	-9999.990	-9999.990
57.930	106.316	-9999.990	-9999.990	-9999.990	-9999.990
57.995	99.562	-9999.990	-9999.990	-9999.990	-9999.990
58.060	94.015	-9999.990	-9999.990	-9999.990	-9999.990
58.126	94.015	-9999.990	-9999.990	-9999.990	-9999.990
58.191	84.791	-9999.990	-9999.990	-9999.990	-9999.990
58.256	90.823	-9999.990	-9999.990	-9999.990	-9999.990

Notes
-9999.99 - no data
API - American Petroleum Institute
cps - counts per second
mS/m - milliSiemens per meter

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
0.000	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.065	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.130	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.196	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.261	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.326	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.391	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.456	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.522	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.587	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.652	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.717	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.782	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.848	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.913	-9999.990	NL	-9999.990	-9999.990	-9999.990
0.978	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.043	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.108	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.174	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.239	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.304	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.369	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.434	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.500	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.565	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.630	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.695	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.760	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.826	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.891	-9999.990	NL	-9999.990	-9999.990	-9999.990
1.956	-9999.990	NL	-9999.990	-9999.990	-9999.990
2.021	-9999.990	NL	-9999.990	-9999.990	-9999.990
2.086	-9999.990	NL	-9999.990	-9999.990	-9999.990
2.152	-9999.990	NL	-9999.990	-9999.990	-9999.990
2.217	121.151	NL	-9999.990	-9999.990	-9999.990
2.282	126.579	NL	-9999.990	-9999.990	-9999.990
2.347	118.136	NL	-9999.990	-9999.990	-9999.990
2.412	118.136	NL	-9999.990	-9999.990	-9999.990
2.478	105.472	NL	-9999.990	-9999.990	-9999.990
2.543	118.136	NL	-9999.990	-9999.990	-9999.990
2.608	118.136	NL	-9999.990	-9999.990	-9999.990
2.673	111.803	NL	-9999.990	-9999.990	-9999.990
2.738	111.803	NL	-9999.990	-9999.990	-9999.990

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
2.804	126.579	NL	-9999.990	-9999.990	-9999.990
2.869	143.468	NL	-9999.990	-9999.990	-9999.990
2.934	143.468	NL	-9999.990	-9999.990	-9999.990
2.999	160.360	NL	-9999.990	-9999.990	-9999.990
3.064	116.025	NL	-9999.990	-9999.990	-9999.990
3.130	116.025	NL	-9999.990	-9999.990	-9999.990
3.195	135.023	NL	-9999.990	-9999.990	-9999.990
3.260	128.690	NL	-9999.990	-9999.990	-9999.990
3.325	128.690	NL	-9999.990	-9999.990	-9999.990
3.390	104.065	NL	-9999.990	-9999.990	-9999.990
3.456	134.179	NL	-9999.990	-9999.990	-9999.990
3.521	134.179	NL	-9999.990	-9999.990	-9999.990
3.586	141.779	NL	-9999.990	-9999.990	-9999.990
3.651	168.807	NL	-9999.990	-9999.990	-9999.990
3.716	168.807	NL	-9999.990	-9999.990	-9999.990
3.782	135.023	NL	-9999.990	-9999.990	-9999.990
3.847	121.513	NL	-9999.990	-9999.990	-9999.990
3.912	121.513	NL	-9999.990	-9999.990	-9999.990
3.977	165.992	NL	-9999.990	-9999.990	-9999.990
4.042	136.712	NL	-9999.990	-9999.990	-9999.990
4.108	136.712	NL	-9999.990	-9999.990	-9999.990
4.173	129.394	NL	0.438	0.088	0.000
4.238	126.579	NL	0.151	0.045	0.009
4.303	126.579	NL	0.162	0.000	0.000
4.368	140.653	NL	0.615	0.000	0.000
4.434	140.653	NL	0.475	0.000	0.000
4.499	108.849	NL	0.637	0.159	0.000
4.564	156.982	NL	0.755	0.239	0.000
4.629	156.982	NL	0.363	0.000	0.000
4.694	140.653	NL	0.794	0.318	0.000
4.760	136.712	NL	0.952	0.754	0.000
4.825	136.712	NL	1.122	0.987	0.165
4.890	129.112	NL	0.995	0.321	0.000
4.955	135.023	NL	0.498	0.240	0.244
5.020	135.023	NL	0.332	0.000	0.326
5.086	144.313	NL	0.803	0.000	0.000
5.151	163.176	NL	2.192	0.247	0.000
5.216	163.176	NL	2.261	0.327	0.000
5.281	141.779	NL	0.811	0.160	0.000
5.346	136.712	NL	0.733	0.000	0.247
5.412	136.712	NL	0.976	0.164	0.165
5.477	174.439	NL	0.485	0.000	0.819
5.542	131.646	NL	0.489	0.000	0.490

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
5.607	131.646	NL	0.663	0.000	0.651
5.672	120.950	NL	1.147	0.163	0.000
5.738	108.849	NL	0.981	0.000	0.000
5.803	108.849	NL	0.822	0.000	0.000
5.868	118.136	NL	1.161	0.000	0.000
5.933	116.447	NL	1.241	0.000	0.000
5.998	116.447	NL	1.155	0.000	0.000
6.064	141.779	NL	0.645	0.160	0.000
6.129	141.779	NL	0.741	0.000	0.000
6.194	123.765	NL	1.143	0.000	0.000
6.259	98.437	NL	1.080	0.000	0.000
6.324	98.437	NL	1.214	0.000	0.000
6.390	134.179	NL	0.978	0.000	0.000
6.455	73.115	NL	1.454	0.161	0.000
6.520	73.115	NL	1.447	0.000	0.000
6.585	116.447	NL	2.078	0.000	0.000
6.650	136.712	NL	0.473	0.000	0.000
6.716	136.712	NL	0.709	0.000	0.000
6.781	115.321	NL	0.482	0.000	0.000
6.846	96.186	NL	0.818	0.000	0.000
6.911	96.186	NL	0.731	0.000	0.000
6.976	98.437	NL	0.650	0.000	0.000
7.042	134.179	NL	0.160	0.160	0.160
7.107	134.179	NL	0.239	0.000	0.000
7.172	139.246	NL	0.000	0.000	0.165
7.237	163.176	NL	0.160	0.000	0.000
7.302	163.176	NL	0.000	0.000	0.000
7.368	121.513	NL	0.000	0.000	0.000
7.433	98.437	NL	0.000	0.163	0.000
7.498	98.437	NL	0.249	0.244	0.000
7.563	86.057	NL	0.328	0.162	0.000
7.628	93.653	NL	1.136	0.000	0.000
7.694	93.653	NL	1.223	0.000	0.000
7.759	89.996	NL	0.984	0.000	0.000
7.824	89.996	NL	0.641	0.000	0.000
7.889	93.653	NL	0.482	0.000	0.000
7.954	129.112	NL	0.482	0.000	0.000
8.020	129.112	NL	0.662	0.165	0.000
8.085	101.251	NL	0.496	0.247	0.000
8.150	70.865	NL	0.166	0.000	0.000
8.215	70.865	NL	0.000	0.163	0.000
8.280	84.369	NL	0.000	0.494	0.000
8.346	80.992	NL	0.000	0.822	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
8.411	80.992	NL	0.320	0.162	0.000
8.476	56.238	NL	0.481	0.254	0.000
8.541	86.057	NL	0.961	0.169	0.000
8.606	86.057	NL	0.973	0.158	0.000
8.672	101.251	NL	0.728	0.000	0.000
8.737	101.251	NL	1.127	0.000	0.000
8.802	101.251	NL	0.162	0.496	0.000
8.867	78.742	NL	0.000	0.248	0.000
8.932	68.333	NL	0.164	0.165	0.000
8.998	68.333	NL	1.143	0.160	0.161
9.063	84.369	NL	1.468	0.240	0.000
9.128	116.447	NL	0.659	0.480	0.000
9.193	116.447	NL	0.160	0.000	0.000
9.258	75.929	NL	0.487	0.000	0.000
9.324	112.507	NL	0.328	0.000	0.000
9.389	112.507	NL	0.490	0.159	0.000
9.454	78.460	NL	0.245	0.239	0.000
9.519	78.460	NL	0.163	0.000	0.000
9.584	101.251	NL	0.482	0.000	0.000
9.650	111.381	NL	1.215	0.000	0.000
9.715	111.381	NL	1.137	0.000	0.000
9.780	78.460	NL	0.812	0.000	0.162
9.845	84.369	NL	0.734	0.000	0.000
9.910	84.369	NL	0.974	0.163	0.163
9.976	75.929	NL	0.161	0.000	0.000
10.041	98.718	NL	0.241	0.000	0.000
10.106	98.718	NL	0.000	0.167	0.000
10.171	98.437	NL	1.157	0.163	0.000
10.236	78.460	NL	0.741	0.244	0.000
10.302	78.460	NL	0.331	0.000	0.000
10.367	92.809	NL	0.330	0.509	0.000
10.432	68.333	NL	0.498	0.506	0.000
10.497	68.333	NL	0.168	0.338	0.000
10.562	89.996	NL	1.005	0.163	0.000
10.628	80.992	NL	0.503	0.000	0.000
10.693	80.992	NL	0.504	0.000	0.000
10.758	92.809	NL	0.161	0.000	0.000
10.823	60.738	NL	0.490	0.000	0.000
10.888	60.738	NL	0.331	0.000	0.000
10.954	75.929	NL	0.482	0.000	0.000
11.019	70.865	NL	0.000	0.000	0.000
11.084	70.865	NL	0.482	0.000	0.000
11.149	92.809	NL	0.482	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
11.214	92.809	NL	0.000	0.404	0.000
11.280	88.589	NL	0.163	0.402	0.163
11.345	101.251	NL	0.490	0.000	0.000
11.410	101.251	NL	0.817	0.409	0.000
11.475	67.489	NL	0.572	0.407	0.000
11.540	91.121	NL	0.000	0.483	0.000
11.606	91.121	NL	0.482	0.162	0.000
11.671	67.489	NL	0.482	0.243	0.000
11.736	68.333	NL	0.964	0.000	0.000
11.801	68.333	NL	0.161	0.000	0.000
11.866	91.121	NL	0.570	0.000	0.000
11.932	56.238	NL	0.000	0.000	0.000
11.997	56.238	NL	0.000	0.000	0.000
12.062	101.251	NL	0.164	0.000	0.164
12.127	88.589	NL	0.488	0.000	0.000
12.192	88.589	NL	0.734	0.247	0.000
12.258	84.369	NL	0.710	0.107	0.005
12.323	70.865	NL	0.449	0.016	0.003
12.388	70.865	NL	0.372	0.163	0.000
12.453	78.460	NL	0.550	0.244	0.000
12.518	50.613	NL	0.091	0.488	0.000
12.584	50.613	NL	0.243	0.000	0.125
12.649	73.397	NL	0.121	0.000	0.083
12.714	84.369	NL	0.081	0.250	0.000
12.779	84.369	NL	0.000	0.287	0.000
12.844	55.675	NL	0.166	0.327	0.000
12.910	55.675	NL	0.335	0.251	0.000
12.975	81.555	NL	0.450	0.126	0.000
13.040	73.397	NL	0.084	0.084	0.083
13.105	73.397	NL	0.000	0.246	0.000
13.170	89.996	NL	0.122	0.444	0.000
13.236	96.186	NL	0.205	0.323	0.000
13.301	96.186	NL	0.082	0.483	0.000
13.366	81.555	NL	0.247	0.000	0.000
13.431	129.112	NL	0.244	0.162	0.161
13.496	129.112	NL	0.247	0.000	0.241
13.562	109.693	NL	0.123	0.000	0.000
13.627	96.186	NL	0.527	0.164	0.000
13.692	96.186	NL	0.325	0.246	0.000
13.757	106.316	NL	0.735	0.123	0.248
13.822	137.838	NL	0.608	0.205	0.285
13.888	137.838	NL	0.406	0.082	0.406
13.953	96.186	NL	0.607	0.000	0.729

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
14.018	88.589	NL	0.243	0.486	0.122
14.083	88.589	NL	0.897	0.729	0.082
14.148	101.251	NL	0.973	0.605	0.000
14.214	70.865	NL	0.491	0.081	0.000
14.279	70.865	NL	0.246	0.000	0.000
14.344	59.051	NL	0.369	0.000	0.000
14.409	70.865	NL	0.569	0.160	0.000
14.474	70.865	NL	0.735	0.000	0.000
14.540	58.207	NL	0.370	0.000	0.000
14.605	58.207	NL	0.370	0.288	0.000
14.670	50.613	NL	0.082	0.661	0.000
14.735	86.057	NL	0.000	0.494	0.000
14.800	86.057	NL	0.163	0.000	0.000
14.866	53.425	NL	0.245	0.000	0.000
14.931	53.144	NL	0.991	0.000	0.000
14.996	53.144	NL	0.250	0.000	0.000
15.061	35.426	NL	0.167	0.000	0.000
15.126	64.676	NL	0.000	0.000	0.000
15.192	64.676	NL	0.644	0.162	0.000
15.257	60.738	NL	0.484	0.243	0.000
15.322	64.676	NL	0.000	0.486	0.000
15.387	64.676	NL	0.000	0.000	0.000
15.452	60.738	NL	0.000	0.000	0.000
15.518	47.800	NL	0.491	0.000	0.000
15.583	47.800	NL	0.559	0.157	0.000
15.648	45.550	NL	0.634	0.235	0.000
15.713	47.800	NL	0.941	0.470	0.000
15.778	47.800	NL	0.244	0.000	0.244
15.844	60.738	NL	0.163	0.000	0.163
15.909	53.144	NL	0.000	0.000	0.000
15.974	53.144	NL	0.245	0.000	0.324
16.039	50.613	NL	0.327	0.000	0.486
16.104	50.613	NL	0.000	0.493	0.482
16.170	50.613	NL	0.322	0.246	0.000
16.235	65.801	NL	0.484	0.164	0.000
16.300	65.801	NL	0.484	0.000	0.000
16.365	44.988	NL	0.407	0.000	0.000
16.430	63.270	NL	0.404	0.000	0.000
16.496	63.270	NL	0.478	0.000	0.000
16.561	53.144	NL	0.000	0.000	0.000
16.626	42.176	NL	0.000	0.000	0.000
16.691	42.176	NL	0.000	0.000	0.000
16.756	86.057	NL	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
16.822	73.115	NL	0.165	0.000	0.000
16.887	73.115	NL	0.000	0.000	0.000
16.952	80.992	NL	0.497	0.000	0.000
17.017	60.738	NL	0.332	0.000	0.000
17.082	60.738	NL	0.000	0.000	0.000
17.148	70.302	NL	0.251	0.000	0.000
17.213	63.270	NL	0.334	0.000	0.000
17.278	63.270	NL	0.000	0.000	0.000
17.343	47.800	NL	0.164	0.000	0.000
17.408	48.081	NL	0.000	0.000	0.000
17.474	48.081	NL	1.003	0.000	0.000
17.539	87.182	NL	1.166	0.000	0.000
17.604	70.865	NL	0.668	0.000	0.000
17.669	70.865	NL	0.000	0.000	0.000
17.734	39.363	NL	0.318	0.159	0.000
17.800	58.207	NL	0.477	0.000	0.000
17.865	58.207	NL	0.000	0.490	0.000
17.930	56.238	NL	0.321	0.245	0.000
17.995	56.238	NL	0.240	0.163	0.000
18.060	70.865	NL	0.479	0.489	0.000
18.126	43.019	NL	0.486	0.244	0.162
18.191	43.019	NL	0.651	0.328	0.000
18.256	50.613	NL	0.979	0.000	0.000
18.321	37.957	NL	0.247	0.000	0.160
18.386	37.957	NL	0.327	0.000	0.240
18.452	70.865	NL	0.000	0.000	0.000
18.517	50.613	NL	0.161	0.243	0.000
18.582	50.613	NL	0.163	0.162	0.000
18.647	50.613	NL	0.495	0.495	0.000
18.712	65.801	NL	0.571	0.247	0.161
18.778	65.801	NL	0.814	0.165	0.242
18.843	64.676	NL	0.000	0.490	0.483
18.908	60.738	NL	0.161	0.245	0.000
18.973	60.738	NL	0.242	0.163	0.000
19.038	73.115	NL	0.976	0.000	0.000
19.104	60.738	NL	0.654	0.000	0.000
19.169	60.738	NL	0.571	0.000	0.000
19.234	68.333	NL	0.485	0.000	0.000
19.299	81.555	NL	0.656	0.000	0.000
19.364	81.555	NL	0.248	0.000	0.000
19.430	48.081	NL	0.497	0.000	0.000
19.495	89.996	NL	0.326	0.163	0.000
19.560	89.996	NL	0.501	0.245	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
19.625	80.992	NL	0.168	0.490	0.000
19.690	80.992	NL	0.484	0.501	0.000
19.756	59.051	NL	0.726	0.251	0.000
19.821	60.738	NL	0.648	0.167	0.000
19.886	60.738	NL	0.161	0.000	0.000
19.951	92.809	NL	0.242	0.000	0.000
20.016	70.865	NL	0.484	0.000	0.000
20.082	70.865	NL	0.488	0.488	0.000
20.147	53.144	NL	0.244	0.983	0.000
20.212	64.676	NL	0.327	0.820	0.000
20.277	64.676	NL	0.977	0.000	0.000
20.342	86.057	NL	0.730	0.000	0.000
20.408	56.238	NL	0.327	0.000	0.000
20.473	56.238	NL	1.307	0.000	0.000
20.538	75.929	NL	0.977	0.000	0.000
20.603	75.929	NL	0.492	0.000	0.000
20.668	75.929	NL	1.135	0.000	0.000
20.734	50.613	NL	0.727	0.244	0.000
20.799	53.144	NL	0.490	0.163	0.000
20.864	53.144	NL	0.159	0.161	0.163
20.929	58.207	NL	0.239	0.242	0.000
20.994	70.302	NL	0.478	0.000	0.000
21.060	70.302	NL	0.000	0.000	0.000
21.125	60.738	NL	0.245	0.000	0.000
21.190	73.397	NL	0.164	0.163	0.000
21.255	73.397	NL	0.650	0.000	0.161
21.320	50.613	NL	0.491	0.000	0.000
21.386	50.613	NL	0.653	0.000	0.000
21.451	78.460	NL	0.162	0.495	0.000
21.516	59.051	NL	0.492	0.247	0.000
21.581	59.051	NL	0.820	0.165	0.000
21.646	73.397	NL	0.825	0.000	0.000
21.712	60.738	NL	0.492	0.248	0.000
21.777	60.738	NL	0.663	0.165	0.000
21.842	75.929	NL	0.163	0.491	0.000
21.907	91.121	NL	0.244	0.491	0.000
21.972	91.121	NL	0.655	0.489	0.000
22.038	73.115	NL	0.662	0.000	0.000
22.103	84.369	NL	0.742	0.250	0.000
22.168	84.369	NL	0.334	0.167	0.000
22.233	96.186	NL	0.320	0.000	0.000
22.298	55.675	NL	0.479	0.000	0.000
22.364	55.675	NL	0.480	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
22.429	67.489	NL	0.973	0.000	0.000
22.494	80.992	NL	0.728	0.244	0.000
22.559	80.992	NL	0.327	0.163	0.000
22.624	89.996	NL	0.162	0.000	0.000
22.690	70.865	NL	0.242	0.000	0.000
22.755	70.865	NL	0.164	0.000	0.000
22.820	83.525	NL	0.161	0.000	0.000
22.885	78.742	NL	0.495	0.000	0.000
22.950	78.742	NL	0.330	0.000	0.000
23.016	55.675	NL	0.159	0.320	0.000
23.081	55.675	NL	0.000	0.242	0.000
23.146	88.589	NL	0.164	0.647	0.000
23.211	47.800	NL	0.323	0.000	0.000
23.276	47.800	NL	0.241	0.000	0.000
23.342	88.589	NL	0.000	0.000	0.000
23.407	89.996	NL	0.000	0.000	0.820
23.472	89.996	NL	0.000	0.000	0.737
23.537	68.333	NL	0.000	0.000	0.165
23.602	73.397	NL	0.324	0.162	0.000
23.668	73.397	NL	0.486	0.243	0.000
23.733	59.051	NL	0.487	0.000	0.000
23.798	70.865	NL	0.327	0.493	0.000
23.863	70.865	NL	0.491	0.246	0.000
23.928	55.675	NL	0.493	0.164	0.000
23.994	78.742	NL	0.324	0.000	0.000
24.059	78.742	NL	0.487	0.000	0.000
24.124	65.801	NL	0.000	0.000	0.000
24.189	39.363	NL	0.000	0.668	0.000
24.254	39.363	NL	0.000	0.746	0.000
24.320	63.270	NL	0.000	0.335	0.000
24.385	70.302	NL	0.652	0.000	0.000
24.450	70.302	NL	0.487	0.000	0.000
24.515	45.550	NL	0.645	0.000	0.000
24.580	56.238	NL	0.484	0.000	0.000
24.646	56.238	NL	0.243	0.000	0.246
24.711	88.589	NL	0.000	0.000	0.164
24.776	88.589	NL	0.485	0.000	0.000
24.841	73.115	NL	0.242	0.000	0.000
24.906	80.992	NL	0.000	0.000	0.000
24.972	80.992	NL	1.302	0.000	0.000
25.037	27.834	NL	0.979	0.000	0.000
25.102	50.613	NL	0.977	0.000	0.000
25.167	50.613	NL	0.815	0.160	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
25.232	53.425	NL	0.731	0.240	0.000
25.298	60.738	NL	1.135	0.000	0.000
25.363	60.738	NL	0.485	0.000	0.000
25.428	63.270	NL	0.730	0.000	0.000
25.493	75.929	NL	0.643	0.000	0.000
25.558	75.929	NL	0.161	0.000	0.000
25.624	67.489	NL	0.241	0.000	0.000
25.689	88.589	NL	0.000	0.000	0.000
25.754	88.589	NL	0.817	0.492	0.000
25.819	73.397	NL	0.492	0.246	0.247
25.884	70.302	NL	0.164	0.327	0.164
25.950	70.302	NL	0.491	0.000	0.163
26.015	65.801	NL	0.246	0.000	0.245
26.080	81.555	NL	0.491	0.000	0.000
26.145	81.555	NL	0.823	0.000	0.000
26.210	83.525	NL	0.490	0.000	0.000
26.276	92.809	NL	0.649	0.000	0.000
26.341	92.809	NL	0.492	0.000	0.000
26.406	104.065	NL	0.740	0.000	0.000
26.471	104.065	NL	0.657	0.000	0.000
26.536	70.865	NL	0.322	0.000	0.000
26.602	67.489	NL	0.490	0.000	0.000
26.667	67.489	NL	0.814	0.000	0.000
26.732	84.369	NL	0.163	0.000	0.000
26.797	75.929	NL	0.000	0.000	0.000
26.862	75.929	NL	0.000	0.000	0.000
26.928	81.555	NL	0.160	0.160	0.000
26.993	103.783	NL	0.000	0.000	0.000
27.058	103.783	NL	0.164	0.000	0.000
27.123	75.929	NL	0.484	0.000	0.000
27.188	78.460	NL	0.725	0.000	0.000
27.254	78.460	NL	0.969	0.000	0.000
27.319	59.051	NL	0.161	0.000	0.000
27.384	78.742	NL	0.000	0.000	0.000
27.449	78.742	NL	0.163	0.000	0.000
27.514	70.865	NL	0.160	0.000	0.000
27.580	73.115	NL	0.240	0.245	0.000
27.645	73.115	NL	0.643	0.163	0.000
27.710	78.460	NL	0.159	0.000	0.488
27.775	84.369	NL	0.239	0.245	0.244
27.840	84.369	NL	0.478	0.163	0.163
27.906	61.863	NL	1.132	0.000	0.000
27.971	91.121	NL	1.457	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
28.036	91.121	NL	0.981	0.000	0.000
28.101	95.623	NL	0.656	0.000	0.161
28.166	95.623	NL	0.488	0.000	0.241
28.232	91.121	NL	0.165	0.000	0.000
28.297	50.613	NL	0.497	0.163	0.000
28.362	50.613	NL	0.248	0.245	0.000
28.427	68.333	NL	0.166	0.000	0.000
28.492	70.302	NL	0.657	0.000	0.000
28.558	70.302	NL	0.246	0.000	0.000
28.623	78.742	NL	0.164	0.000	0.000
28.688	73.397	NL	1.006	0.323	0.000
28.753	73.397	NL	0.503	0.242	0.000
28.818	61.863	NL	0.335	0.484	0.000
28.884	64.676	NL	0.476	0.160	0.000
28.949	64.676	NL	0.714	0.484	0.000
29.014	73.397	NL	0.479	0.642	0.000
29.079	92.809	NL	0.973	0.000	0.000
29.144	92.809	NL	0.728	0.000	0.000
29.210	92.809	NL	0.163	0.000	0.000
29.275	65.801	NL	0.000	0.161	0.000
29.340	65.801	NL	0.000	0.242	0.000
29.405	73.115	NL	0.000	0.000	0.000
29.470	65.801	NL	0.810	0.321	0.000
29.536	65.801	NL	0.969	0.481	0.000
29.601	47.800	NL	0.808	0.000	0.000
29.666	58.207	NL	0.160	0.983	0.000
29.731	58.207	NL	0.240	0.491	0.000
29.796	70.302	NL	0.000	0.328	0.000
29.862	70.302	NL	0.323	0.161	0.161
29.927	70.302	NL	0.987	0.242	0.241
29.992	68.333	NL	0.497	0.000	0.482
30.057	68.333	NL	0.806	0.000	0.000
30.122	98.437	NL	0.727	0.000	0.000
30.188	75.929	NL	0.481	0.000	0.164
30.253	75.929	NL	0.973	0.000	0.000
30.318	101.251	NL	0.732	0.000	0.000
30.383	55.675	NL	0.652	0.165	0.000
30.448	55.675	NL	0.163	0.163	0.164
30.514	67.489	NL	0.246	0.000	0.245
30.579	73.397	NL	0.164	0.000	0.491
30.644	73.397	NL	0.161	0.164	0.000
30.709	84.369	NL	0.242	0.245	0.000
30.774	87.182	NL	0.484	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
30.840	87.182	NL	0.000	0.000	0.494
30.905	75.929	NL	0.000	0.000	0.247
30.970	64.676	NL	0.000	0.167	0.165
31.035	64.676	NL	0.160	0.322	0.000
31.100	84.369	NL	0.000	0.243	0.000
31.166	84.369	NL	0.000	0.000	0.000
31.231	84.369	NL	1.309	0.000	0.160
31.296	103.783	NL	1.225	0.000	0.241
31.361	135.023	NL	1.137	0.000	0.481
31.426	135.023	NL	1.129	0.325	0.000
31.492	88.589	NL	0.736	0.487	0.000
31.557	88.589	NL	0.491	0.000	0.000
31.622	109.693	NL	0.322	0.000	0.000
31.687	96.186	NL	0.242	0.000	0.000
31.752	96.186	NL	0.326	0.000	0.163
31.818	140.653	NL	1.299	0.000	0.000
31.883	124.046	NL	0.489	0.000	0.000
31.948	124.046	NL	0.326	0.164	0.164
32.013	92.809	NL	1.467	0.162	0.000
32.078	109.693	NL	0.732	0.487	0.000
32.144	109.693	NL	0.805	0.163	0.000
32.209	70.865	NL	0.160	0.000	0.000
32.274	89.996	NL	0.733	0.000	0.000
32.339	89.996	NL	0.652	0.000	0.000
32.404	124.046	NL	0.643	0.000	0.000
32.470	81.555	NL	0.000	0.000	0.000
32.535	81.555	NL	0.241	0.000	0.000
32.600	108.849	NL	0.325	0.000	0.000
32.665	92.809	NL	0.492	0.000	0.000
32.730	92.809	NL	0.492	0.000	0.000
32.796	101.251	NL	0.654	0.000	0.000
32.861	75.929	NL	0.241	0.000	0.000
32.926	75.929	NL	0.000	0.248	0.000
32.991	112.507	NL	0.661	0.497	0.166
33.056	68.333	NL	0.244	0.000	0.000
33.122	68.333	NL	0.488	0.000	0.000
33.187	81.555	NL	0.488	0.164	0.000
33.252	81.555	NL	1.233	0.000	0.000
33.317	87.182	NL	0.736	0.000	0.000
33.382	53.144	NL	0.969	0.000	0.000
33.448	53.144	NL	0.956	0.000	0.000
33.513	81.555	NL	0.000	0.244	0.000
33.578	64.676	NL	0.160	0.163	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
33.643	64.676	NL	0.240	0.000	0.000
33.708	75.929	NL	0.000	0.000	0.000
33.774	67.489	NL	0.323	0.161	0.161
33.839	67.489	NL	0.000	0.241	0.000
33.904	73.397	NL	0.245	0.000	0.000
33.969	53.425	NL	0.163	0.324	0.000
34.034	53.425	NL	0.489	0.242	0.000
34.100	73.397	NL	0.490	0.000	0.000
34.165	59.051	NL	0.649	0.161	0.000
34.230	59.051	NL	0.000	0.242	0.000
34.295	68.333	NL	0.244	0.484	0.000
34.360	75.929	NL	0.323	0.000	0.000
34.426	75.929	NL	0.240	0.000	0.000
34.491	64.676	NL	0.000	0.000	0.000
34.556	93.653	NL	0.161	0.000	0.000
34.621	93.653	NL	0.735	0.000	0.000
34.686	89.996	NL	0.246	0.244	0.000
34.752	68.333	NL	0.325	0.484	0.000
34.817	68.333	NL	1.210	0.000	0.000
34.882	73.115	NL	0.733	0.000	0.000
34.947	73.115	NL	0.814	0.326	0.000
35.012	101.251	NL	0.000	0.000	0.000
35.078	67.489	NL	0.000	0.000	0.000
35.143	67.489	NL	0.166	0.000	0.000
35.208	101.251	NL	0.502	0.000	0.000
35.273	63.270	NL	0.251	0.000	0.000
35.338	63.270	NL	0.488	0.321	0.000
35.404	112.507	NL	0.983	0.481	0.000
35.469	81.555	NL	0.976	0.479	0.000
35.534	81.555	NL	0.653	0.162	0.000
35.599	88.589	NL	0.975	0.243	0.000
35.664	59.051	NL	1.210	0.000	0.000
35.730	59.051	NL	0.325	0.161	0.000
35.795	91.121	NL	0.241	0.728	0.000
35.860	81.555	NL	0.245	0.727	0.000
35.925	81.555	NL	0.492	0.327	0.000
35.990	113.914	NL	0.245	0.000	0.000
36.056	86.057	NL	0.000	0.000	0.000
36.121	86.057	NL	0.320	0.158	0.000
36.186	95.623	NL	0.000	0.000	0.000
36.251	93.653	NL	0.000	0.000	0.000
36.316	93.653	NL	0.647	0.324	0.000
36.382	106.316	NL	0.487	0.487	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
36.447	101.251	NL	0.486	0.486	0.000
36.512	101.251	NL	0.162	0.161	0.000
36.577	68.333	NL	0.731	0.731	0.000
36.642	68.333	NL	0.973	0.244	0.000
36.708	53.144	NL	0.486	0.163	0.000
36.773	78.742	NL	0.726	0.000	0.000
36.838	78.742	NL	0.725	0.000	0.000
36.903	83.525	NL	0.161	0.000	0.000
36.968	101.251	NL	0.000	0.000	0.000
37.034	101.251	NL	0.000	0.000	0.000
37.099	88.589	NL	0.651	0.000	0.000
37.164	83.525	NL	0.738	0.494	0.000
37.229	83.525	NL	0.735	0.496	0.249
37.294	87.182	NL	0.325	0.330	0.166
37.360	60.738	NL	0.241	0.000	0.000
37.425	60.738	NL	0.483	0.000	0.000
37.490	78.460	NL	0.000	0.162	0.160
37.555	64.676	NL	0.000	0.000	0.241
37.620	64.676	NL	0.248	0.248	0.481
37.686	88.589	NL	0.638	0.165	0.000
37.751	87.182	NL	0.235	0.000	0.000
37.816	87.182	NL	0.714	0.244	0.000
37.881	70.865	NL	0.635	0.163	0.000
37.946	56.238	NL	0.230	0.000	0.000
38.012	56.238	NL	0.461	0.000	0.000
38.077	86.057	NL	0.618	0.000	0.155
38.142	116.447	NL	0.935	0.000	0.232
38.207	116.447	NL	0.472	0.473	0.000
38.272	98.437	NL	0.623	0.315	0.000
38.338	103.783	NL	0.462	0.000	0.000
38.403	103.783	NL	0.464	0.000	0.000
38.468	60.738	NL	0.624	0.000	0.000
38.533	60.738	NL	0.707	0.000	0.000
38.598	56.238	NL	0.701	0.000	0.000
38.664	58.207	NL	0.467	0.157	0.154
38.729	58.207	NL	0.231	0.000	0.000
38.794	86.057	NL	0.699	0.000	0.000
38.859	73.115	NL	0.783	0.155	0.000
38.924	73.115	NL	0.234	0.233	0.000
38.990	78.460	NL	0.000	0.466	0.000
39.055	65.801	NL	0.309	0.000	0.154
39.120	65.801	NL	0.230	0.000	0.230
39.185	39.363	NL	0.000	0.236	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
39.250	32.895	NL	0.313	0.157	0.000
39.316	32.895	NL	0.234	0.000	0.000
39.381	55.675	NL	0.000	0.000	0.000
39.446	39.363	NL	0.159	0.000	0.155
39.511	39.363	NL	0.476	0.476	0.233
39.576	70.865	NL	0.478	0.238	0.000
39.642	83.525	NL	0.319	0.315	0.000
39.707	83.525	NL	0.000	0.235	0.000
39.772	59.051	NL	0.000	0.000	0.000
39.837	70.865	NL	0.778	0.000	0.156
39.902	70.865	NL	0.933	0.000	0.000
39.968	64.676	NL	1.398	0.000	0.000
40.033	60.738	NL	0.306	0.000	0.000
40.098	60.738	NL	1.896	0.000	0.000
40.163	87.182	NL	1.637	0.000	0.000
40.228	87.182	NL	0.795	0.000	0.000
40.294	50.613	NL	0.465	0.000	0.000
40.359	42.176	NL	0.233	0.000	0.000
40.424	42.176	NL	0.311	0.000	0.000
40.489	58.207	NL	0.234	0.474	0.000
40.554	55.675	NL	0.468	0.237	0.000
40.620	55.675	NL	0.153	0.158	0.000
40.685	80.992	NL	0.230	0.000	0.000
40.750	50.613	NL	0.000	0.000	0.000
40.815	50.613	NL	0.314	0.313	0.000
40.880	60.738	NL	0.000	0.235	0.000
40.946	47.800	NL	0.000	0.000	0.000
41.011	47.800	NL	0.470	0.157	0.157
41.076	53.144	NL	0.235	0.708	0.235
41.141	53.144	NL	0.707	0.236	0.470
41.206	53.144	NL	0.158	0.158	0.000
41.272	70.302	NL	0.939	0.000	0.000
41.337	78.460	NL	0.702	0.000	0.000
41.402	78.460	NL	1.259	0.628	0.000
41.467	53.144	NL	1.426	0.240	0.000
41.532	44.988	NL	1.674	0.479	0.000
41.598	44.988	NL	0.476	0.000	0.000
41.663	55.675	NL	0.477	0.000	0.000
41.728	65.801	NL	0.000	0.000	0.000
41.793	65.801	NL	0.160	0.161	0.000
41.858	56.238	NL	0.000	0.242	0.000
41.924	56.238	NL	0.000	0.000	0.000
41.989	60.738	NL	0.319	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
42.054	56.238	NL	0.238	0.000	0.000
42.119	56.238	NL	0.000	0.000	0.000
42.184	70.865	NL	0.159	0.317	0.000
42.250	80.992	NL	0.000	0.476	0.000
42.315	80.992	NL	0.000	0.951	0.000
42.380	67.489	NL	0.316	0.000	0.000
42.445	35.426	NL	0.236	0.000	0.000
42.510	35.426	NL	0.471	0.236	0.000
42.576	98.437	NL	0.158	0.157	0.000
42.641	50.613	NL	0.705	0.000	0.000
42.706	50.613	NL	0.468	0.000	0.000
42.771	70.865	NL	0.312	0.000	0.000
42.836	61.863	NL	0.469	0.000	0.000
42.902	61.863	NL	0.235	0.000	0.000
42.967	53.144	NL	0.470	0.000	0.000
43.032	63.270	NL	0.000	0.000	0.000
43.097	63.270	NL	0.000	0.000	0.000
43.162	78.742	NL	0.478	0.000	0.000
43.228	50.613	NL	0.476	0.000	0.000
43.293	50.613	NL	0.238	0.000	0.000
43.358	48.081	NL	0.639	0.160	0.000
43.423	59.051	NL	0.947	0.240	0.000
43.488	59.051	NL	0.233	0.000	0.000
43.554	78.460	NL	0.156	0.315	0.162
43.619	78.460	NL	0.468	0.000	0.243
43.684	75.929	NL	0.234	0.000	0.487
43.749	61.863	NL	0.318	0.000	0.000
43.814	61.863	NL	0.479	0.000	0.000
43.880	75.929	NL	0.239	0.000	0.000
43.945	70.302	NL	0.322	0.324	0.000
44.010	70.302	NL	0.000	0.486	0.000
44.075	60.738	NL	0.240	0.485	0.000
44.140	83.525	NL	0.323	0.000	0.000
44.206	83.525	NL	0.000	0.000	0.000
44.271	56.238	NL	0.239	0.000	0.000
44.336	61.863	NL	0.323	0.000	0.000
44.401	61.863	NL	0.245	0.000	0.000
44.466	50.613	NL	0.966	0.238	0.000
44.532	70.302	NL	0.794	0.318	0.000
44.597	70.302	NL	0.239	0.239	0.000
44.662	75.929	NL	0.000	0.000	0.000
44.727	45.550	NL	0.161	0.000	0.000
44.792	45.550	NL	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
44.858	73.115	NL	0.000	0.234	0.000
44.923	65.801	NL	0.324	0.318	0.000
44.988	65.801	NL	0.486	0.000	0.000
45.053	60.738	NL	0.972	0.000	0.000
45.118	59.051	NL	0.162	0.000	0.000
45.184	59.051	NL	0.000	0.000	0.000
45.249	53.144	NL	0.000	0.000	0.000
45.314	53.144	NL	0.000	0.000	0.000
45.379	58.207	NL	0.000	0.000	0.000
45.444	61.863	NL	0.000	0.000	0.000
45.510	61.863	NL	0.164	0.000	0.000
45.575	55.675	NL	0.469	0.000	0.000
45.640	47.800	NL	0.234	0.000	0.000
45.705	47.800	NL	0.156	0.000	0.000
45.770	58.207	NL	0.000	0.000	0.000
45.836	80.992	NL	0.000	0.000	0.000
45.901	80.992	NL	0.000	0.000	0.000
45.966	75.929	NL	0.469	0.000	0.000
46.031	48.081	NL	0.235	0.000	0.000
46.096	48.081	NL	0.156	0.000	0.000
46.162	70.865	NL	0.475	0.000	0.000
46.227	112.507	NL	0.238	0.000	0.000
46.292	112.507	NL	0.158	0.000	0.000
46.357	55.675	NL	0.000	0.480	0.000
46.422	61.863	NL	0.000	0.240	0.000
46.488	61.863	NL	0.650	0.160	0.000
46.553	55.675	NL	0.249	0.000	0.000
46.618	84.369	NL	0.239	0.000	0.000
46.683	84.369	NL	0.488	0.000	0.000
46.748	103.783	NL	0.492	0.000	0.000
46.814	56.238	NL	0.000	0.232	0.000
46.879	56.238	NL	0.484	0.319	0.000
46.944	78.460	NL	0.493	0.246	0.000
47.009	78.460	NL	0.493	0.000	0.235
47.074	61.863	NL	0.326	0.162	0.157
47.140	53.144	NL	0.710	0.243	0.000
47.205	53.144	NL	0.954	0.486	0.000
47.270	63.270	NL	0.631	0.000	0.000
47.335	61.863	NL	0.245	0.000	0.000
47.400	61.863	NL	0.000	0.000	0.000
47.466	75.929	NL	0.157	0.164	0.000
47.531	58.207	NL	0.000	0.000	0.000
47.596	58.207	NL	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
47.661	101.251	NL	0.322	0.000	0.157
47.726	63.270	NL	0.721	0.000	0.000
47.792	63.270	NL	0.731	0.000	0.000
47.857	63.270	NL	0.475	0.164	0.000
47.922	53.425	NL	0.243	0.000	0.000
47.987	53.425	NL	0.955	0.000	0.000
48.052	68.333	NL	0.811	0.000	0.000
48.118	73.397	NL	0.749	0.000	0.000
48.183	73.397	NL	0.997	0.000	0.000
48.248	44.988	NL	0.167	0.166	0.000
48.313	55.675	NL	0.251	0.000	0.000
48.378	55.675	NL	0.739	0.000	0.000
48.444	50.613	NL	0.646	0.165	0.000
48.509	63.270	NL	0.494	0.248	0.000
48.574	63.270	NL	0.493	0.000	0.000
48.639	56.238	NL	0.166	0.000	0.000
48.704	56.238	NL	0.477	0.000	0.000
48.770	37.957	NL	0.239	0.000	0.000
48.835	75.929	NL	0.159	0.159	0.000
48.900	75.929	NL	0.000	0.000	0.000
48.965	50.613	NL	0.000	0.237	0.000
49.030	73.115	NL	0.165	0.487	0.000
49.096	73.115	NL	0.247	0.247	0.000
49.161	43.019	NL	0.000	0.493	0.000
49.226	70.865	NL	0.000	0.156	0.000
49.291	70.865	NL	0.000	0.000	0.000
49.356	53.425	NL	0.235	0.000	0.000
49.422	50.613	NL	0.157	0.000	0.000
49.487	50.613	NL	0.000	0.000	0.000
49.552	45.550	NL	0.000	0.000	0.000
49.617	61.863	NL	0.000	0.164	0.000
49.682	61.863	NL	0.000	0.246	0.000
49.748	58.207	NL	0.000	0.492	0.000
49.813	68.333	NL	0.326	0.000	0.000
49.878	68.333	NL	0.245	0.000	0.000
49.943	73.115	NL	0.000	0.000	0.000
50.008	86.057	NL	0.320	0.321	0.156
50.074	86.057	NL	0.246	0.000	0.000
50.139	70.865	NL	0.492	0.000	0.000
50.204	106.879	NL	0.658	0.490	0.000
50.269	106.879	NL	0.472	0.502	0.000
50.334	75.929	NL	0.236	0.000	0.000
50.400	75.929	NL	0.488	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
50.465	81.555	NL	0.000	0.000	0.000
50.530	93.653	NL	0.000	0.237	0.000
50.595	93.653	NL	0.159	0.158	0.168
50.660	86.057	NL	0.000	0.479	0.252
50.726	87.182	NL	0.237	0.477	0.000
50.791	87.182	NL	0.158	0.485	0.000
50.856	111.381	NL	0.000	0.251	0.000
50.921	61.863	NL	0.241	0.000	0.000
50.986	61.863	NL	0.985	0.330	0.000
51.052	63.270	NL	0.736	0.245	0.000
51.117	73.115	NL	0.727	0.490	0.000
51.182	73.115	NL	0.158	0.000	0.165
51.247	88.589	NL	0.466	0.000	0.247
51.312	75.929	NL	0.233	0.000	0.000
51.378	75.929	NL	0.321	0.000	0.000
51.443	75.929	NL	0.497	0.000	0.000
51.508	111.381	NL	0.000	0.000	0.000
51.573	111.381	NL	0.000	0.000	0.000
51.638	112.507	NL	0.000	0.000	0.000
51.704	101.251	NL	0.000	0.000	0.000
51.769	101.251	NL	0.888	0.000	0.000
51.834	101.251	NL	1.047	0.000	0.000
51.899	98.437	NL	0.490	0.000	0.000
51.964	98.437	NL	0.165	0.000	0.000
52.030	91.121	NL	0.402	0.000	0.000
52.095	91.121	NL	0.964	0.000	0.000
52.160	83.525	NL	0.730	0.166	0.000
52.225	87.182	NL	0.900	0.405	0.000
52.290	87.182	NL	0.965	0.498	0.000
52.356	139.246	NL	0.797	0.164	0.165
52.421	126.579	NL	0.312	0.246	0.000
52.486	126.579	NL	0.940	0.470	0.000
52.551	113.914	NL	1.037	0.402	0.000
52.616	83.525	NL	1.035	0.407	0.000
52.682	83.525	NL	0.475	0.000	0.000
52.747	89.996	NL	0.810	0.000	0.000
52.812	108.849	NL	0.569	0.000	0.000
52.877	108.849	NL	0.000	0.480	0.480
52.942	101.251	NL	0.334	0.647	0.240
53.008	93.653	NL	0.500	0.570	0.160
53.073	93.653	NL	0.000	0.972	0.000
53.138	121.513	NL	0.665	0.236	0.239
53.203	106.879	NL	0.908	0.158	0.159

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
53.268	106.879	NL	1.497	0.000	0.000
53.334	91.121	NL	0.164	0.000	0.000
53.399	101.251	NL	0.402	0.000	0.000
53.464	101.251	NL	0.964	0.000	0.000
53.529	116.447	NL	0.401	0.236	0.000
53.594	78.742	NL	0.314	0.314	0.000
53.660	78.742	NL	0.000	0.000	0.000
53.725	70.865	NL	0.000	0.165	0.000
53.790	70.865	NL	0.000	0.247	0.000
53.855	98.718	NL	0.000	0.000	0.000
53.920	61.863	NL	0.164	0.000	0.000
53.986	61.863	NL	0.000	0.000	0.000
54.051	63.270	NL	0.000	0.000	0.000
54.116	91.121	NL	0.466	0.000	0.000
54.181	91.121	NL	0.311	0.000	0.000
54.246	70.302	NL	0.473	0.473	0.000
54.312	93.653	NL	0.637	0.400	0.000
54.377	93.653	NL	0.563	0.403	0.000
54.442	75.929	NL	0.465	0.492	0.000
54.507	95.623	NL	0.233	0.000	0.000
54.572	95.623	NL	0.467	0.312	0.000
54.638	80.992	NL	0.468	0.000	0.000
54.703	89.996	NL	0.468	0.000	0.167
54.768	89.996	NL	0.471	0.000	0.251
54.833	101.251	NL	0.475	0.000	0.501
54.898	70.865	NL	0.572	0.335	0.000
54.964	70.865	NL	0.567	0.250	0.000
55.029	98.437	NL	0.965	0.000	0.000
55.094	126.579	NL	0.817	0.000	0.000
55.159	126.579	NL	0.824	0.000	0.000
55.224	84.369	NL	0.000	0.000	0.000
55.290	106.316	NL	0.166	0.166	0.166
55.355	106.316	NL	0.250	0.250	0.250
55.420	95.623	NL	0.499	0.499	0.499
55.485	95.623	NL	0.402	0.000	0.000
55.550	131.646	NL	0.562	0.000	0.000
55.616	73.115	NL	0.000	0.000	0.000
55.681	73.115	NL	0.163	0.165	0.000
55.746	96.186	NL	0.245	0.000	0.000
55.811	106.316	NL	0.471	0.000	0.000
55.876	106.316	NL	0.960	0.164	0.000
55.942	61.863	NL	1.050	0.246	0.000
56.007	75.929	NL	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
56.072	75.929	NL	0.235	0.401	0.000
56.137	50.613	NL	0.157	0.563	0.000
56.202	78.742	NL	0.000	0.499	0.000
56.268	78.742	NL	0.164	0.399	0.000
56.333	63.270	NL	0.000	0.156	0.000
56.398	56.238	NL	0.000	0.000	0.000
56.463	56.238	NL	0.164	0.000	0.000
56.528	63.270	NL	0.247	0.157	0.000
56.594	63.270	NL	0.000	0.000	0.000
56.659	63.270	NL	0.000	0.000	0.166
56.724	59.051	NL	0.000	0.000	0.000
56.789	53.144	NL	0.000	0.470	0.000
56.854	53.144	NL	0.330	0.235	0.000
56.920	45.550	NL	0.248	0.157	0.000
56.985	64.676	NL	0.469	0.000	0.000
57.050	64.676	NL	0.235	0.000	0.000
57.115	37.957	NL	0.315	0.158	0.000
57.180	37.957	NL	0.000	0.000	0.000
57.246	50.613	NL	0.167	0.000	0.000
57.311	56.238	NL	0.158	0.000	0.000
57.376	56.238	NL	0.000	0.000	0.000
57.441	47.800	NL	0.334	0.000	0.239
57.506	45.550	NL	0.249	0.000	0.159
57.572	45.550	NL	0.499	0.000	0.000
57.637	59.051	NL	0.000	0.000	0.000
57.702	65.801	NL	0.313	0.000	0.000
57.767	65.801	NL	0.000	0.000	0.000
57.832	37.957	NL	0.396	0.163	0.000
57.898	44.988	NL	0.400	0.245	0.000
57.963	44.988	NL	0.000	0.467	0.000
58.028	43.019	NL	0.327	0.233	0.000
58.093	33.739	NL	0.491	0.156	0.000
58.158	33.739	NL	0.982	0.000	0.000
58.224	37.957	NL	0.164	0.000	0.000
58.289	50.613	NL	0.245	0.000	0.000
58.354	50.613	NL	0.000	0.000	0.000
58.419	65.801	NL	0.000	0.164	0.000
58.484	47.800	NL	0.000	0.246	0.000
58.550	47.800	NL	0.000	0.958	0.000
58.615	40.488	NL	0.162	0.395	0.000
58.680	67.489	NL	0.400	0.399	0.000
58.745	67.489	NL	0.000	0.000	0.000
58.810	60.738	NL	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
58.876	60.738	NL	0.000	0.000	0.000
58.941	65.801	NL	0.000	0.000	0.000
59.006	73.115	NL	0.722	0.000	0.000
59.071	73.115	NL	0.401	0.000	0.000
59.136	50.613	NL	0.000	0.000	0.000
59.202	55.675	NL	0.000	0.000	0.000
59.267	55.675	NL	0.000	0.157	0.000
59.332	47.800	NL	0.000	0.000	0.000
59.397	35.426	NL	0.000	0.168	0.000
59.462	35.426	NL	0.000	0.252	0.000
59.528	42.176	NL	0.000	0.504	0.000
59.593	50.613	NL	0.000	0.000	0.000
59.658	50.613	NL	0.159	0.000	0.000
59.723	53.425	NL	0.481	0.000	0.000
59.788	53.144	NL	0.884	0.000	0.000
59.854	53.144	NL	0.479	0.000	0.158
59.919	47.800	NL	0.000	0.000	0.000
59.984	55.675	NL	0.000	0.164	0.000
60.049	55.675	NL	0.000	0.000	0.156
60.114	58.207	NL	0.000	0.000	0.000
60.180	56.238	NL	0.165	0.000	0.000
60.245	56.238	NL	0.000	0.000	0.000
60.310	55.675	NL	0.000	0.465	0.000
60.375	44.988	NL	0.329	0.396	0.000
60.440	44.988	NL	0.247	0.400	0.000
60.506	65.801	NL	0.000	0.490	0.000
60.571	65.801	NL	0.000	0.330	0.000
60.636	60.738	NL	0.000	0.495	0.000
60.701	47.800	NL	0.000	0.991	0.000
60.766	47.800	NL	0.000	0.000	0.000
60.832	75.929	NL	0.313	0.000	0.000
60.897	78.460	NL	0.467	0.000	0.000
60.962	78.460	NL	0.958	0.165	0.000
61.027	70.302	NL	0.801	0.247	0.000
61.092	78.460	NL	0.467	0.961	0.000
61.158	78.460	NL	0.565	0.234	0.000
61.223	93.653	NL	0.311	0.156	0.000
61.288	87.182	NL	0.000	0.000	0.000
61.353	87.182	NL	0.167	0.000	0.000
61.418	73.397	NL	0.250	0.000	0.000
61.484	81.555	NL	0.975	0.000	0.000
61.549	81.555	NL	0.404	0.000	0.000
61.614	70.865	NL	0.408	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
61.679	47.800	NL	0.476	0.000	0.000
61.744	47.800	NL	0.739	0.000	0.000
61.810	60.738	NL	0.407	0.000	0.000
61.875	59.051	NL	0.000	0.000	0.000
61.940	59.051	NL	0.402	0.164	0.000
62.005	55.675	NL	0.159	0.247	0.000
62.070	61.863	NL	0.479	0.493	0.000
62.136	61.863	NL	0.566	0.000	0.000
62.201	45.550	NL	0.806	0.000	0.000
62.266	45.550	NL	0.953	0.000	0.000
62.331	50.613	NL	0.719	0.000	0.165
62.396	59.051	NL	0.155	0.000	0.247
62.462	59.051	NL	0.000	0.000	0.000
62.527	65.801	NL	0.164	0.165	0.000
62.592	55.675	NL	0.247	0.248	0.000
62.657	55.675	NL	0.000	0.495	0.000
62.722	67.489	NL	0.164	0.000	0.000
62.788	53.144	NL	0.246	0.000	0.000
62.853	53.144	NL	0.000	0.000	0.000
62.918	43.019	NL	0.235	0.471	0.000
62.983	53.425	NL	0.157	0.314	0.000
63.048	53.425	NL	0.465	0.000	0.000
63.114	35.426	NL	0.890	0.000	0.000
63.179	59.051	NL	0.898	0.000	0.000
63.244	59.051	NL	1.485	0.000	0.000
63.309	58.207	NL	0.000	0.000	0.000
63.374	43.019	NL	0.000	0.000	0.000
63.440	43.019	NL	0.946	0.000	0.000
63.505	50.613	NL	0.473	0.401	0.000
63.570	53.144	NL	0.315	0.405	0.000
63.635	53.144	NL	0.472	0.000	0.000
63.700	48.081	NL	0.474	0.167	0.000
63.766	44.988	NL	0.316	0.251	0.000
63.831	44.988	NL	0.000	0.502	0.000
63.896	58.207	NL	0.240	0.000	0.000
63.961	58.207	NL	0.160	0.000	0.000
64.026	64.676	NL	0.000	0.000	0.000
64.092	40.488	NL	0.643	0.239	0.000
64.157	40.488	NL	0.567	0.159	0.000
64.222	44.988	NL	0.479	0.000	0.000
64.287	55.675	NL	1.039	0.000	0.000
64.352	55.675	NL	0.720	0.156	0.000
64.418	70.865	NL	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
64.483	64.676	NL	0.402	0.234	0.000
64.548	64.676	NL	0.407	0.156	0.000
64.613	55.675	NL	0.970	0.000	0.000
64.678	70.865	NL	0.234	0.165	0.000
64.744	70.865	NL	0.313	0.247	0.000
64.809	63.270	NL	0.468	0.495	0.000
64.874	67.489	NL	0.560	0.232	0.000
64.939	67.489	NL	0.801	0.155	0.000
65.004	50.613	NL	0.492	0.000	0.000
65.070	78.460	NL	0.000	0.000	0.000
65.135	78.460	NL	0.000	0.000	0.000
65.200	56.238	NL	0.000	0.000	0.000
65.265	55.675	NL	0.402	0.000	0.000
65.330	55.675	NL	0.316	0.000	0.000
65.396	106.316	NL	0.000	0.000	0.000
65.461	56.238	NL	0.163	0.000	0.000
65.526	56.238	NL	0.401	0.000	0.000
65.591	80.992	NL	0.932	0.000	0.000
65.656	80.992	NL	0.633	0.167	0.000
65.722	67.489	NL	0.561	0.251	0.000
65.787	104.065	NL	0.502	0.502	0.000
65.852	104.065	NL	0.498	0.236	0.000
65.917	86.057	NL	0.498	0.157	0.000
65.982	87.438	NL	0.495	0.000	0.000
66.048	87.438	NL	0.660	0.000	0.164
66.113	88.589	NL	0.492	0.000	0.246
66.178	94.344	NL	0.984	0.946	0.492
66.243	94.344	NL	0.476	0.473	0.166
66.308	89.740	NL	0.317	0.315	0.249
66.374	73.627	NL	0.479	0.000	0.499
66.439	73.627	NL	0.877	0.714	0.000
66.504	85.136	NL	1.184	0.629	0.000
66.569	103.553	NL	1.424	0.000	0.000
66.634	103.553	NL	0.158	0.308	0.000
66.700	80.148	NL	0.156	0.381	0.000
66.765	85.136	NL	0.000	0.469	0.000
66.830	85.136	NL	0.352	0.506	0.007
66.895	82.258	NL	0.471	0.366	0.010
66.960	103.553	NL	-9999.990	-9999.990	-9999.990
67.026	103.553	NL	-9999.990	-9999.990	-9999.990
67.091	94.920	NL	-9999.990	-9999.990	-9999.990
67.156	94.344	NL	-9999.990	-9999.990	-9999.990
67.221	94.344	NL	-9999.990	-9999.990	-9999.990

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
67.286	99.140	NL	-9999.990	-9999.990	-9999.990
67.352	99.140	NL	-9999.990	-9999.990	-9999.990
67.417	82.834	NL	-9999.990	-9999.990	-9999.990
67.482	101.251	NL	-9999.990	-9999.990	-9999.990
67.547	101.251	NL	-9999.990	-9999.990	-9999.990
67.612	99.442	NL	-9999.990	-9999.990	-9999.990
67.678	91.511	NL	-9999.990	-9999.990	-9999.990
67.743	91.511	NL	-9999.990	-9999.990	-9999.990
67.808	91.511	NL	-9999.990	-9999.990	-9999.990
67.873	75.929	NL	-9999.990	-9999.990	-9999.990
67.938	75.929	NL	-9999.990	-9999.990	-9999.990
68.004	113.914	NL	-9999.990	-9999.990	-9999.990
68.069	82.962	NL	-9999.990	-9999.990	-9999.990
68.134	82.962	NL	-9999.990	-9999.990	-9999.990
68.199	105.049	NL	-9999.990	-9999.990	-9999.990

Notes

NL - not logged due to steel casing
-9999.99 - no data
API - American Petroleum Institute
cps - counts per second
mS/m - milliSiemens per meter

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
2.193	74.874	-9999.990	-9999.990	-9999.990	-9999.990
2.258	73.263	-9999.990	-9999.990	-9999.990	-9999.990
2.323	73.263	-9999.990	-9999.990	-9999.990	-9999.990
2.388	83.924	-9999.990	-9999.990	-9999.990	-9999.990
2.454	80.148	-9999.990	-9999.990	-9999.990	-9999.990
2.519	80.148	-9999.990	-9999.990	-9999.990	-9999.990
2.584	86.590	-9999.990	-9999.990	-9999.990	-9999.990
2.649	91.921	-9999.990	-9999.990	-9999.990	-9999.990
2.714	91.921	-9999.990	-9999.990	-9999.990	-9999.990
2.780	70.865	-9999.990	-9999.990	-9999.990	-9999.990
2.845	84.369	-9999.990	-9999.990	-9999.990	-9999.990
2.910	84.369	-9999.990	-9999.990	-9999.990	-9999.990
2.975	73.627	-9999.990	-9999.990	-9999.990	-9999.990
3.040	80.751	-9999.990	-9999.990	-9999.990	-9999.990
3.106	80.751	-9999.990	-9999.990	-9999.990	-9999.990
3.171	71.181	-9999.990	-9999.990	-9999.990	-9999.990
3.236	71.181	-9999.990	-9999.990	-9999.990	-9999.990
3.301	90.699	-9999.990	-9999.990	-9999.990	-9999.990
3.366	80.992	-9999.990	-9999.990	-9999.990	-9999.990
3.432	80.992	13.186	-9999.990	-9999.990	-9999.990
3.497	67.489	11.679	-9999.990	-9999.990	-9999.990
3.562	88.589	11.679	-9999.990	-9999.990	-9999.990
3.627	88.589	10.793	-9999.990	-9999.990	-9999.990
3.692	50.613	8.641	-9999.990	-9999.990	-9999.990
3.758	84.369	8.641	-9999.990	-9999.990	-9999.990
3.823	84.369	8.724	-9999.990	-9999.990	-9999.990
3.888	93.653	7.923	-9999.990	-9999.990	-9999.990
3.953	64.676	7.923	-9999.990	-9999.990	-9999.990
4.018	64.676	6.966	-9999.990	-9999.990	-9999.990
4.084	86.057	6.727	-9999.990	-9999.990	-9999.990
4.149	75.929	6.727	0.327	0.013	0.039
4.214	75.929	5.052	0.759	0.009	0.026
4.279	75.929	6.203	0.993	0.165	0.782
4.344	73.115	6.203	1.725	0.247	0.391
4.410	73.115	5.121	1.798	0.000	0.261
4.475	75.929	4.904	0.170	0.170	0.000
4.540	70.302	4.904	1.000	0.255	0.249
4.605	70.302	5.375	0.497	0.000	0.166
4.670	80.992	5.375	0.493	0.164	0.000
4.736	78.742	4.530	0.492	0.246	0.000
4.801	78.742	5.770	0.984	0.492	0.167
4.866	75.929	5.770	1.511	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
4.931	75.929	4.861	1.510	0.000	0.000
4.996	80.992	5.770	1.508	0.000	0.000
5.062	87.182	5.770	1.328	0.000	0.000
5.127	87.182	8.800	1.494	0.000	0.000
5.192	98.437	6.780	0.831	0.000	0.000
5.257	93.653	6.780	0.167	0.000	0.167
5.322	93.653	7.790	0.503	0.000	0.250
5.388	89.996	8.295	0.169	0.000	0.000
5.453	84.369	8.295	0.165	0.000	0.329
5.518	84.369	9.810	0.248	0.000	0.248
5.583	106.316	8.295	0.495	0.000	0.495
5.648	64.676	8.295	1.299	0.166	0.000
5.714	64.676	6.679	0.977	0.248	0.243
5.779	91.121	8.295	0.984	0.000	0.162
5.844	87.182	8.295	0.984	0.000	0.000
5.909	87.182	5.770	0.979	0.000	0.000
5.974	86.057	4.255	1.632	0.163	0.000
6.040	95.623	4.255	0.324	0.000	0.000
6.105	95.623	3.245	0.241	0.000	0.000
6.170	68.333	4.255	0.324	0.000	0.000
6.235	84.369	4.255	0.321	0.000	0.000
6.300	84.369	1.793	0.485	0.000	0.000
6.366	88.589	1.793	0.162	0.000	0.161
6.431	98.437	0.215	0.812	0.000	0.000
6.496	98.437	-0.290	1.220	0.000	0.000
6.561	73.115	-0.290	1.633	0.000	0.000
6.626	73.115	-0.795	1.296	0.000	0.000
6.692	116.447	0.215	1.453	0.000	0.000
6.757	112.507	0.215	0.808	0.000	0.000
6.822	112.507	-1.805	0.970	0.000	0.492
6.887	91.121	-3.320	0.718	0.000	0.246
6.952	115.321	-3.320	0.328	0.000	0.327
7.018	115.321	-3.320	0.842	0.000	0.000
7.083	68.333	-1.805	0.000	0.000	0.000
7.148	87.182	-1.805	0.496	0.000	0.000
7.213	87.182	-4.835	0.663	0.000	0.493
7.278	120.950	-4.835	1.242	0.000	0.247
7.344	93.653	-4.835	0.995	0.000	0.164
7.409	93.653	-5.845	0.653	0.000	0.000
7.474	98.437	-3.825	0.489	0.000	0.000
7.539	81.555	-3.825	0.498	0.000	0.000
7.604	81.555	-6.047	0.657	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
7.670	91.121	-6.350	0.493	0.000	0.000
7.735	95.623	-6.350	0.978	0.000	0.000
7.800	95.623	-3.825	0.166	0.000	0.000
7.865	78.742	-5.845	0.249	0.000	0.000
7.930	108.849	-5.845	0.164	0.000	0.000
7.996	108.849	-5.845	0.328	0.000	0.000
8.061	73.115	-5.845	0.000	0.000	0.000
8.126	75.929	-6.350	0.000	0.000	0.000
8.191	75.929	-3.825	0.659	0.000	0.000
8.256	84.369	-3.825	0.988	0.242	0.000
8.322	84.369	-6.350	0.998	0.161	0.000
8.387	75.929	-5.845	1.471	0.000	0.000
8.452	109.693	-5.845	0.978	0.242	0.000
8.517	109.693	-6.350	0.652	0.162	0.161
8.582	98.718	-4.835	0.331	0.000	0.000
8.648	92.809	-4.835	0.496	0.000	0.000
8.713	92.809	-5.845	0.986	0.000	0.162
8.778	108.849	-6.350	0.649	0.000	0.164
8.843	87.182	-6.350	1.217	0.000	0.000
8.908	87.182	-5.593	0.646	0.000	0.000
8.974	93.653	-6.350	0.821	0.000	0.000
9.039	67.489	-6.350	0.744	0.000	0.000
9.104	67.489	-3.320	0.162	0.000	0.163
9.169	73.115	-5.340	0.674	0.169	0.496
9.234	73.397	-5.340	0.754	0.000	0.497
9.300	73.397	-5.845	0.166	0.000	0.331
9.365	87.182	-5.340	0.334	0.000	0.000
9.430	83.525	-5.340	0.498	0.000	0.000
9.495	83.525	-4.229	0.829	0.000	0.000
9.560	104.065	-5.340	0.000	0.000	0.000
9.626	84.369	-5.340	0.000	0.000	0.246
9.691	84.369	-5.845	0.166	0.000	0.164
9.756	98.718	-5.845	0.167	0.000	0.000
9.821	84.369	-3.825	0.246	0.000	0.000
9.886	84.369	-5.845	0.164	0.000	0.000
9.952	87.182	-5.845	0.987	0.000	0.000
10.017	87.182	-6.855	0.491	0.000	0.000
10.082	78.460	-6.350	0.648	0.000	0.162
10.147	84.369	-6.350	0.329	0.000	0.489
10.212	84.369	-5.340	0.246	0.000	0.245
10.278	80.992	-7.865	0.325	0.000	0.163
10.343	70.302	-7.865	1.806	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
10.408	70.302	-8.370	1.737	0.000	0.000
10.473	118.136	-8.370	3.154	0.000	0.164
10.538	70.865	-8.370	0.164	0.492	0.492
10.604	70.865	-6.855	0.246	0.246	0.246
10.669	81.555	-9.380	0.492	0.164	0.164
10.734	75.929	-9.380	1.148	0.000	0.000
10.799	75.929	-9.885	0.985	0.000	0.000
10.864	81.555	-10.390	0.978	0.000	0.000
10.930	78.460	-10.390	0.504	0.000	0.000
10.995	78.460	-8.370	0.408	0.000	0.000
11.060	64.676	-10.895	0.570	0.000	0.000
11.125	70.865	-10.895	1.457	0.484	0.000
11.190	70.865	-11.400	0.484	0.410	0.000
11.256	70.302	-11.905	0.487	0.414	0.000
11.321	80.992	-11.905	0.488	0.000	0.000
11.386	80.992	-9.885	0.244	0.000	0.000
11.451	89.996	-9.885	0.326	0.163	0.000
11.516	50.613	-11.905	0.495	0.000	0.000
11.582	50.613	-12.410	0.585	0.000	0.000
11.647	67.489	-12.410	0.165	0.164	0.000
11.712	67.489	-12.915	0.993	0.000	0.497
11.777	56.238	-10.895	1.657	0.000	0.499
11.842	68.333	-10.895	1.651	0.000	0.333
11.908	68.333	-12.915	0.981	0.000	0.000
11.973	50.613	-13.420	0.166	0.000	0.250
12.038	42.176	-13.420	0.583	0.000	0.166
12.103	42.176	-12.915	0.497	0.000	0.000
12.168	45.550	-11.400	0.000	0.000	0.000
12.234	64.676	-11.400	0.000	0.000	0.000
12.299	64.676	-13.925	0.000	0.000	0.000
12.364	70.302	-12.915	0.573	0.000	0.000
12.429	58.207	-12.915	0.409	0.000	0.000
12.494	58.207	-13.420	0.000	0.000	0.000
12.560	61.863	-11.400	0.810	0.000	0.000
12.625	73.397	-11.400	0.809	0.000	0.000
12.690	73.397	-13.925	1.455	0.000	0.000
12.755	53.425	-13.420	0.409	0.165	0.000
12.820	43.019	-13.420	0.411	0.000	0.000
12.886	43.019	-13.925	0.498	0.000	0.000
12.951	59.051	-11.400	0.574	0.163	0.000
13.016	91.121	-11.400	0.660	0.000	0.000
13.081	91.121	-13.925	0.998	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
13.146	39.363	-13.925	0.000	0.000	0.167
13.212	68.333	-13.925	0.000	0.000	0.161
13.277	68.333	-13.925	0.000	0.000	0.000
13.342	67.489	-13.925	0.410	0.000	0.166
13.407	67.489	-11.905	0.489	0.000	0.249
13.472	78.460	-14.430	0.000	0.000	0.499
13.538	70.302	-14.430	0.338	0.000	0.000
13.603	70.302	-13.925	0.672	0.000	0.165
13.668	67.489	-14.430	0.000	0.000	0.000
13.733	73.397	-14.430	0.341	0.000	0.246
13.798	73.397	-12.410	0.675	0.000	0.164
13.864	78.742	-14.430	0.511	0.000	0.000
13.929	78.460	-14.430	0.166	0.000	0.000
13.994	78.460	-14.935	0.248	0.000	0.000
14.059	73.115	-14.935	0.497	0.000	0.000
14.124	75.929	-14.935	0.167	0.000	0.000
14.190	75.929	-12.915	0.000	0.000	0.000
14.255	75.929	-14.935	0.000	0.000	0.000
14.320	61.863	-14.935	0.840	0.167	0.415
14.385	61.863	-15.440	1.592	0.000	0.417
14.450	112.507	-15.440	1.513	0.000	0.504
14.516	65.801	-15.440	0.236	0.000	0.000
14.581	65.801	-13.420	0.157	0.000	0.000
14.646	61.863	-15.440	0.000	0.000	0.000
14.711	53.144	-15.440	0.493	0.000	0.000
14.776	53.144	-16.501	0.489	0.000	0.000
14.842	53.425	-16.501	0.492	0.000	0.000
14.907	78.460	-13.925	0.166	0.000	0.165
14.972	78.460	-15.440	0.248	0.000	0.000
15.037	75.929	-15.440	0.000	0.000	0.000
15.102	75.929	-15.945	1.072	0.000	0.330
15.168	48.081	-16.450	1.068	0.000	0.246
15.233	75.929	-16.450	0.492	0.000	0.492
15.298	75.929	-13.925	0.000	0.000	0.000
15.363	58.207	-15.819	0.323	0.000	0.000
15.428	61.863	-15.819	0.000	0.000	0.000
15.494	61.863	-16.450	0.409	0.000	0.244
15.559	80.992	-16.450	0.410	0.000	0.163
15.624	73.115	-16.450	0.000	0.000	0.482
15.689	73.115	-16.450	0.000	0.000	0.241
15.754	50.613	-14.935	0.000	0.000	0.161
15.820	48.081	-14.935	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
15.885	48.081	-16.450	0.989	0.000	0.000
15.950	67.489	-16.450	0.738	0.000	0.000
16.015	48.081	-16.450	0.497	0.000	0.497
16.080	48.081	-16.955	0.586	0.169	0.416
16.146	61.863	-14.430	0.672	0.254	0.582
16.211	55.675	-14.430	0.508	0.508	0.987
16.276	55.675	-16.955	0.000	0.000	0.493
16.341	59.051	-16.955	0.166	0.000	0.329
16.406	70.302	-16.955	0.000	0.000	0.000
16.472	70.302	-14.430	0.243	0.000	0.000
16.537	65.801	-14.430	0.162	0.000	0.000
16.602	67.489	-16.450	0.000	0.000	0.000
16.667	67.489	-16.450	0.658	0.000	0.333
16.732	59.051	-16.450	0.735	0.000	0.250
16.798	59.051	-15.945	1.309	0.000	0.000
16.863	84.369	-13.925	0.332	0.000	0.166
16.928	53.425	-13.925	0.742	0.000	0.249
16.993	53.425	-15.440	0.324	0.000	0.000
17.058	44.988	-14.935	0.499	0.000	0.000
17.124	106.879	-14.935	0.740	0.000	0.000
17.189	106.879	-15.440	0.824	0.000	0.000
17.254	75.929	-15.945	1.638	0.000	0.165
17.319	48.081	-15.945	1.727	0.000	0.000
17.384	48.081	-18.470	0.981	0.000	0.000
17.450	56.238	-15.945	1.316	0.000	0.000
17.515	44.988	-15.945	1.723	0.000	0.242
17.580	44.988	-13.925	1.978	0.000	0.161
17.645	70.302	-11.905	0.663	0.000	0.165
17.710	70.302	-11.905	0.499	0.000	0.000
17.776	70.302	-13.925	0.327	0.000	0.000
17.841	50.613	-14.430	0.495	0.000	0.164
17.906	50.613	-14.430	0.492	0.000	0.246
17.971	50.613	-14.430	0.164	0.000	0.000
18.036	73.115	-10.895	0.336	0.000	0.000
18.102	84.369	-10.895	0.252	0.000	0.000
18.167	84.369	-6.855	0.000	0.000	0.000
18.232	95.623	-6.855	0.659	0.000	0.507
18.297	59.051	-8.370	0.499	0.000	0.254
18.362	59.051	-11.400	0.672	0.000	0.509
18.428	75.929	-11.400	0.166	0.000	0.503
18.493	75.929	-9.885	0.495	0.000	0.498
18.558	64.676	-11.905	0.826	0.000	0.332

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
18.623	67.489	-11.905	0.329	0.000	0.000
18.688	67.489	-11.905	0.000	0.000	0.000
18.754	81.555	-11.905	0.165	0.000	0.000
18.819	70.302	-11.905	0.000	0.000	0.000
18.884	70.302	-10.895	0.244	0.000	0.000
18.949	78.742	-15.440	0.162	0.000	0.164
19.014	36.551	-15.440	0.656	0.000	0.333
19.080	36.551	-15.440	0.495	0.000	0.500
19.145	75.929	-14.935	0.163	0.000	0.661
19.210	59.051	-14.935	1.317	0.164	0.000
19.275	59.051	-12.915	0.990	0.000	0.000
19.340	87.182	-15.137	0.827	0.000	0.161
19.406	56.238	-15.137	0.993	0.000	0.000
19.471	56.238	-15.440	0.986	0.000	0.000
19.536	47.800	-13.420	0.824	0.000	0.000
19.601	83.525	-13.420	1.310	0.168	0.000
19.666	83.525	-15.440	0.983	0.000	0.000
19.732	39.363	-15.440	0.487	0.000	0.000
19.797	50.613	-15.440	0.489	0.000	0.000
19.862	50.613	-15.440	0.247	0.000	0.000
19.927	89.996	-15.440	0.494	0.000	0.000
19.992	73.115	-13.925	0.000	0.000	0.165
20.058	73.115	-15.251	0.000	0.000	0.000
20.123	67.489	-15.251	0.000	0.000	0.000
20.188	67.489	-16.501	0.000	0.000	0.000
20.253	70.865	-15.945	0.000	0.000	0.246
20.318	87.182	-15.945	0.000	0.000	0.328
20.384	87.182	-13.925	0.168	0.000	0.000
20.449	59.051	-15.945	0.252	0.000	0.000
20.514	80.992	-15.945	0.000	0.000	0.000
20.579	80.992	-15.440	0.842	0.000	0.000
20.644	70.302	-15.945	0.754	0.000	0.000
20.710	87.182	-15.945	0.165	0.165	0.000
20.775	87.182	-13.420	0.995	0.000	0.167
20.840	70.302	-15.440	0.746	0.000	0.250
20.905	84.369	-15.440	0.831	0.000	0.500
20.970	84.369	-15.945	0.997	0.000	0.165
21.036	87.182	-14.935	0.996	0.000	0.247
21.101	50.613	-14.935	1.329	0.000	0.000
21.166	50.613	-13.420	1.310	0.000	0.000
21.231	70.302	-14.935	1.473	0.000	0.000
21.296	78.742	-14.935	1.639	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
21.362	78.742	-14.430	0.498	0.000	0.000
21.427	73.115	-14.935	0.741	0.000	0.000
21.492	70.865	-14.935	0.821	0.000	0.000
21.557	70.865	-11.905	0.988	0.000	0.167
21.622	87.182	-11.905	0.495	0.000	0.250
21.688	75.929	-14.430	0.325	0.000	0.501
21.753	75.929	-13.925	0.326	0.000	0.000
21.818	73.115	-13.925	0.490	0.000	0.491
21.883	73.115	-13.925	0.000	0.000	0.327
21.948	75.929	-11.400	0.331	0.000	0.329
22.014	63.270	-11.400	0.730	0.000	0.494
22.079	63.270	-13.420	0.322	0.163	0.163
22.144	75.929	-12.915	0.334	0.000	0.000
22.209	59.051	-12.915	0.253	0.000	0.000
22.274	59.051	-12.915	0.830	0.000	0.162
22.340	84.369	-10.895	0.333	0.167	0.167
22.405	59.051	-10.895	0.742	0.250	0.250
22.470	59.051	-12.410	0.822	0.000	0.161
22.535	96.186	-12.915	0.982	0.000	0.333
22.600	89.996	-12.915	0.737	0.000	0.249
22.666	89.996	-12.410	0.654	0.000	0.499
22.731	50.613	-9.885	0.164	0.000	0.000
22.796	56.238	-9.885	0.246	0.000	0.000
22.861	56.238	-11.905	0.333	0.000	0.000
22.926	89.996	-11.905	0.833	0.000	0.000
22.992	67.489	-11.905	0.996	0.000	0.000
23.057	67.489	-11.400	1.822	0.000	0.000
23.122	84.369	-9.380	0.660	0.000	0.000
23.187	81.555	-9.380	0.492	0.000	0.000
23.252	81.555	-10.390	0.494	0.000	0.000
23.318	40.488	-10.390	1.158	0.000	0.166
23.383	75.929	-10.592	1.239	0.000	0.249
23.448	75.929	-7.865	1.314	0.000	0.497
23.513	78.742	-7.865	0.500	0.000	0.166
23.578	78.742	-9.380	1.229	0.000	0.249
23.644	87.182	-8.875	1.484	0.000	0.498
23.709	95.623	-8.875	0.164	0.000	0.000
23.774	95.623	-7.360	0.730	0.000	0.242
23.839	95.623	-4.835	0.816	0.000	0.324
23.904	101.251	-4.835	0.663	0.000	0.000
23.970	101.251	-4.835	0.494	0.000	0.000
24.035	73.397	-4.330	1.149	0.000	0.322

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
24.100	98.437	-4.330	1.301	0.485	0.166
24.165	98.437	-2.310	0.978	0.242	0.249
24.230	84.369	1.730	0.982	0.162	0.000
24.296	109.693	1.730	1.620	0.000	0.000
24.361	109.693	1.225	0.973	0.000	0.000
24.426	89.996	3.750	0.482	0.000	0.000
24.491	121.513	3.750	0.000	0.000	1.139
24.556	121.513	5.265	0.241	0.000	0.736
24.622	73.115	9.305	0.321	0.000	0.324
24.687	104.065	9.305	0.821	0.000	0.000
24.752	104.065	8.800	0.497	0.000	0.000
24.817	104.065	10.315	0.994	0.000	0.000
24.882	115.321	10.315	0.505	0.000	0.000
24.948	115.321	11.830	0.994	0.000	0.000
25.013	109.693	11.830	0.987	0.000	0.000
25.078	96.186	14.860	0.331	0.000	0.000
25.143	96.186	13.345	0.248	0.000	0.000
25.208	78.742	13.345	0.495	0.000	0.166
25.274	78.742	14.355	0.494	0.000	0.000
25.339	81.555	14.355	0.491	0.000	0.000
25.404	81.555	14.355	0.163	0.164	0.000
25.469	81.555	16.375	1.987	0.498	0.000
25.534	84.369	14.860	1.240	0.249	0.000
25.600	106.879	14.860	1.485	0.166	0.000
25.665	106.879	14.355	0.329	0.000	0.000
25.730	95.623	15.769	0.244	0.000	0.000
25.795	112.507	15.769	0.812	0.000	0.162
25.860	112.507	14.860	0.000	0.000	0.646
25.926	126.579	13.850	0.242	0.000	0.489
25.991	86.057	13.850	0.324	0.000	0.657
26.056	86.057	13.850	0.648	0.000	0.166
26.121	101.251	15.870	0.490	0.000	0.249
26.186	73.115	15.870	0.485	0.000	0.162
26.252	73.115	12.840	0.655	0.000	0.491
26.317	106.879	12.335	0.491	0.000	0.245
26.382	92.809	12.335	0.164	0.000	0.164
26.447	92.809	12.335	1.308	0.000	0.000
26.512	91.121	13.850	0.980	0.000	0.000
26.578	104.065	13.850	0.648	0.000	0.000
26.643	104.065	11.830	0.168	0.164	0.500
26.708	115.321	11.830	0.494	0.000	0.750
26.773	87.182	11.325	0.827	0.000	0.503

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
26.838	87.182	10.820	0.000	0.165	0.490
26.904	92.809	10.820	0.000	0.000	0.245
26.969	92.809	13.345	0.160	0.000	0.163
27.034	95.623	11.325	0.499	0.000	0.000
27.099	86.057	11.325	0.749	0.000	0.000
27.164	86.057	11.325	1.163	0.000	0.000
27.230	104.065	11.325	0.820	0.000	0.000
27.295	98.437	11.325	0.982	0.000	0.245
27.360	98.437	13.850	0.488	0.000	0.163
27.425	104.065	11.325	0.828	0.000	0.000
27.490	118.136	11.325	1.490	0.000	0.000
27.556	118.136	12.335	1.322	0.000	0.000
27.621	115.321	12.335	0.496	0.000	0.992
27.686	104.065	12.335	0.494	0.000	0.496
27.751	104.065	14.355	0.329	0.000	0.331
27.816	75.929	12.840	0.660	0.000	0.493
27.882	109.693	12.840	0.744	0.000	0.246
27.947	109.693	11.830	1.160	0.000	0.164
28.012	101.251	12.840	0.499	0.000	0.000
28.077	129.394	12.840	0.492	0.000	0.000
28.142	129.394	13.850	0.161	0.000	0.165
28.208	123.765	10.770	1.796	0.164	0.331
28.273	98.437	10.770	1.460	0.246	0.497
28.338	98.437	10.820	1.301	0.492	0.492
28.403	123.765	10.820	0.322	0.000	0.000
28.468	75.929	12.335	0.243	0.000	0.000
28.534	75.929	9.810	0.324	0.000	0.000
28.599	106.879	9.810	0.656	0.165	0.650
28.664	106.879	8.295	0.979	0.000	0.242
28.729	92.809	7.790	0.162	0.000	0.323
28.794	106.879	7.790	0.492	0.000	0.164
28.860	106.879	8.800	0.492	0.000	0.000
28.925	118.136	5.770	0.491	0.000	0.000
28.990	88.589	5.770	0.646	0.000	0.000
29.055	88.589	4.760	0.729	0.000	0.242
29.120	75.929	3.245	0.976	0.000	0.161
29.186	98.437	3.245	0.985	0.000	0.000
29.251	98.437	2.929	0.989	0.000	0.000
29.316	98.437	3.245	1.333	0.000	0.000
29.381	73.115	3.245	0.990	0.000	0.000
29.446	73.115	-0.593	0.992	0.000	0.000
29.512	87.182	-1.300	1.493	0.164	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
29.577	98.718	-1.300	0.000	0.000	0.000
29.642	98.718	0.215	0.493	0.000	0.000
29.707	84.369	-3.320	0.329	0.000	0.000
29.772	87.182	-3.320	0.166	0.000	0.000
29.838	87.182	-4.835	0.493	0.000	0.000
29.903	61.863	-4.835	0.327	0.000	0.000
29.968	73.115	-4.835	0.164	0.000	0.000
30.033	73.115	-3.825	0.493	0.000	0.247
30.098	112.507	-3.825	0.164	0.164	0.164
30.164	84.369	-6.855	0.971	0.000	0.000
30.229	84.369	-7.865	0.973	0.000	0.000
30.294	126.579	-7.865	0.970	0.000	0.000
30.359	126.579	-8.370	0.812	0.000	0.164
30.424	98.718	-6.350	0.734	0.000	0.246
30.490	81.555	-6.350	0.324	0.162	0.491
30.555	81.555	-9.885	0.332	0.000	0.000
30.620	106.879	-9.885	0.249	0.000	0.000
30.685	78.742	-9.885	0.498	0.000	0.000
30.750	78.742	-8.774	0.333	0.000	0.491
30.816	84.369	-10.895	0.252	0.000	0.245
30.881	64.676	-10.895	0.000	0.000	0.164
30.946	64.676	-11.400	0.642	0.000	0.000
31.011	45.550	-11.400	0.482	0.000	0.000
31.076	123.765	-11.400	0.322	0.000	0.000
31.142	123.765	-9.885	0.165	0.000	0.000
31.207	98.437	-11.842	0.247	0.000	0.000
31.272	123.765	-11.842	0.162	0.000	0.000
31.337	123.765	-11.905	1.133	0.167	0.000
31.402	135.023	-13.420	0.734	0.250	0.000
31.468	113.914	-13.420	0.985	0.501	0.000
31.533	113.914	-12.410	0.165	0.000	0.332
31.598	120.950	-11.501	0.242	0.000	0.251
31.663	106.879	-11.501	0.324	0.000	0.000
31.728	106.879	-13.420	1.804	0.000	0.652
31.794	101.251	-13.420	1.478	0.000	0.490
31.859	98.437	-12.915	1.811	0.000	0.489
31.924	98.437	-11.905	0.822	0.167	0.000
31.989	61.863	-11.905	0.986	0.000	0.000
32.054	61.863	-13.420	1.318	0.000	0.165
32.120	86.057	-13.925	2.640	0.000	0.495
32.185	101.251	-13.925	1.732	0.000	0.248
32.250	101.251	-13.925	0.823	0.000	0.165

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
32.315	87.182	-11.905	0.324	0.000	0.160
32.380	115.321	-11.905	0.492	0.000	0.000
32.446	115.321	-13.925	0.164	0.000	0.161
32.511	81.555	-13.925	1.445	0.164	0.000
32.576	106.879	-13.925	1.206	0.000	0.000
32.641	106.879	-13.420	0.644	0.000	0.000
32.706	81.555	-11.905	0.657	0.000	0.166
32.772	73.115	-11.905	0.489	0.000	0.000
32.837	73.115	-13.925	0.978	0.000	0.000
32.902	98.718	-13.420	0.489	0.000	0.000
32.967	78.742	-13.420	0.488	0.000	0.000
33.032	78.742	-13.925	0.653	0.000	0.000
33.098	61.863	-11.905	1.303	0.000	0.000
33.163	61.863	-11.905	1.225	0.000	0.000
33.228	61.863	-13.925	1.143	0.000	0.000
33.293	81.555	-13.420	0.649	0.000	0.000
33.358	75.929	-13.420	0.727	0.000	0.000
33.424	75.929	-13.925	0.648	0.000	0.000
33.489	61.863	-13.925	0.498	0.000	0.000
33.554	84.369	-11.400	0.000	0.000	0.000
33.619	84.369	-13.925	0.161	0.000	0.000
33.684	104.065	-13.925	0.821	0.000	0.000
33.750	104.065	-13.420	0.745	0.000	0.000
33.815	92.809	-11.956	0.823	0.000	0.000
33.880	113.914	-11.956	0.167	0.000	0.330
33.945	113.914	-13.420	0.251	0.000	0.000
34.010	75.929	-13.420	0.830	0.000	0.000
34.076	112.507	-13.420	0.328	0.000	0.165
34.141	112.507	-11.501	0.738	0.000	0.247
34.206	109.693	-13.420	1.313	0.000	0.166
34.271	78.742	-13.420	0.985	0.000	0.000
34.336	78.742	-12.915	0.735	0.000	0.000
34.402	92.809	-11.501	0.328	0.000	0.000
34.467	81.555	-11.501	0.655	0.000	0.000
34.532	81.555	-12.915	0.755	0.000	0.000
34.597	98.437	-12.915	0.655	0.000	0.000
34.662	101.251	-12.915	1.136	0.000	0.000
34.728	101.251	-12.915	0.733	0.000	0.238
34.793	96.186	-11.501	1.304	0.000	0.159
34.858	101.251	-11.501	0.788	0.000	0.000
34.923	101.251	-12.915	1.189	0.000	0.000
34.988	80.992	-12.410	0.959	0.000	0.158

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
35.054	70.302	-12.410	0.328	0.000	0.000
35.119	70.302	-10.592	0.245	0.000	0.000
35.184	75.929	-10.592	0.000	0.000	0.000
35.249	83.525	-11.905	0.804	0.000	0.000
35.314	83.525	-11.905	0.722	0.000	0.000
35.380	87.182	-11.905	0.627	0.000	0.000
35.445	87.182	-9.380	0.468	0.000	0.000
35.510	93.653	-11.501	0.704	0.000	0.000
35.575	59.051	-11.501	0.782	0.000	0.000
35.640	59.051	-10.895	0.325	0.000	0.166
35.706	61.863	-8.370	0.488	0.000	0.248
35.771	83.525	-8.370	0.497	0.157	0.497
35.836	83.525	-9.885	1.419	0.000	0.166
35.901	59.051	-9.885	0.715	0.000	0.250
35.966	78.460	-9.885	0.967	0.000	0.000
36.032	78.460	-8.875	0.165	0.000	0.165
36.097	70.302	-6.956	0.247	0.000	0.247
36.162	75.929	-6.956	0.000	0.000	0.154
36.227	75.929	-7.865	0.163	0.000	0.000
36.292	112.507	-6.855	0.000	0.000	0.000
36.358	91.121	-6.855	0.637	0.000	0.000
36.423	91.121	-4.229	0.329	0.000	0.471
36.488	75.929	-8.875	0.730	0.000	0.236
36.553	59.051	-8.875	1.303	0.000	0.157
36.618	59.051	-12.410	0.808	0.000	0.000
36.684	73.115	-3.775	1.686	0.000	0.000
36.749	78.460	-3.775	1.283	0.000	0.000
36.814	78.460	-3.320	0.640	0.000	0.000
36.879	95.623	-3.320	0.476	0.000	0.000
36.944	87.182	-2.815	0.475	0.000	0.158
37.010	87.182	-0.290	0.630	0.000	0.163
37.075	96.186	-0.290	0.714	0.236	0.245
37.140	96.186	-1.957	0.959	0.157	0.490
37.205	73.115	-1.805	0.795	0.000	0.000
37.270	83.525	-1.805	0.477	0.000	0.000
37.336	83.525	0.720	0.959	0.000	0.158
37.401	64.676	9.861	0.162	0.000	0.163
37.466	50.613	9.861	0.243	0.000	0.244
37.531	50.613	8.800	0.801	0.000	0.000
37.596	87.182	8.295	0.814	0.474	0.163
37.662	98.718	8.295	1.446	0.237	0.245
37.727	98.718	7.790	1.290	0.158	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
37.792	84.369	9.406	0.483	0.000	0.000
37.857	92.809	9.406	1.198	0.000	0.000
37.922	92.809	13.850	0.804	0.000	0.000
37.988	88.589	15.365	0.467	0.000	0.000
38.053	84.369	15.365	0.467	0.000	0.000
38.118	84.369	18.395	0.312	0.000	0.000
38.183	55.675	18.395	0.163	0.000	0.000
38.248	101.251	18.395	0.716	0.000	0.000
38.314	101.251	22.132	0.314	0.000	0.000
38.379	73.115	25.465	0.000	0.163	0.000
38.444	93.653	25.465	0.472	0.000	0.000
38.509	93.653	28.495	0.315	0.000	0.000
38.574	73.115	28.495	0.954	0.000	0.165
38.640	80.992	34.050	0.977	0.000	0.252
38.705	80.992	35.313	1.313	0.000	0.168
38.770	84.369	35.313	0.470	0.000	0.000
38.835	84.369	39.100	0.235	0.000	0.000
38.900	64.676	43.645	0.157	0.000	0.000
38.966	78.460	43.645	0.489	0.000	0.164
39.031	78.460	44.857	0.246	0.000	0.246
39.096	87.182	48.695	0.648	0.000	0.492
39.161	106.879	48.695	0.165	0.000	0.000
39.226	106.879	53.745	0.247	0.000	0.235
39.292	92.809	53.947	0.000	0.000	0.156
39.357	60.738	53.947	1.264	0.000	0.000
39.422	60.738	56.270	1.181	0.000	0.000
39.487	95.623	60.815	0.625	0.000	0.000
39.552	98.718	60.815	0.632	0.000	0.632
39.618	98.718	60.310	0.481	0.000	0.481
39.683	126.579	61.674	0.312	0.000	0.156
39.748	98.718	61.674	0.166	0.467	0.000
39.813	98.718	65.865	0.249	0.466	0.000
39.878	73.115	64.350	0.499	0.311	0.000
39.944	87.182	64.350	0.000	0.000	0.000
40.009	87.182	65.865	0.000	0.000	0.000
40.074	91.121	65.865	0.000	0.000	0.000
40.139	87.182	65.865	0.329	0.000	0.000
40.204	87.182	67.582	0.494	0.000	0.000
40.270	96.186	67.582	0.496	0.000	0.000
40.335	89.996	66.370	0.771	0.000	0.166
40.400	89.996	65.865	0.218	0.000	0.249
40.465	126.579	65.865	0.303	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
40.530	126.579	67.885	0.170	0.000	0.000
40.596	89.996	64.350	0.254	0.000	0.000
40.661	75.929	64.350	0.000	0.000	0.000
40.726	75.929	63.946	0.333	0.000	0.166
40.791	55.675	64.855	0.249	0.000	0.249
40.856	67.489	64.855	0.159	0.000	0.159
40.922	67.489	62.835	0.472	0.000	0.000
40.987	78.742	61.825	0.476	0.000	0.000
41.052	70.865	61.825	0.317	0.000	0.000
41.117	70.865	62.583	0.331	0.000	0.000
41.182	67.489	60.815	0.485	0.000	0.000
41.248	70.302	60.815	0.653	0.000	0.000
41.313	70.302	60.815	0.170	0.000	0.472
41.378	45.550	61.219	0.255	0.000	0.236
41.443	56.238	61.219	0.000	0.000	0.157
41.508	56.238	59.300	0.497	0.000	0.000
41.574	70.302	58.795	0.250	0.000	0.000
41.639	48.081	58.795	0.500	0.000	0.000
41.704	48.081	58.795	0.166	0.000	0.464
41.769	47.800	59.805	0.000	0.236	0.232
41.834	55.675	59.805	0.000	0.157	0.155
41.900	55.675	57.129	0.000	0.000	0.165
41.965	42.176	57.129	0.233	0.000	0.248
42.030	42.176	57.280	0.156	0.156	0.652
42.095	42.176	58.290	0.000	0.000	0.000
42.160	65.801	58.290	0.234	0.000	0.000
42.226	65.801	56.775	0.312	0.000	0.000
42.291	73.115	55.765	0.939	0.000	0.000
42.356	45.550	55.765	0.469	0.000	0.000
42.421	45.550	55.765	0.313	0.000	0.000
42.486	59.051	57.280	0.166	0.000	0.000
42.552	75.929	57.280	0.485	0.000	0.000
42.617	75.929	54.402	0.655	0.000	0.000
42.682	65.801	53.745	0.000	0.000	0.000
42.747	30.927	53.745	0.234	0.000	0.000
42.812	30.927	55.765	0.156	0.000	0.000
42.878	60.738	52.735	0.000	0.000	0.644
42.943	39.363	52.735	0.236	0.000	0.237
43.008	39.363	52.129	0.632	0.000	0.158
43.073	53.425	54.250	0.000	0.000	0.000
43.138	81.555	54.250	0.000	0.000	0.000
43.204	81.555	51.725	0.000	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
43.269	55.675	51.725	0.168	0.000	0.000
43.334	56.238	51.725	0.503	0.000	0.000
43.399	56.238	52.584	0.838	0.000	0.000
43.464	47.800	50.715	0.490	0.490	0.168
43.530	50.613	50.715	0.489	0.245	0.251
43.595	50.613	50.210	0.326	0.163	0.503
43.660	50.613	50.210	0.337	0.000	0.000
43.725	56.238	49.705	0.733	0.000	0.000
43.790	56.238	52.230	0.821	0.000	0.000
43.856	43.019	52.230	0.661	0.000	0.000
43.921	43.019	48.948	0.500	0.000	0.000
43.986	50.613	49.200	0.672	0.000	0.000
44.051	47.800	49.200	0.819	0.000	0.000
44.116	47.800	50.210	0.243	0.000	0.248
44.182	45.550	48.190	0.162	0.000	0.165
44.247	50.613	48.190	0.000	0.000	0.000
44.312	50.613	48.190	0.000	0.000	0.000
44.377	44.988	47.685	0.163	0.000	0.000
44.442	53.144	47.685	0.168	0.000	0.491
44.508	53.144	49.402	0.252	0.000	0.246
44.573	53.425	47.180	0.503	0.000	0.326
44.638	35.426	47.180	0.822	0.000	0.000
44.703	35.426	47.180	0.744	0.000	0.000
44.768	53.425	49.200	0.666	0.000	0.000
44.834	50.613	49.200	0.165	0.000	0.000
44.899	50.613	46.675	0.739	0.000	0.000
44.964	53.425	46.170	0.985	0.000	0.000
45.029	61.863	46.170	0.661	0.175	0.000
45.094	61.863	48.039	0.749	0.000	0.000
45.160	56.238	45.665	0.844	0.000	0.000
45.225	53.144	45.665	0.168	0.000	0.165
45.290	53.144	45.665	0.252	0.000	0.000
45.355	59.051	45.665	0.164	0.000	0.000
45.420	42.176	44.655	0.502	0.000	0.166
45.486	42.176	46.675	0.251	0.000	0.250
45.551	65.801	46.675	0.167	0.000	0.499
45.616	65.801	44.403	0.167	0.000	0.169
45.681	59.051	44.150	0.000	0.000	0.253
45.746	75.929	44.150	0.162	0.000	0.506
45.812	75.929	45.665	0.170	0.000	0.487
45.877	75.929	43.645	0.254	0.000	0.244
45.942	63.270	43.645	0.000	0.000	0.162

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
46.007	63.270	43.039	0.653	0.000	0.000
46.072	59.051	45.160	0.729	0.000	0.000
46.138	73.397	45.160	0.486	0.000	0.000
46.203	73.397	43.140	0.000	0.000	0.000
46.268	42.176	43.140	0.000	0.000	0.000
46.333	70.302	43.140	0.000	0.000	0.000
46.398	70.302	43.645	0.169	0.000	0.000
46.464	68.333	45.160	0.000	0.000	0.000
46.529	67.489	45.160	0.000	0.000	0.000
46.594	67.489	43.494	0.168	0.000	0.328
46.659	60.738	43.645	0.252	0.000	0.251
46.724	64.676	43.645	0.000	0.000	0.501
46.790	64.676	46.170	0.000	0.000	0.162
46.855	75.929	44.655	0.000	0.000	0.000
46.920	50.613	44.655	0.484	0.000	0.000
46.985	50.613	45.160	0.660	0.000	0.337
47.050	44.988	45.160	0.507	0.000	0.505
47.116	64.676	45.160	1.257	0.000	0.000
47.181	64.676	47.685	1.012	0.172	0.000
47.246	83.525	47.685	1.269	0.258	0.000
47.311	83.525	45.766	0.761	0.000	0.000
47.376	61.863	46.170	0.509	0.000	0.000
47.442	75.929	46.170	0.515	0.000	0.000
47.507	75.929	48.695	0.514	0.000	0.000
47.572	56.238	46.675	0.172	0.000	0.170
47.637	75.929	46.675	0.258	0.000	0.000
47.702	75.929	46.675	0.515	0.000	0.000
47.768	70.302	49.402	0.673	0.000	0.000
47.833	92.809	49.402	0.995	0.000	0.000
47.898	92.809	47.685	1.488	0.000	0.000
47.963	64.676	47.685	0.993	0.000	0.000
48.028	83.525	47.685	0.757	0.000	0.000
48.094	83.525	48.695	0.751	0.000	0.000
48.159	59.051	51.220	0.324	0.000	0.000
48.224	78.742	51.220	0.000	0.000	0.000
48.289	78.742	49.402	0.732	0.000	0.000
48.354	60.738	50.715	0.658	0.332	0.000
48.420	70.302	50.715	0.255	0.255	0.487
48.485	70.302	53.745	0.511	0.511	0.243
48.550	83.525	52.735	0.843	0.000	0.162
48.615	70.302	52.735	0.497	0.000	0.000
48.680	70.302	53.745	1.238	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
48.746	67.489	55.260	0.162	0.000	0.000
48.811	73.397	55.260	0.000	0.000	0.000
48.876	73.397	58.038	0.000	0.000	0.000
48.941	81.555	58.038	0.499	0.000	0.000
49.006	84.369	57.280	0.255	0.000	0.483
49.072	84.369	58.290	1.003	0.000	0.242
49.137	58.207	58.290	0.497	0.000	0.161
49.202	58.207	61.320	0.741	0.000	0.487
49.267	92.809	59.805	0.244	0.000	0.488
49.332	61.863	59.805	0.162	0.000	0.325
49.398	61.863	60.310	0.492	0.000	0.000
49.463	98.718	62.583	0.246	0.000	0.000
49.528	106.879	62.583	0.336	0.000	0.000
49.593	106.879	61.825	0.258	0.000	0.998
49.658	89.996	62.330	0.740	0.000	0.499
49.724	98.437	62.330	1.009	0.000	0.502
49.789	98.437	62.330	1.766	0.000	0.496
49.854	73.397	64.350	0.746	0.000	0.248
49.919	53.425	64.350	0.774	0.000	0.207
49.984	53.425	62.128	0.909	0.000	0.556
50.050	104.065	62.835	0.494	0.000	0.494
50.115	109.693	62.835	0.329	0.000	0.329
50.180	109.693	64.855	0.973	0.000	0.000
50.245	106.316	62.330	1.455	0.000	0.000
50.310	53.425	62.330	1.295	0.000	0.000
50.376	53.425	61.674	0.986	0.000	0.000
50.441	98.437	63.340	0.493	0.000	0.000
50.506	88.589	63.340	0.972	0.321	0.000
50.571	88.589	61.320	0.000	0.000	0.000
50.636	87.182	61.320	0.000	0.000	0.000
50.702	63.270	60.815	0.000	0.000	0.000
50.767	63.270	60.310	0.000	0.000	0.971
50.832	81.555	60.310	0.000	0.000	0.970
50.897	81.555	62.330	0.327	0.000	0.974
50.962	84.369	59.300	0.000	0.000	0.000
51.028	58.207	59.300	0.507	0.000	0.000
51.093	58.207	58.492	0.331	0.000	0.163
51.158	59.051	60.815	0.251	0.000	0.000
51.223	61.863	60.815	0.502	0.000	0.000
51.288	61.863	58.290	0.338	0.000	0.170
51.354	73.397	57.785	1.237	0.000	0.255
51.419	67.489	57.785	1.005	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
51.484	67.489	57.280	0.834	0.000	0.000
51.549	47.800	59.300	0.761	0.000	0.000
51.614	63.270	59.300	0.000	0.000	0.000
51.680	63.270	57.129	0.167	0.000	0.000
51.745	59.051	57.280	0.000	0.000	0.000
51.810	50.613	57.280	0.000	0.000	0.000
51.875	50.613	59.300	0.000	0.000	0.000
51.940	65.801	57.280	1.005	0.000	0.000
52.006	78.742	57.280	0.752	0.000	0.000
52.071	78.742	57.583	0.667	0.000	0.000
52.136	75.929	59.805	0.000	0.000	0.495
52.201	73.115	59.805	0.000	0.000	0.247
52.266	73.115	58.290	0.336	0.330	0.165
52.332	101.251	58.290	0.990	0.000	0.486
52.397	75.929	57.785	0.243	0.000	0.243
52.462	75.929	57.785	0.162	0.000	0.329
52.527	59.051	57.785	0.486	0.000	0.250
52.592	59.051	59.401	0.243	0.000	0.500
52.658	73.397	57.280	0.162	0.000	0.333
52.723	84.369	57.280	0.000	0.000	0.255
52.788	84.369	57.280	0.000	0.000	0.000
52.853	78.742	58.290	0.337	0.000	0.000
52.918	91.121	58.290	0.254	0.000	0.000
52.984	91.121	56.270	0.753	0.000	0.000
53.049	89.996	54.856	0.333	0.000	0.000
53.114	75.929	54.856	0.484	0.000	0.000
53.179	75.929	57.280	0.242	0.000	0.000
53.244	80.992	54.250	0.161	0.000	0.000
53.310	81.555	54.250	0.000	0.000	0.000
53.375	81.555	54.755	0.000	0.000	0.000
53.440	48.081	53.745	0.664	0.000	0.332
53.505	42.176	53.745	0.511	0.000	0.256
53.570	42.176	56.775	1.023	0.000	0.511
53.636	61.863	53.745	0.340	0.000	0.000
53.701	60.738	53.745	0.256	0.000	0.000
53.766	60.738	53.493	0.000	0.000	0.000
53.831	87.182	55.765	0.170	0.000	0.170
53.896	78.742	55.765	0.493	0.000	0.000
53.962	78.742	53.240	0.247	0.000	0.000
54.027	55.675	53.240	0.164	0.000	0.170
54.092	42.176	52.735	0.000	0.000	0.254
54.157	42.176	52.230	0.000	0.000	0.509

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
54.222	95.623	52.230	0.688	0.347	1.030
54.288	95.623	53.493	0.684	0.260	0.000
54.353	73.115	51.725	0.512	0.000	0.000
54.418	65.801	51.725	0.412	0.000	0.000
54.483	65.801	50.715	0.163	0.162	0.000
54.548	101.251	52.735	0.493	0.000	0.000
54.614	67.489	52.735	0.661	0.000	0.167
54.679	67.489	49.857	0.328	0.000	0.251
54.744	39.363	49.705	0.489	0.000	0.000
54.809	80.992	49.705	0.756	0.000	0.341
54.874	80.992	51.220	0.999	0.000	0.512
54.940	73.115	49.705	2.486	0.000	1.511
55.005	68.333	49.705	0.901	0.171	0.244
55.070	68.333	48.948	0.980	0.256	0.162
55.135	92.809	51.725	0.487	0.000	0.000
55.200	87.182	51.725	0.413	0.000	0.000
55.266	87.182	49.200	0.416	0.000	0.000
55.331	86.057	49.705	0.508	0.000	0.000
55.396	98.437	49.705	0.168	0.000	0.243
55.461	98.437	49.705	0.252	0.000	0.162
55.526	80.992	52.230	0.000	0.000	0.000
55.592	73.115	52.230	0.169	0.000	0.167
55.657	73.115	50.210	0.254	0.000	0.251
55.722	67.489	50.210	0.000	0.000	0.502
55.787	91.121	51.725	0.000	0.000	0.000
55.852	91.121	53.493	0.000	0.000	0.000
55.918	81.555	53.493	0.000	0.000	0.000
55.983	81.555	51.725	0.171	0.000	0.000
56.048	104.065	47.685	0.257	0.000	0.164
56.113	48.081	47.685	0.500	0.000	0.000
56.178	48.081	48.695	0.424	0.000	0.000
56.244	81.555	54.250	0.167	0.000	0.000
56.309	75.929	54.250	0.000	0.000	0.000
56.374	75.929	53.493	0.173	0.000	0.000
56.439	78.742	54.250	0.166	0.000	0.000
56.504	48.081	54.250	0.000	0.000	0.000
56.570	48.081	57.280	0.168	0.000	0.000
56.635	70.302	54.402	0.253	0.000	0.000
56.700	53.425	54.402	0.000	0.000	0.000
56.765	53.425	54.250	0.654	0.000	0.170
56.830	73.115	61.825	0.578	0.000	0.256
56.896	68.333	61.825	0.511	0.000	0.511

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
56.961	68.333	64.855	0.245	0.000	0.168
57.026	59.051	60.815	0.164	0.000	0.253
57.091	75.929	60.815	0.000	0.482	0.505
57.156	75.929	60.765	0.337	0.241	0.000
57.222	88.589	59.300	0.000	0.161	0.000
57.287	53.425	59.300	0.000	0.000	0.000
57.352	53.425	58.290	1.017	0.000	0.000
57.417	55.675	58.290	1.272	0.163	0.000
57.482	87.182	58.290	1.012	0.000	0.000
57.548	87.182	61.320	0.509	0.243	0.243
57.613	78.742	61.320	0.676	0.162	0.162
57.678	78.742	55.765	1.023	0.000	0.000
57.743	40.488	51.725	0.168	0.000	0.000
57.808	78.742	51.725	0.000	0.000	0.000
57.874	78.742	53.038	0.000	0.000	0.000
57.939	55.675	51.220	0.000	0.000	0.000
58.004	67.489	51.220	0.334	0.000	0.170
58.069	67.489	50.715	0.255	0.000	0.255
58.134	78.742	49.705	0.509	0.000	0.509
58.200	78.460	49.705	0.000	0.000	0.000
58.265	78.460	50.715	0.000	0.000	0.000
58.330	47.800	48.190	0.000	0.000	0.000
58.395	75.929	48.190	0.504	0.172	0.000
58.460	75.929	46.675	1.008	0.000	0.000
58.526	50.613	48.695	0.759	0.000	0.000
58.591	59.051	48.695	0.501	0.000	0.164
58.656	59.051	46.675	0.256	0.000	0.000
58.721	44.988	45.665	0.000	0.000	0.000
58.786	59.051	45.665	0.333	0.168	0.168
58.852	59.051	46.221	0.740	0.252	0.252
58.917	50.613	43.645	0.749	0.505	0.505
58.982	44.988	43.645	0.327	0.000	0.000
59.047	44.988	42.635	0.000	0.000	0.000
59.112	89.996	42.635	0.000	0.000	0.000
59.178	70.865	42.130	0.169	0.000	0.000
59.243	70.865	42.585	0.254	0.000	0.000
59.308	75.929	42.585	0.508	0.000	0.000
59.373	75.929	40.615	0.846	0.000	0.000
59.438	63.270	40.110	1.500	0.000	0.000
59.504	59.051	40.110	0.241	0.000	0.000
59.569	59.051	41.625	0.493	0.000	0.000
59.634	67.489	39.605	0.252	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
59.699	70.865	39.605	0.505	0.242	0.000
59.764	70.865	39.605	0.334	0.161	0.168
59.830	78.742	39.100	0.741	0.000	0.252
59.895	47.800	39.100	0.744	0.000	0.000
59.960	47.800	41.221	0.332	0.000	0.000
60.025	55.675	39.100	0.253	0.000	0.000
60.090	70.302	39.100	0.000	0.000	0.000
60.156	70.302	39.100	0.515	0.000	0.163
60.221	53.144	41.120	0.772	0.000	0.000
60.286	78.742	41.120	1.545	0.000	0.000
60.351	78.742	38.595	0.339	0.000	0.000
60.416	70.302	37.585	0.994	0.000	0.000
60.482	75.929	37.585	1.005	0.000	0.000
60.547	75.929	39.100	0.329	0.000	0.000
60.612	84.369	36.575	0.499	0.000	0.499
60.677	56.238	36.575	0.496	0.000	0.249
60.742	56.238	36.070	0.673	0.000	0.166
60.808	78.742	36.070	0.761	0.000	0.000
60.873	86.057	35.060	0.767	0.000	0.000
60.938	86.057	36.222	0.497	0.000	0.000
61.003	67.489	36.222	0.000	0.000	0.000
61.068	67.489	34.555	0.245	0.000	0.000
61.134	64.676	34.555	0.164	0.000	0.000
61.199	75.929	34.555	0.000	0.000	0.000
61.264	75.929	36.575	0.000	0.000	0.000
61.329	65.801	33.949	0.164	0.000	0.169
61.394	53.425	33.949	0.486	0.000	0.000
61.460	53.425	34.555	0.484	0.000	0.000
61.525	73.115	36.070	0.492	0.000	0.168
61.590	78.460	36.070	0.000	0.000	0.253
61.655	78.460	35.060	0.000	0.000	0.505
61.720	75.929	33.949	0.334	0.000	0.000
61.786	88.589	33.949	0.745	0.000	0.000
61.851	88.589	36.575	0.997	0.000	0.000
61.916	95.623	34.555	0.497	0.000	0.000
61.981	75.929	34.555	0.254	0.000	0.482
62.046	75.929	34.555	0.754	0.000	0.241
62.112	93.653	34.555	0.666	0.000	0.161
62.177	75.929	34.555	0.254	0.000	0.000
62.242	75.929	36.575	0.000	0.000	0.000
62.307	95.623	34.050	0.161	0.000	0.169
62.372	83.525	34.050	0.000	0.000	0.253

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
62.438	83.525	34.050	0.000	0.000	0.506
62.503	78.742	34.050	0.508	0.000	0.171
62.568	86.057	35.767	0.762	0.000	0.256
62.633	86.057	33.545	0.761	0.249	0.513
62.698	92.809	33.545	0.329	0.166	0.171
62.764	92.809	34.050	0.497	0.000	0.256
62.829	84.369	34.050	0.248	0.000	0.000
62.894	61.863	34.050	0.166	0.000	0.168
62.959	61.863	35.767	0.000	0.000	0.252
63.024	80.992	34.050	0.246	0.000	0.504
63.090	73.115	34.050	0.665	0.000	0.000
63.155	73.115	34.050	0.752	0.000	0.000
63.220	67.489	35.767	0.249	0.000	0.000
63.285	91.121	35.767	0.506	0.000	0.170
63.350	91.121	34.050	0.510	0.000	0.255
63.416	81.555	34.555	1.020	0.000	0.510
63.481	70.302	34.555	0.831	0.000	0.163
63.546	70.302	36.070	0.756	0.000	0.000
63.611	68.333	33.949	0.992	0.000	0.000
63.676	78.742	33.949	0.491	0.000	0.000
63.742	78.742	34.050	0.740	0.000	0.000
63.807	61.863	36.070	0.746	0.000	0.000
63.872	80.992	36.070	0.500	0.000	0.169
63.937	80.992	34.555	0.252	0.000	0.253
64.002	84.369	34.050	0.989	0.000	0.000
64.068	44.988	34.050	0.494	0.000	0.000
64.133	44.988	35.767	0.746	0.000	0.000
64.198	60.738	35.767	0.758	0.000	0.000
64.263	70.302	34.050	0.495	0.000	0.163
64.328	70.302	34.555	0.000	0.000	0.000
64.394	91.121	34.555	0.000	0.000	0.000
64.459	91.121	34.050	0.169	0.000	0.000
64.524	109.693	36.070	0.742	0.000	0.000
64.589	81.555	36.070	0.486	0.000	0.000
64.654	81.555	33.545	0.486	0.163	0.000
64.720	58.207	33.545	0.493	0.000	0.000
64.785	106.879	33.545	0.739	0.000	0.000
64.850	106.879	34.858	0.493	0.000	0.171
64.915	50.613	33.545	0.000	0.000	0.257
64.980	83.525	33.545	0.500	0.000	0.000
65.046	83.525	33.040	0.503	0.000	0.000
65.111	95.623	32.535	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
65.176	70.302	32.535	0.000	0.000	0.000
65.241	70.302	33.949	0.344	0.000	0.172
65.306	83.525	32.535	0.515	0.000	0.000
65.372	59.051	32.535	0.000	0.000	0.000
65.437	59.051	32.535	0.331	0.000	0.000
65.502	56.238	34.555	0.000	0.000	0.000
65.567	67.489	34.555	0.247	0.247	0.000
65.632	67.489	31.677	0.662	0.165	0.000
65.698	96.186	32.535	0.997	0.000	0.000
65.763	87.182	32.535	0.495	0.000	0.000
65.828	87.182	34.555	0.665	0.000	0.000
65.893	67.489	34.555	0.502	0.000	0.982
65.958	73.397	31.020	0.244	0.000	0.491
66.024	73.397	28.041	0.163	0.000	0.327
66.089	53.425	28.041	0.000	0.000	0.000
66.154	53.425	30.010	0.000	0.000	0.000
66.219	65.801	29.000	0.000	0.000	0.000
66.284	81.555	29.000	0.000	0.000	0.000
66.350	81.555	30.010	0.000	0.000	0.000
66.415	50.613	30.515	0.170	0.000	0.000
66.480	73.397	30.515	0.749	0.494	0.000
66.545	73.397	33.040	0.757	0.247	0.000
66.610	78.742	30.515	0.495	0.165	0.340
66.676	70.302	30.515	0.492	0.000	0.256
66.741	70.302	31.525	0.246	0.000	0.511
66.806	75.929	34.858	0.334	0.166	0.000
66.871	47.800	34.858	0.254	0.000	0.000
66.936	47.800	37.585	0.000	0.000	0.000
67.002	73.397	38.090	0.000	0.000	0.000
67.067	70.302	38.090	0.000	0.000	0.000
67.132	70.302	38.090	0.000	0.251	0.000
67.197	75.929	39.403	0.172	0.167	0.000
67.262	60.738	39.403	0.257	0.000	0.000
67.328	60.738	38.595	0.515	0.000	0.000
67.393	59.051	37.585	0.000	0.000	0.172
67.458	75.929	37.585	0.000	0.000	0.000
67.523	75.929	39.100	0.250	0.000	0.000
67.588	115.321	39.100	0.671	0.000	0.000
67.654	91.121	34.858	1.252	0.000	0.502
67.719	91.121	34.555	1.245	0.000	0.251
67.784	73.115	34.555	1.001	0.000	0.167
67.849	73.115	36.575	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
67.914	87.182	35.565	0.250	0.000	0.000
67.980	78.460	35.565	0.166	0.000	0.000
68.045	78.460	34.858	0.000	0.000	0.000
68.110	78.742	37.080	0.000	0.000	0.000
68.175	59.051	37.080	0.337	0.000	0.000
68.240	59.051	35.565	0.744	0.000	0.000
68.306	45.550	35.060	0.246	0.000	0.000
68.371	56.238	35.060	0.333	0.000	0.169
68.436	56.238	35.060	0.253	0.000	0.253
68.501	50.613	37.080	0.492	0.000	0.000
68.566	70.302	37.080	0.836	0.000	0.000
68.632	70.302	34.858	0.509	0.000	0.000
68.697	53.425	35.060	0.758	0.000	0.000
68.762	68.333	35.060	0.335	0.000	0.166
68.827	68.333	36.575	0.253	0.000	0.000
68.892	53.425	35.060	0.751	0.000	0.000
68.958	80.992	35.060	1.003	0.000	0.000
69.023	80.992	34.050	0.757	0.000	0.000
69.088	59.051	34.555	0.511	0.000	0.000
69.153	78.742	34.555	0.000	0.000	0.165
69.218	78.742	35.767	0.503	0.000	0.000
69.284	63.270	35.767	0.498	0.000	0.000
69.349	73.115	34.050	0.505	0.000	0.000
69.414	73.115	34.555	0.760	0.000	0.000
69.479	84.369	34.555	0.508	0.000	0.000
69.544	84.369	36.070	0.844	0.000	0.000
69.610	70.865	33.949	0.508	0.000	0.000
69.675	78.742	33.949	0.511	0.000	0.000
69.740	78.742	34.050	0.000	0.000	0.000
69.805	53.425	36.575	0.000	0.000	0.000
69.870	73.115	36.575	0.245	0.000	0.000
69.936	73.115	34.555	0.502	0.000	0.337
70.001	73.397	34.555	0.508	0.000	0.506
70.066	95.623	34.555	0.000	0.000	0.504
70.131	95.623	36.222	0.338	0.000	0.000
70.196	87.182	35.565	0.254	0.000	0.000
70.262	70.865	35.565	0.000	0.000	0.000
70.327	70.865	35.060	0.336	0.000	0.000
70.392	61.863	36.676	0.254	0.000	0.000
70.457	75.929	36.676	0.000	0.000	0.000
70.522	75.929	35.060	0.331	0.000	0.000
70.588	78.742	35.060	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
70.653	73.115	35.060	0.000	0.000	0.000
70.718	73.115	35.060	0.000	0.000	0.000
70.783	63.270	37.080	0.498	0.000	0.000
70.848	70.302	37.080	0.249	0.000	0.000
70.914	70.302	35.060	0.335	0.168	0.000
70.979	53.425	35.060	0.253	0.000	0.499
71.044	58.207	35.060	0.000	0.000	0.249
71.109	58.207	35.060	0.170	0.000	0.334
71.174	67.489	35.060	0.255	0.000	0.000
71.240	67.489	36.222	0.000	0.248	0.000
71.305	68.333	35.060	0.342	0.165	0.171
71.370	81.555	35.060	0.000	0.000	0.256
71.435	81.555	34.555	0.000	0.248	0.512
71.500	73.115	36.575	0.000	0.165	0.170
71.566	75.929	36.575	0.503	0.000	0.256
71.631	75.929	33.949	0.251	0.000	0.000
71.696	78.742	33.545	0.510	0.000	0.000
71.761	56.238	33.545	1.017	0.000	0.000
71.826	56.238	36.070	1.019	0.000	0.000
71.892	112.507	33.545	0.504	0.000	0.000
71.957	73.397	33.545	0.000	0.000	0.000
72.022	73.397	33.040	0.249	0.000	0.000
72.087	81.555	34.404	0.166	0.166	0.168
72.152	61.863	34.404	0.000	0.000	0.252
72.218	61.863	32.535	0.000	0.000	0.505
72.283	65.801	32.535	0.167	0.167	0.337
72.348	87.182	32.535	0.500	0.000	0.000
72.413	87.182	32.030	0.250	0.000	0.000
72.478	81.555	33.495	0.337	0.000	0.000
72.544	65.801	33.495	0.256	0.000	0.000
72.609	65.801	31.525	0.761	0.000	0.000
72.674	73.115	31.525	0.335	0.000	0.000
72.739	78.460	32.030	0.747	0.000	0.000
72.804	78.460	33.040	0.752	0.000	0.245
72.870	61.863	33.040	0.331	0.000	0.330
72.935	61.863	31.525	0.250	0.000	0.000
73.000	56.238	31.020	0.000	0.000	0.000
73.065	86.057	31.020	0.000	0.000	0.000
73.130	86.057	31.020	0.000	0.000	0.000
73.196	70.302	32.131	0.000	0.000	0.000
73.261	65.801	32.131	0.504	0.000	0.169
73.326	65.801	31.020	0.256	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
73.391	70.302	30.010	0.749	0.000	0.000
73.456	78.742	30.010	0.670	0.000	0.000
73.522	78.742	32.535	0.256	0.000	0.494
73.587	70.865	30.010	0.512	0.000	0.247
73.652	44.988	30.010	0.513	0.000	0.165
73.717	44.988	29.859	1.274	0.504	0.504
73.782	70.302	32.030	1.021	0.252	0.252
73.848	83.525	32.030	0.508	0.168	0.339
73.913	83.525	30.010	0.000	0.000	0.766
73.978	92.809	29.505	0.254	0.000	0.767
74.043	87.182	29.505	0.511	0.000	0.170
74.108	87.182	31.677	0.512	0.000	0.000
74.174	101.251	30.010	0.507	0.000	0.000
74.239	101.251	30.010	0.168	0.000	0.164
74.304	101.251	30.010	0.253	0.000	0.000
74.369	39.363	30.010	0.505	0.000	0.000
74.434	89.996	30.010	0.332	0.000	0.000
74.500	89.996	31.677	0.249	0.000	0.000
74.565	88.589	31.677	0.745	0.000	0.000
74.630	88.589	30.515	0.661	0.000	0.000
74.695	87.182	30.515	0.745	0.000	0.000
74.760	80.992	30.515	0.746	0.245	0.000
74.826	80.992	32.535	0.497	0.163	0.000
74.891	67.489	30.515	0.252	0.000	0.499
74.956	56.238	30.515	0.249	0.000	0.498
75.021	56.238	30.313	0.336	0.000	0.332
75.086	78.460	33.040	0.744	0.000	0.000
75.152	75.929	33.040	0.756	0.000	0.246
75.217	75.929	31.525	0.501	0.000	0.164
75.282	98.718	31.020	0.752	0.000	0.000
75.347	84.369	31.020	0.496	0.246	0.000
75.412	84.369	32.030	0.499	0.164	0.000
75.478	106.879	34.555	0.252	0.000	0.000
75.543	80.992	34.555	0.000	0.000	0.000
75.608	80.992	32.535	0.170	0.000	0.000
75.673	104.065	32.586	0.255	0.000	0.000
75.738	60.738	32.586	0.511	0.000	0.000
75.804	60.738	35.565	0.335	0.165	0.171
75.869	81.555	33.545	0.501	0.000	0.758
75.934	75.929	33.545	0.503	0.000	0.251
75.999	75.929	32.030	0.507	0.000	0.167
76.064	87.182	32.030	0.503	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
76.130	78.460	31.222	0.000	0.000	0.000
76.195	78.460	31.020	0.845	0.000	0.170
76.260	89.996	31.020	0.593	0.000	0.255
76.325	89.996	33.040	0.000	0.000	0.509
76.390	92.809	33.545	0.336	0.000	0.168
76.456	78.742	33.545	0.503	0.000	0.252
76.521	78.742	34.858	1.505	0.000	0.000
76.586	80.992	34.050	0.584	0.000	0.167
76.651	50.613	34.050	0.166	0.000	0.000
76.716	50.613	33.545	0.000	0.000	0.000
76.782	87.182	37.080	0.000	0.000	0.165
76.847	65.801	37.080	0.000	0.000	0.247
76.912	65.801	39.403	0.000	0.000	0.000
76.977	95.623	42.130	0.750	0.168	0.247
77.042	65.801	42.130	0.745	0.252	0.165
77.108	65.801	44.150	0.498	0.000	0.494
77.173	78.742	41.625	0.168	0.000	0.494
77.238	101.251	41.625	0.252	0.000	0.494
77.303	101.251	42.130	0.504	0.000	0.000
77.368	88.589	42.635	0.913	0.246	0.000
77.434	75.929	42.635	1.079	0.164	0.000
77.499	75.929	45.312	0.998	0.000	0.500
77.564	75.929	43.140	0.334	0.000	0.664
77.629	95.623	43.140	0.665	0.000	0.580
77.694	95.623	41.625	0.504	0.000	0.000
77.760	75.929	41.625	0.340	0.000	0.000
77.825	98.718	44.655	0.422	0.000	0.000
77.890	98.718	44.655	0.000	0.000	0.000
77.955	89.996	44.655	0.170	0.248	0.000
78.020	89.996	45.665	0.420	0.166	0.000
78.086	73.397	48.039	1.015	0.000	0.000
78.151	87.182	48.039	0.594	0.000	0.254
78.216	87.182	48.190	0.680	0.000	0.170
78.281	64.676	49.705	1.017	0.000	0.000
78.346	111.381	49.705	0.420	0.000	0.679
78.412	111.381	51.675	0.420	0.000	0.764
78.477	98.437	51.220	0.000	0.000	1.024
78.542	92.809	51.220	0.513	0.000	0.164
78.607	92.809	52.230	0.256	0.000	0.247
78.672	87.182	52.230	0.000	0.000	0.493
78.738	124.046	52.230	0.577	0.000	0.410
78.803	124.046	54.402	0.663	0.000	0.742

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
78.868	106.879	53.240	0.999	0.000	0.000
78.933	95.623	53.240	1.080	0.000	0.167
78.998	95.623	53.745	1.323	0.000	0.413
79.064	118.980	56.270	0.000	0.000	0.000
79.129	101.251	56.270	0.169	0.000	0.000
79.194	101.251	53.493	0.420	0.000	0.000
79.259	87.182	54.755	0.508	0.000	0.000
79.324	86.057	54.755	0.329	0.170	0.246
79.390	86.057	57.785	0.494	0.000	0.164
79.455	143.468	57.785	0.987	0.000	0.000
79.520	113.914	56.270	0.415	0.000	0.414
79.585	113.914	56.270	0.330	0.000	0.416
79.650	98.437	56.270	0.500	0.000	0.504
79.716	98.437	57.785	1.166	0.000	0.000
79.781	91.121	58.947	1.000	0.000	0.000
79.846	89.996	58.947	0.000	0.000	0.496
79.911	89.996	58.795	0.000	0.000	0.415
79.976	101.251	58.290	0.496	0.000	0.415
80.042	111.381	58.290	0.000	0.000	0.500
80.107	111.381	61.825	0.168	0.000	0.000
80.172	61.863	59.805	0.167	0.000	0.000
80.237	95.623	59.805	0.000	0.000	0.000
80.302	95.623	59.401	0.419	0.000	0.419
80.368	96.186	63.340	0.755	0.000	0.421
80.433	140.653	63.340	1.019	0.000	0.000
80.498	140.653	61.320	1.273	0.000	0.000
80.563	101.251	62.330	1.274	0.000	0.000
80.628	113.914	62.330	0.509	0.000	0.000
80.694	113.914	64.855	0.166	0.000	0.418
80.759	81.555	63.845	0.248	0.000	0.417
80.824	123.765	63.845	0.988	0.000	0.000
80.889	123.765	64.855	0.994	0.247	0.334
80.954	109.693	65.360	1.158	0.165	0.250
81.020	103.783	65.360	1.980	0.000	0.000
81.085	103.783	67.128	0.830	0.169	0.338
81.150	129.394	67.128	1.001	0.253	0.507
81.215	129.394	66.370	0.000	0.000	0.000
81.280	129.394	66.875	0.247	0.000	0.167
81.346	111.381	66.875	0.164	0.000	0.250
81.411	111.381	68.491	0.000	0.000	0.000
81.476	132.209	67.885	0.417	0.000	0.000
81.541	93.653	67.885	0.166	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
81.606	93.653	68.390	0.976	0.000	0.000
81.672	75.929	71.420	0.901	0.000	0.749
81.737	118.136	71.420	0.489	0.000	0.834
81.802	118.136	70.915	0.000	0.000	0.503
81.867	103.783	71.420	0.507	0.000	0.000
81.932	129.394	71.420	0.414	0.000	0.000
81.998	129.394	73.945	0.000	0.000	0.991
82.063	103.783	77.480	0.000	0.000	0.495
82.128	112.507	77.480	0.000	0.000	0.330
82.193	112.507	77.127	0.000	0.000	0.496
82.258	126.579	80.005	0.840	0.336	0.248
82.324	134.179	80.005	1.008	0.504	0.330
82.389	134.179	83.540	1.007	0.504	0.000
82.454	129.394	83.540	0.422	0.000	0.000
82.519	106.879	83.540	0.337	0.000	0.000
82.584	106.879	84.853	1.009	0.000	0.000
82.650	101.251	88.590	0.676	0.000	0.000
82.715	146.283	88.590	0.931	0.000	0.000
82.780	146.283	87.580	0.513	0.000	0.000
82.845	123.765	87.580	0.511	0.000	0.000
82.910	144.313	88.085	0.849	0.000	0.000
82.976	144.313	90.307	1.524	0.000	0.498
83.041	140.653	90.307	1.250	0.000	0.666
83.106	140.653	89.600	0.998	0.000	0.583
83.171	151.914	89.095	0.992	0.000	0.992
83.236	98.437	89.095	1.403	0.000	0.246
83.302	98.437	91.216	1.238	0.000	0.164
83.367	154.448	89.095	0.000	0.000	0.000
83.432	129.394	89.095	0.744	0.000	0.328
83.497	129.394	89.095	0.829	0.000	0.000
83.562	139.246	88.085	0.000	0.000	0.000
83.628	135.023	88.085	0.659	0.000	0.169
83.693	135.023	90.105	0.580	0.000	0.253
83.758	157.545	87.126	0.484	0.000	0.506
83.823	141.779	87.126	0.656	0.000	0.000
83.888	141.779	87.580	0.490	0.000	0.000
83.954	123.765	89.095	0.000	0.000	0.000
84.019	124.046	89.095	1.243	0.164	0.247
84.084	124.046	87.075	0.910	0.246	0.331
84.149	140.653	87.075	0.492	0.492	0.000
84.214	118.136	87.075	0.507	0.000	0.168
84.280	118.136	87.580	0.761	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
84.345	103.783	91.115	0.000	0.000	0.000
84.410	95.623	91.115	0.000	0.000	0.169
84.475	95.623	88.944	0.335	0.000	0.254
84.540	116.447	88.944	0.491	0.000	0.508
84.606	132.209	91.115	0.245	0.000	0.000
84.671	132.209	93.640	0.164	0.000	0.169
84.736	95.623	93.640	0.000	0.000	0.000
84.801	95.623	93.135	0.250	0.000	0.000
84.866	126.579	93.034	0.501	0.000	0.000
84.932	151.914	93.034	0.000	0.000	0.000
84.997	151.914	95.660	0.166	0.000	0.000
85.062	112.507	93.640	0.417	0.000	0.000
85.127	129.394	93.640	0.998	0.000	0.000
85.192	129.394	92.580	0.418	0.000	0.512
85.258	146.846	94.650	0.331	0.000	0.264
85.323	146.283	94.650	0.000	0.000	0.000
85.388	146.283	91.115	0.941	0.000	0.678
85.453	134.179	90.105	0.939	0.000	0.751
85.518	123.765	90.105	1.548	0.000	0.516
85.584	123.765	90.307	0.411	0.000	0.508
85.649	129.112	87.580	0.576	0.000	0.000
85.714	134.179	87.580	0.993	0.496	0.000
85.779	134.179	86.065	0.412	0.248	0.912
85.844	126.579	86.217	0.574	0.165	0.749
85.910	116.447	86.217	0.491	0.000	0.491
85.975	116.447	82.530	0.327	0.000	0.245
86.040	154.448	81.520	0.246	0.000	0.329
86.105	109.693	81.520	0.489	0.000	0.000
86.170	109.693	80.005	0.410	0.000	0.246
86.236	126.579	80.005	0.411	0.000	0.164
86.301	129.112	81.520	0.493	0.000	0.493
86.366	129.112	78.995	0.413	0.000	0.824
86.431	84.369	78.995	0.329	0.000	0.576
86.496	84.369	77.985	0.495	0.000	0.494
86.562	108.849	79.854	0.247	0.000	0.000
86.627	86.057	79.854	0.330	0.000	0.000
86.692	86.057	77.480	0.000	0.000	0.000
86.757	81.555	77.985	0.583	0.000	0.000
86.822	98.718	77.985	0.419	0.000	0.000
86.888	98.718	80.763	0.000	0.000	0.000
86.953	115.321	78.490	0.336	0.000	0.419
87.018	86.057	78.490	0.000	0.000	0.168

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
87.083	86.057	77.581	1.010	0.000	0.505
87.148	112.507	79.399	0.670	0.000	0.420
87.214	98.718	79.399	0.585	0.000	0.168
87.279	98.718	76.470	0.000	0.000	0.000
87.344	116.447	76.672	0.321	0.000	0.000
87.409	120.950	76.672	0.804	0.000	0.000
87.474	120.950	73.945	0.962	0.000	0.000
87.540	188.520	72.582	0.325	0.000	0.402
87.605	116.447	72.582	0.487	0.000	0.403
87.670	116.447	72.935	0.975	0.000	0.487
87.735	136.712	70.309	0.239	0.000	0.560
87.800	101.251	70.309	0.160	0.000	0.397
87.866	101.251	69.905	0.000	0.000	0.475
87.931	126.579	69.905	0.324	0.165	0.000
87.996	144.313	71.218	0.407	0.248	0.000
88.061	144.313	69.905	0.495	0.495	0.000
88.126	143.468	69.905	0.719	0.161	0.159
88.192	143.468	70.915	1.196	0.242	0.157
88.257	106.316	72.127	0.000	0.483	0.000
88.322	123.765	72.127	0.329	0.164	0.164
88.387	123.765	71.925	0.248	0.000	0.160
88.452	124.046	71.420	0.970	0.000	0.000
88.518	126.579	71.420	0.395	0.161	0.161
88.583	126.579	73.491	0.394	0.242	0.242
88.648	126.579	71.420	0.955	0.483	0.483
88.713	106.316	71.420	0.807	0.000	0.395
88.778	106.316	73.036	0.971	0.000	0.395
88.844	113.914	70.915	0.000	0.000	0.957
88.909	120.950	70.915	0.487	0.000	0.241
88.974	120.950	71.218	0.160	0.000	0.161
89.039	124.046	73.440	0.000	0.000	0.000
89.104	151.914	73.440	0.486	0.000	0.000
89.170	151.914	71.673	0.486	0.000	0.161
89.235	121.513	72.935	0.484	0.000	0.000
89.300	132.209	72.935	0.407	0.000	0.327
89.365	132.209	75.763	0.408	0.000	0.653
89.430	106.316	75.965	0.491	0.000	0.982
89.496	98.437	75.965	0.565	0.000	0.000
89.561	98.437	80.308	0.808	0.000	0.000
89.626	98.718	80.308	0.481	0.000	0.000
89.691	118.136	81.015	0.641	0.000	0.000
89.756	118.136	84.399	0.720	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
89.822	103.783	84.399	0.484	0.000	0.476
89.887	103.783	89.095	0.403	0.000	0.238
89.952	116.447	89.853	0.563	0.000	0.159
90.017	120.950	89.853	0.959	0.000	0.474
90.082	120.950	92.630	0.559	0.161	0.399
90.148	121.513	96.670	0.559	0.000	0.401
90.213	73.397	96.670	0.475	0.000	0.486
90.278	73.397	97.680	0.397	0.163	0.000
90.343	146.283	99.195	0.556	0.000	0.000
90.408	129.112	99.195	0.957	0.000	0.000
90.474	129.112	102.124	0.798	0.000	0.161
90.539	116.447	102.730	0.800	0.000	0.241
90.604	104.065	102.730	0.000	0.000	0.482
90.669	104.065	104.245	0.801	0.000	0.241
90.734	121.513	106.669	0.802	0.000	0.161
90.800	141.779	106.669	0.487	0.000	0.000
90.865	141.779	106.770	0.328	0.237	0.163
90.930	129.394	108.941	0.410	0.158	0.245
90.995	159.516	108.941	0.979	0.000	0.000
91.060	159.516	107.780	0.971	0.000	0.000
91.126	154.729	107.123	1.534	0.000	0.000
91.191	131.646	107.123	1.954	0.000	0.000
91.256	131.646	109.295	1.147	0.000	0.165
91.321	149.099	109.295	1.067	0.000	0.248
91.386	154.448	106.215	2.433	0.000	0.000
91.452	154.448	105.255	1.462	0.000	0.000
91.517	106.879	105.255	0.897	0.000	0.000
91.582	106.879	105.305	1.960	0.000	0.000
91.647	149.380	102.225	1.058	0.000	0.000
91.712	132.209	102.225	0.894	0.000	0.000
91.778	132.209	101.670	0.479	0.000	0.958
91.843	91.121	98.185	0.638	0.000	0.641
91.908	124.046	98.185	0.722	0.000	0.563
91.973	124.046	96.216	0.000	0.000	0.482
92.038	135.023	98.185	0.324	0.164	0.480
92.104	88.589	98.185	0.486	0.158	0.320
92.169	88.589	94.398	0.957	0.000	0.000
92.234	129.394	92.630	0.563	0.000	0.163
92.299	124.046	92.630	0.647	0.000	0.245
92.364	124.046	93.489	0.966	0.000	0.000
92.430	78.460	90.610	1.272	0.000	0.000
92.495	132.209	90.610	0.633	0.000	0.160

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
92.560	132.209	90.762	0.479	0.000	0.000
92.625	86.057	87.580	0.402	0.000	0.000
92.690	75.929	87.580	0.319	0.000	0.000
92.756	75.929	86.570	0.000	0.000	0.000
92.821	95.623	86.217	0.162	0.000	0.488
92.886	108.849	86.217	0.000	0.000	0.403
92.951	108.849	84.045	0.000	0.000	0.490
93.016	106.316	84.045	0.479	0.241	0.321
93.082	118.136	82.530	0.635	0.161	0.397
93.147	118.136	83.035	0.951	0.000	0.475
93.212	80.992	83.035	0.490	0.000	0.000
93.277	80.992	81.015	0.407	0.000	0.000
93.342	78.742	79.854	0.491	0.000	0.000
93.408	91.121	79.854	0.166	0.166	0.166
93.473	91.121	82.025	0.411	0.000	0.000
93.538	87.182	78.945	0.491	0.000	0.000
93.603	83.525	78.945	1.147	0.000	0.000
93.668	83.525	78.490	0.822	0.000	0.162
93.734	89.996	79.854	0.991	0.000	0.000
93.799	70.865	79.854	0.733	0.000	0.162
93.864	70.865	77.480	0.649	0.000	0.242
93.929	106.879	78.490	0.969	0.000	0.485
93.994	106.316	78.490	0.000	0.000	0.000
94.060	106.316	76.470	0.000	0.000	0.160
94.125	86.057	75.763	0.000	0.000	0.000
94.190	129.394	75.763	0.435	0.000	0.196
94.255	129.394	77.480	0.369	0.160	0.453
94.320	86.057	74.400	0.961	0.000	0.000
94.386	126.579	74.400	0.480	0.000	0.000
94.451	126.579	74.955	0.320	0.000	0.000
94.516	98.437	75.763	0.000	0.000	0.486
94.581	106.316	75.763	0.486	0.000	0.163
94.646	106.316	74.450	0.888	0.000	0.244
94.712	144.313	74.854	0.977	0.000	0.489
94.777	101.251	74.854	0.800	0.000	0.565
94.842	101.251	73.440	0.966	0.000	0.650
94.907	151.914	73.440	0.486	0.481	0.000
94.972	116.447	72.935	0.325	0.240	0.000
95.038	116.447	73.945	0.488	0.160	0.000
95.103	109.693	73.945	1.455	0.000	0.479
95.168	109.693	71.420	0.891	0.000	0.240
95.233	134.179	71.420	1.055	0.000	0.319

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
95.298	134.179	71.420	0.480	0.000	0.000
95.364	134.179	71.673	0.572	0.000	0.000
95.429	140.653	69.400	0.731	0.000	0.160
95.494	98.718	69.400	0.983	0.000	0.484
95.559	98.718	68.491	1.154	0.581	1.068
95.624	140.653	69.905	1.074	0.163	1.069
95.690	121.513	69.905	0.979	0.000	0.000
95.755	121.513	67.582	0.575	0.000	0.000
95.820	98.437	69.400	0.823	0.000	0.000
95.885	108.849	69.400	0.994	0.000	0.000
95.950	108.849	57.280	0.819	0.000	0.408
96.016	137.838	51.220	1.142	0.000	0.163
96.081	164.584	51.220	0.979	0.000	0.000
96.146	164.584	66.370	0.164	0.000	0.000
96.211	146.283	63.340	0.160	0.000	0.160
96.276	149.380	63.340	0.000	0.000	0.000
96.342	149.380	60.765	0.485	0.000	0.000
96.407	126.579	61.674	0.482	0.000	0.000
96.472	160.360	61.674	0.957	0.000	0.000
96.537	160.360	58.795	0.567	0.000	0.237
96.602	131.646	58.795	0.726	0.000	0.158
96.668	141.779	57.785	0.000	0.000	0.000
96.733	141.779	58.492	0.566	0.000	0.161
96.798	129.394	58.492	0.651	0.000	0.000
96.863	129.394	76.975	0.495	0.000	0.000
96.928	121.513	60.310	0.651	0.000	0.407
96.994	126.579	60.310	0.976	0.000	0.161
97.059	126.579	56.775	0.962	0.000	0.949
97.124	108.849	57.280	0.724	0.163	0.962
97.189	139.246	57.280	0.646	0.244	0.965
97.254	139.246	58.492	0.966	0.000	0.000
97.320	157.545	56.775	0.239	0.000	0.000
97.385	177.255	56.775	0.319	0.000	0.000
97.450	177.255	57.280	0.000	0.000	0.000
97.515	154.448	59.401	0.168	0.406	0.500
97.580	171.623	59.401	0.413	0.161	0.503
97.646	171.623	54.250	0.986	0.000	1.007
97.711	156.982	53.038	0.652	0.000	0.332
97.776	165.992	53.038	0.573	0.000	0.413
97.841	165.992	56.775	0.983	0.000	0.498
97.906	184.859	53.493	0.573	0.165	0.499
97.972	182.887	53.493	0.657	0.248	0.662

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
98.037	182.887	53.240	1.477	0.496	0.496
98.102	149.380	54.856	1.060	0.000	0.000
98.167	171.623	54.856	1.219	0.000	0.000
98.232	171.623	52.735	1.465	0.000	0.485
98.298	118.980	52.735	0.813	0.000	0.406
98.363	169.652	54.402	0.973	0.000	0.407
98.428	169.652	52.129	0.975	0.000	0.492
98.493	143.468	52.129	1.059	0.000	0.329
98.558	143.468	52.230	1.301	0.000	0.000
98.624	149.380	54.250	0.985	0.471	0.000
98.689	163.176	54.250	0.806	0.235	0.405
98.754	163.176	51.675	0.887	0.157	0.570
98.819	149.380	52.230	0.493	0.000	0.000
98.884	129.112	52.230	0.641	0.000	0.403
98.950	129.112	53.038	0.564	0.000	0.563
99.015	149.099	51.725	0.479	0.479	0.000
99.080	179.790	51.725	0.897	0.405	0.000
99.145	179.790	51.220	0.904	0.408	0.159
99.210	169.652	53.493	0.497	0.497	0.000
99.276	129.394	53.493	1.137	0.240	0.167
99.341	129.394	51.220	1.218	0.318	0.250
99.406	139.246	53.038	1.451	0.000	1.451
99.471	149.380	53.038	1.137	0.000	1.145
99.536	149.380	50.766	1.222	0.000	1.321
99.602	143.468	51.725	0.979	0.000	0.490
99.667	194.998	51.725	0.902	0.000	0.168
99.732	194.998	53.038	0.657	0.000	0.414
99.797	199.786	51.725	0.494	0.000	0.000
99.862	162.050	51.725	0.903	0.334	0.000
99.928	162.050	53.038	1.065	0.251	0.000
99.993	182.887	53.038	0.000	0.000	0.000
100.058	189.928	51.220	0.916	0.246	0.000
100.123	189.928	51.220	1.080	0.164	0.000
100.188	163.176	51.220	0.993	0.000	0.000
100.254	163.176	53.038	0.814	0.161	0.330
100.319	174.721	51.220	0.878	0.241	0.401
100.384	207.673	51.220	1.453	0.483	0.485
100.449	207.673	53.038	1.128	0.239	0.406
100.514	180.071	51.675	0.889	0.159	0.320
100.580	184.859	51.675	0.971	0.000	0.000
100.645	184.859	53.493	0.729	0.000	0.327
100.710	196.969	52.584	0.562	0.000	0.158

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
100.775	179.790	52.584	0.475	0.000	0.475
100.840	179.790	54.856	0.715	0.000	0.400
100.906	151.914	53.493	0.637	0.000	0.402
100.971	199.786	53.493	0.000	0.000	0.000
101.036	199.786	56.220	0.654	0.000	0.163
101.101	172.186	56.178	0.895	0.000	0.000
101.166	177.255	56.178	0.488	0.000	0.479
101.232	177.255	55.311	0.829	0.000	0.406
101.297	109.693	57.418	0.747	0.000	0.568
101.362	139.246	57.418	0.500	0.000	0.980
101.427	139.246	57.129	0.736	0.164	0.240
101.492	163.176	58.657	0.657	0.000	0.320
101.558	139.246	58.657	0.497	0.000	0.000
101.623	139.246	60.310	0.733	0.000	0.000
101.688	121.513	60.310	0.893	0.000	0.000
101.753	165.992	60.310	1.462	0.000	0.000
101.818	165.992	59.897	1.389	0.239	0.000
101.884	151.914	59.897	0.982	0.159	0.000
101.949	151.914	62.583	0.490	0.000	0.000
102.014	103.783	63.719	0.899	0.000	0.000
102.079	118.136	63.719	1.064	0.000	0.000
102.144	118.136	65.991	0.503	0.000	0.000
102.210	103.783	67.506	0.577	0.000	0.000
102.275	101.251	67.506	0.823	0.000	0.161
102.340	101.251	70.536	0.998	0.000	0.000
102.405	108.849	73.188	0.735	0.000	0.407
102.470	87.182	73.188	0.651	0.000	0.408
102.536	87.182	76.596	0.490	0.000	0.490
102.601	126.579	80.005	0.804	0.000	0.000
102.666	132.209	80.005	0.562	0.000	0.159
102.731	132.209	84.550	0.980	0.000	0.000
102.796	136.712	89.095	0.809	0.000	0.163
102.862	129.112	89.095	0.969	0.000	0.402
102.927	129.112	95.371	0.979	0.000	0.489
102.992	137.838	99.916	0.000	0.000	0.164
103.057	118.980	99.916	0.321	0.000	0.246
103.122	118.980	107.578	1.428	0.000	0.000
103.188	86.057	114.525	1.204	0.000	0.166
103.253	140.653	114.525	1.210	0.000	0.249
103.318	140.653	120.044	0.000	0.000	0.497
103.383	129.112	120.044	0.000	0.000	0.166
103.448	96.186	127.879	0.000	0.000	0.249

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
103.514	96.186	133.535	0.481	0.000	0.000
103.579	115.321	133.535	0.806	0.000	0.164
103.644	115.321	140.446	0.968	0.157	0.246
103.709	98.718	146.665	0.974	0.000	0.481
103.774	108.849	146.665	0.812	0.000	0.648
103.840	108.849	152.574	0.641	0.000	0.641
103.905	101.251	158.027	0.251	0.000	0.727
103.970	103.783	158.027	0.480	0.000	0.980
104.035	103.783	163.936	0.489	0.000	0.488
104.100	87.182	169.163	0.253	0.000	0.254
104.166	80.992	169.163	0.242	0.000	0.508
104.231	80.992	174.389	0.328	0.000	0.164
104.296	95.623	179.616	0.000	0.000	0.246
104.361	93.653	179.616	0.245	0.000	0.000
104.426	93.653	184.843	0.660	0.328	0.000
104.492	88.589	190.070	0.729	0.000	0.000
104.557	101.251	190.070	0.733	0.000	0.000
104.622	101.251	195.751	0.482	0.163	0.156
104.687	92.042	201.432	0.247	0.000	0.000
104.752	75.929	201.432	0.493	0.000	0.000
104.818	75.929	208.381	0.329	0.000	0.000
104.883	87.438	14.116	0.249	0.000	0.480
104.948	99.140	-9999.990	0.000	0.000	0.240
105.013	99.140	-9999.990	0.356	0.000	0.160
105.078	82.258	-9999.990	0.228	0.000	0.413
105.144	110.296	-9999.990	0.674	0.000	0.206
105.209	110.296	-9999.990	0.219	0.011	0.323
105.274	108.286	-9999.990	0.556	0.017	0.053
105.339	108.286	-9999.990	0.666	0.258	0.106
105.404	103.916	-9999.990	0.899	0.300	0.000
105.470	98.718	-9999.990	-9999.990	-9999.990	-9999.990
105.535	98.718	-9999.990	-9999.990	-9999.990	-9999.990
105.600	95.919	-9999.990	-9999.990	-9999.990	-9999.990
105.665	86.780	-9999.990	-9999.990	-9999.990	-9999.990
105.730	86.780	-9999.990	-9999.990	-9999.990	-9999.990
105.796	111.381	-9999.990	-9999.990	-9999.990	-9999.990
105.861	101.251	-9999.990	-9999.990	-9999.990	-9999.990
105.926	101.251	-9999.990	-9999.990	-9999.990	-9999.990
105.991	114.581	-9999.990	-9999.990	-9999.990	-9999.990
106.056	129.112	-9999.990	-9999.990	-9999.990	-9999.990
106.122	129.112	-9999.990	-9999.990	-9999.990	-9999.990
106.187	143.468	-9999.990	-9999.990	-9999.990	-9999.990

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
106.252	131.912	-9999.990	-9999.990	-9999.990	-9999.990
106.317	131.912	-9999.990	-9999.990	-9999.990	-9999.990
106.382	137.246	-9999.990	-9999.990	-9999.990	-9999.990
106.448	118.580	-9999.990	-9999.990	-9999.990	-9999.990
106.513	118.580	-9999.990	-9999.990	-9999.990	-9999.990
106.578	157.248	-9999.990	-9999.990	-9999.990	-9999.990
106.643	177.255	-9999.990	-9999.990	-9999.990	-9999.990

Notes
-9999.99 - no data
API - American Petroleum Institute
cps - counts per second
mS/m - milliSiemens per meter

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
2.172	133.672	-9999.990	-9999.990	-9999.990	-9999.990
2.238	124.553	-9999.990	-9999.990	-9999.990	-9999.990
2.303	124.553	-9999.990	-9999.990	-9999.990	-9999.990
2.368	131.482	-9999.990	-9999.990	-9999.990	-9999.990
2.433	143.777	-9999.990	-9999.990	-9999.990	-9999.990
2.498	143.777	-9999.990	-9999.990	-9999.990	-9999.990
2.564	160.360	-9999.990	-9999.990	-9999.990	-9999.990
2.629	112.763	-9999.990	-9999.990	-9999.990	-9999.990
2.694	112.763	-9999.990	-9999.990	-9999.990	-9999.990
2.759	130.801	-9999.990	-9999.990	-9999.990	-9999.990
2.824	131.185	-9999.990	-9999.990	-9999.990	-9999.990
2.890	131.185	-9999.990	-9999.990	-9999.990	-9999.990
2.955	145.004	-9999.990	-9999.990	-9999.990	-9999.990
3.020	149.802	-9999.990	-9999.990	-9999.990	-9999.990
3.085	149.802	-9999.990	-9999.990	-9999.990	-9999.990
3.150	118.980	-9999.990	-9999.990	-9999.990	-9999.990
3.216	118.980	-9999.990	-9999.990	-9999.990	-9999.990
3.281	151.914	-9999.990	-9999.990	-9999.990	-9999.990
3.346	123.765	-9999.990	-9999.990	-9999.990	-9999.990
3.411	123.765	25.822	-9999.990	-9999.990	-9999.990
3.476	126.579	24.416	-9999.990	-9999.990	-9999.990
3.542	135.023	24.416	-9999.990	-9999.990	-9999.990
3.607	135.023	23.523	-9999.990	-9999.990	-9999.990
3.672	135.023	22.530	-9999.990	-9999.990	-9999.990
3.737	115.321	22.530	-9999.990	-9999.990	-9999.990
3.802	115.321	21.678	-9999.990	-9999.990	-9999.990
3.868	109.693	20.742	-9999.990	-9999.990	-9999.990
3.933	135.023	20.742	-9999.990	-9999.990	-9999.990
3.998	135.023	20.257	-9999.990	-9999.990	-9999.990
4.063	86.057	19.689	-9999.990	-9999.990	-9999.990
4.128	104.065	19.689	-9999.990	-9999.990	-9999.990
4.194	104.065	19.121	-9999.990	-9999.990	-9999.990
4.259	104.065	18.553	-9999.990	-9999.990	-9999.990
4.324	123.765	18.553	-9999.990	-9999.990	-9999.990
4.389	123.765	17.985	-9999.990	-9999.990	-9999.990
4.454	120.950	17.417	-9999.990	-9999.990	-9999.990
4.520	131.646	17.417	-9999.990	-9999.990	-9999.990
4.585	131.646	18.068	-9999.990	-9999.990	-9999.990
4.650	132.209	16.564	-9999.990	-9999.990	-9999.990
4.715	92.809	16.564	-9999.990	-9999.990	-9999.990
4.780	92.809	16.280	-9999.990	-9999.990	-9999.990
4.846	120.950	16.280	-9999.990	-9999.990	-9999.990
4.911	120.950	15.662	-9999.990	-9999.990	-9999.990

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
4.976	132.209	15.712	-9999.990	-9999.990	-9999.990
5.041	129.394	15.712	-9999.990	-9999.990	-9999.990
5.106	129.394	15.712	-9999.990	-9999.990	-9999.990
5.172	95.623	15.395	-9999.990	-9999.990	-9999.990
5.237	103.783	15.395	-9999.990	-9999.990	-9999.990
5.302	103.783	15.428	0.766	0.288	0.107
5.367	92.809	15.618	0.539	0.221	0.088
5.432	101.251	15.618	0.520	0.016	0.059
5.498	101.251	16.224	0.463	0.000	0.149
5.563	126.579	14.406	0.470	0.000	0.224
5.628	87.182	14.406	0.674	0.000	0.000
5.693	87.182	15.769	0.000	0.000	0.162
5.758	103.783	13.951	0.000	0.000	0.250
5.824	135.023	13.951	0.000	0.000	0.167
5.889	135.023	14.447	0.663	0.161	0.499
5.954	120.950	13.497	0.249	0.242	0.502
6.019	112.507	13.497	0.502	0.484	0.334
6.084	112.507	14.406	0.821	0.000	0.162
6.150	126.579	12.588	0.734	0.000	0.243
6.215	123.765	12.588	0.652	0.000	0.000
6.280	123.765	13.951	1.486	0.000	0.164
6.345	149.380	12.133	0.985	0.000	0.000
6.410	118.136	12.133	0.821	0.000	0.000
6.476	118.136	13.497	1.990	0.163	0.325
6.541	137.838	13.497	1.241	0.492	0.492
6.606	137.838	11.224	1.481	0.331	0.331
6.671	118.136	13.345	0.163	0.000	0.000
6.736	135.023	13.345	0.251	0.000	0.000
6.802	135.023	10.770	0.333	0.000	0.000
6.867	101.251	12.588	0.000	0.497	0.995
6.932	115.321	12.588	0.000	0.249	0.497
6.997	115.321	10.770	0.000	0.166	0.332
7.062	111.381	12.133	0.492	0.000	0.000
7.128	112.507	12.133	0.741	0.000	0.000
7.193	112.507	9.902	1.150	0.000	0.168
7.258	95.623	12.133	0.494	0.000	0.000
7.323	126.579	12.133	0.493	0.000	0.000
7.388	126.579	10.315	0.492	0.000	0.000
7.454	146.283	11.679	0.000	0.000	0.165
7.519	98.437	11.679	0.000	0.000	0.508
7.584	98.437	9.861	0.000	0.000	0.668
7.649	140.653	11.224	0.164	0.000	0.000
7.714	75.929	11.224	0.000	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
7.780	75.929	9.406	0.000	0.000	0.341
7.845	109.693	11.679	0.994	0.000	0.324
7.910	101.251	11.679	0.984	0.000	0.487
7.975	101.251	8.952	1.629	0.000	0.973
8.040	109.693	11.224	0.163	0.000	0.163
8.106	106.879	11.224	0.492	0.000	0.245
8.171	106.879	10.315	0.165	0.000	0.000
8.236	129.112	10.315	0.491	0.000	0.000
8.301	129.112	8.497	0.498	0.000	0.000
8.366	120.950	10.315	0.169	0.000	0.000
8.432	109.693	10.315	1.801	0.000	0.167
8.497	109.693	8.043	1.220	0.000	0.749
8.562	123.765	9.406	0.661	0.000	1.001
8.627	92.809	9.406	0.814	0.000	0.000
8.692	92.809	7.588	1.474	0.000	0.000
8.758	134.179	9.406	1.471	0.000	0.000
8.823	112.507	9.406	0.000	0.000	0.163
8.888	112.507	7.285	0.000	0.000	0.244
8.953	101.251	7.134	0.000	0.000	0.488
9.018	89.996	7.134	0.827	0.000	0.164
9.084	89.996	8.043	0.991	0.000	0.246
9.149	109.693	6.679	1.313	0.000	0.000
9.214	123.765	6.679	0.166	0.164	0.327
9.279	123.765	8.043	0.498	0.247	0.247
9.344	83.525	5.770	0.663	0.000	0.168
9.410	126.579	5.770	0.662	0.500	0.165
9.475	126.579	7.423	0.493	0.250	0.251
9.540	98.437	7.134	0.167	0.167	0.336
9.605	92.809	7.134	1.009	0.000	0.676
9.670	92.809	-9999.990	1.003	0.000	0.255
9.736	115.321	7.134	1.504	0.000	0.170
9.801	95.623	7.134	0.848	0.000	0.000
9.866	95.623	5.770	0.517	0.000	0.000
9.931	109.693	5.770	0.345	0.000	0.000
9.996	109.693	7.588	0.330	0.000	0.672
10.062	118.136	5.316	0.000	0.000	0.254
10.127	84.369	5.316	0.171	0.171	0.169
10.192	84.369	7.588	0.000	0.000	1.179
10.257	81.555	5.316	0.249	0.000	0.508
10.322	78.742	5.316	0.166	0.000	0.505
10.388	78.742	7.134	0.164	0.000	0.164
10.453	73.397	5.316	0.496	0.000	0.246
10.518	89.996	5.316	0.826	0.000	0.492

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
10.583	89.996	6.679	0.327	0.000	0.163
10.648	129.394	-9999.990	0.750	0.000	0.252
10.714	81.555	-9999.990	0.827	0.000	0.334
10.779	81.555	6.679	0.499	0.499	0.000
10.844	112.507	4.861	0.752	0.501	0.000
10.909	84.369	4.861	0.501	0.334	0.000
10.974	84.369	6.225	0.325	0.000	0.000
11.040	88.589	-9999.990	0.982	0.247	0.000
11.105	78.742	-9999.990	0.330	0.165	0.166
11.170	78.742	7.134	0.669	0.163	0.163
11.235	87.182	5.316	0.251	0.245	0.245
11.300	89.996	5.316	0.334	0.490	0.490
11.366	89.996	8.497	0.163	0.163	0.000
11.431	126.579	2.134	0.501	0.245	0.251
11.496	78.742	2.134	0.334	0.490	0.167
11.561	78.742	-2.411	0.000	0.000	0.000
11.626	83.525	-2.411	0.250	0.000	0.000
11.692	83.525	0.771	0.167	0.000	0.000
11.757	98.437	6.679	1.328	0.000	0.000
11.822	89.996	6.679	0.997	0.000	0.252
11.887	89.996	4.861	0.839	0.000	0.336
11.952	89.996	6.679	0.499	0.000	0.000
12.018	84.369	6.679	0.752	0.000	0.000
12.083	84.369	4.407	0.832	0.000	0.172
12.148	87.182	4.530	0.000	0.168	0.168
12.213	81.555	4.530	0.000	0.251	0.251
12.278	81.555	2.134	0.513	0.503	0.503
12.344	92.809	16.678	0.167	0.000	0.167
12.409	101.251	16.678	0.000	0.000	0.000
12.474	101.251	14.406	0.000	0.000	0.000
12.539	109.693	9.406	0.330	0.000	0.164
12.604	84.369	9.406	0.495	0.000	0.245
12.670	84.369	6.679	0.991	0.000	0.000
12.735	108.849	8.952	1.006	0.000	0.164
12.800	95.623	8.952	0.503	0.000	0.000
12.865	95.623	7.588	0.335	0.000	0.000
12.930	104.065	10.315	0.164	0.000	0.000
12.996	118.136	10.315	0.000	0.000	0.250
13.061	118.136	9.861	0.166	0.000	0.167
13.126	115.321	8.952	0.000	0.000	0.165
13.191	120.950	8.952	0.250	0.250	0.000
13.256	120.950	5.316	0.167	0.167	0.000
13.322	126.579	5.316	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
13.387	126.579	9.861	0.494	0.000	0.000
13.452	-9999.990	8.952	0.330	0.000	0.000
13.517	112.507	8.952	0.000	0.166	0.000
13.582	112.507	10.770	0.251	0.000	0.000
13.648	109.693	9.406	0.168	0.000	0.000
13.713	132.209	9.406	0.164	0.000	0.331
13.778	132.209	11.224	0.000	0.252	0.251
13.843	103.783	9.861	0.167	0.168	0.502
13.908	137.838	9.861	0.994	0.000	0.165
13.974	137.838	11.679	1.242	0.000	0.000
14.039	140.653	9.861	1.815	0.000	0.000
14.104	87.182	9.861	0.839	0.000	0.673
14.169	87.182	11.679	0.507	0.000	0.253
14.234	98.437	9.406	0.338	0.000	0.169
14.300	118.136	9.406	0.333	0.000	0.000
14.365	118.136	11.224	0.250	0.000	0.257
14.430	118.136	10.728	0.000	0.000	0.171
14.495	120.950	10.728	0.168	0.000	0.166
14.560	120.950	8.497	0.000	0.000	0.249
14.626	92.809	10.315	0.170	0.000	0.497
14.691	115.321	10.315	0.325	0.000	0.325
14.756	115.321	8.043	0.487	0.000	0.244
14.821	139.246	9.861	0.168	0.000	0.000
14.886	87.182	9.861	0.164	0.000	0.000
14.952	87.182	7.134	0.494	0.000	0.000
15.017	109.693	7.134	0.333	0.000	0.000
15.082	109.693	8.952	0.000	0.000	0.163
15.147	92.809	6.679	0.000	0.000	0.245
15.212	81.555	6.679	0.000	0.000	0.655
15.278	81.555	8.043	0.994	0.165	0.165
15.343	81.555	6.225	0.497	0.247	0.248
15.408	86.057	6.225	0.830	0.000	0.663
15.473	86.057	8.043	0.000	0.000	0.000
15.538	104.065	5.770	0.000	0.000	0.251
15.604	115.321	5.770	0.167	0.000	0.168
15.669	115.321	7.134	0.000	0.000	0.166
15.734	59.051	5.770	0.000	0.000	0.249
15.799	89.996	5.770	0.167	0.000	0.000
15.864	89.996	6.679	0.670	0.000	0.000
15.930	75.929	4.861	0.253	0.000	0.000
15.995	109.693	4.861	0.333	0.000	0.000
16.060	109.693	6.225	1.499	0.000	0.000
16.125	126.579	4.407	1.248	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
16.190	109.693	4.407	0.333	0.000	0.000
16.256	109.693	6.225	0.168	0.501	0.000
16.321	120.950	4.407	0.252	0.251	0.000
16.386	108.849	4.407	0.504	0.167	0.000
16.451	108.849	5.770	0.332	0.000	0.168
16.516	87.182	3.952	0.754	0.000	0.000
16.582	64.676	3.952	0.343	0.000	0.000
16.647	64.676	6.225	0.519	0.000	0.519
16.712	120.950	6.225	0.259	0.000	0.259
16.777	120.950	3.704	0.343	0.000	0.173
16.842	84.369	5.770	0.511	0.000	0.511
16.908	104.065	5.770	0.768	0.000	0.512
16.973	104.065	4.407	0.512	0.169	0.341
17.038	78.742	6.679	0.501	0.000	0.000
17.103	70.302	6.679	0.250	0.000	0.000
17.168	70.302	4.861	0.167	0.000	0.000
17.234	61.863	7.588	0.491	0.000	0.164
17.299	115.321	7.588	0.491	0.249	0.245
17.364	115.321	6.225	0.000	0.166	0.168
17.429	73.115	7.588	0.666	0.000	0.000
17.494	101.251	7.588	0.497	0.251	0.251
17.560	101.251	6.225	0.658	0.167	0.167
17.625	106.879	8.497	0.832	0.000	0.496
17.690	104.065	8.497	0.752	0.000	0.744
17.755	104.065	6.679	0.336	0.000	0.493
17.820	101.251	8.497	0.659	0.162	0.164
17.886	81.555	8.497	0.249	0.000	0.246
17.951	81.555	6.225	0.334	0.168	0.000
18.016	-9999.990	8.497	0.994	0.325	1.008
18.081	67.489	8.497	0.740	0.488	0.504
18.146	67.489	6.225	0.990	0.488	0.336
18.212	95.623	8.497	0.660	0.000	0.000
18.277	112.507	8.497	0.497	0.000	0.000
18.342	112.507	7.134	0.995	0.167	0.167
18.407	67.489	7.134	0.000	0.000	0.166
18.472	67.489	8.952	0.255	0.000	0.249
18.538	98.437	7.134	0.338	0.000	0.000
18.603	103.783	7.134	0.502	0.000	0.000
18.668	103.783	8.952	0.505	0.000	0.000
18.733	78.742	7.588	0.336	0.000	0.000
18.798	98.437	7.588	0.497	0.000	0.332
18.864	98.437	9.406	1.002	0.000	0.498
18.929	78.742	8.249	0.672	0.000	0.502

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
18.994	95.623	8.249	0.000	0.166	0.166
19.059	95.623	6.679	0.000	0.248	0.248
19.124	104.065	8.043	0.000	0.497	0.497
19.190	87.182	8.043	0.491	0.332	0.164
19.255	87.182	6.679	0.487	0.000	0.246
19.320	73.115	8.043	0.974	0.000	0.000
19.385	64.676	8.043	0.498	0.000	0.660
19.450	64.676	6.225	0.249	0.000	0.249
19.516	92.809	8.043	0.166	0.000	0.166
19.581	63.270	8.043	0.163	0.000	0.000
19.646	63.270	6.679	0.245	0.000	0.252
19.711	70.302	8.497	0.000	0.000	0.168
19.776	50.613	8.497	0.665	0.000	0.000
19.842	50.613	6.679	0.250	0.000	0.000
19.907	59.051	8.952	0.334	0.000	0.000
19.972	64.676	8.952	0.164	0.000	0.503
20.037	64.676	6.679	0.246	0.000	0.252
20.102	75.929	6.679	0.492	0.000	0.168
20.168	75.929	8.952	0.664	0.000	0.664
20.233	73.115	7.134	0.747	0.000	0.498
20.298	64.676	7.134	0.998	0.000	0.665
20.363	64.676	9.406	0.668	0.000	1.170
20.428	53.425	8.043	0.498	0.000	0.997
20.494	61.863	8.043	0.660	0.000	0.503
20.559	61.863	9.861	0.000	0.499	0.164
20.624	64.676	8.497	0.000	0.249	0.247
20.689	65.801	8.497	0.000	0.166	0.000
20.754	65.801	10.315	0.165	0.166	0.166
20.820	61.863	8.952	0.000	0.249	0.249
20.885	44.988	8.952	0.170	0.000	0.170
20.950	44.988	11.224	0.168	0.000	1.018
21.015	64.676	9.489	0.252	0.000	0.509
21.080	67.489	9.489	0.677	0.000	0.339
21.146	67.489	12.588	0.519	0.000	0.166
21.211	59.051	10.770	0.260	0.000	0.249
21.276	70.302	10.770	0.514	0.000	0.498
21.341	70.302	13.497	0.168	0.000	0.512
21.406	64.676	11.679	0.252	0.000	0.256
21.472	61.863	11.679	0.340	0.000	0.171
21.537	61.863	14.860	0.000	0.000	0.000
21.602	64.676	13.497	0.000	0.250	0.000
21.667	75.929	13.497	0.333	0.167	0.000
21.732	75.929	15.769	0.164	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
21.798	50.613	15.769	0.249	0.000	0.000
21.863	50.613	14.860	0.166	0.000	0.167
21.928	78.742	17.587	1.332	0.000	0.000
21.993	56.238	17.587	0.750	0.000	0.000
22.058	56.238	16.224	0.995	0.000	0.000
22.124	81.555	19.405	0.331	0.502	0.165
22.189	68.333	19.405	0.496	0.251	0.248
22.254	68.333	18.496	0.000	0.167	0.000
22.319	87.182	21.223	0.165	0.000	0.000
22.384	59.051	21.223	0.248	0.000	0.000
22.450	59.051	20.769	0.496	0.000	0.000
22.515	106.879	23.496	0.990	0.000	0.000
22.580	101.251	23.496	1.237	0.000	0.000
22.645	101.251	23.496	0.824	0.000	0.000
22.710	111.381	25.314	0.506	0.000	0.000
22.776	67.489	25.314	0.253	0.000	0.000
22.841	67.489	24.859	0.169	0.000	0.000
22.906	84.369	28.041	1.173	0.000	0.165
22.971	84.369	28.041	0.503	0.000	0.247
23.036	84.369	27.586	0.504	0.000	0.662
23.102	75.929	29.735	0.333	0.000	0.000
23.167	73.115	29.735	0.250	0.000	0.000
23.232	73.115	31.222	0.000	0.000	0.000
23.297	80.992	30.768	1.012	0.167	0.000
23.362	67.489	30.768	1.015	0.251	0.258
23.428	67.489	33.949	1.016	0.502	0.343
23.493	89.996	33.949	0.335	0.000	1.197
23.558	89.996	33.040	0.252	0.000	0.515
23.623	87.182	36.222	0.504	0.000	0.514
23.688	73.115	36.222	0.167	0.000	0.510
23.754	73.115	35.767	0.000	0.000	0.255
23.819	92.809	38.494	0.000	0.000	0.170
23.884	73.115	38.494	0.330	0.000	0.330
23.949	73.115	38.040	0.495	0.000	0.495
24.014	101.251	40.767	1.159	0.000	0.991
24.080	96.186	40.767	0.491	0.000	0.164
24.145	96.186	39.651	0.737	0.000	0.496
24.210	104.065	42.585	1.150	0.000	0.658
24.275	61.863	42.585	1.669	0.000	0.000
24.340	61.863	42.130	1.001	0.000	0.000
24.406	104.065	44.403	1.330	0.000	0.000
24.471	98.437	44.403	0.000	0.502	0.000
24.536	98.437	43.494	0.000	0.251	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
24.601	118.136	46.675	0.168	0.167	0.000
24.666	98.718	46.675	0.830	0.000	0.000
24.732	98.718	44.857	1.251	0.000	0.000
24.797	95.623	47.130	0.667	0.000	0.168
24.862	101.251	47.130	0.329	0.000	0.000
24.927	101.251	45.312	0.247	0.000	0.250
24.992	104.065	47.130	1.160	0.000	0.167
25.058	126.579	47.130	0.327	0.000	0.000
25.123	126.579	44.609	0.491	0.000	0.000
25.188	101.251	44.609	0.825	0.000	0.000
25.253	101.251	46.221	0.603	0.008	0.024
25.318	123.765	44.403	0.908	0.012	0.037
25.384	98.437	44.403	0.800	0.024	0.073
25.449	98.437	45.766	1.008	0.000	0.000
25.514	92.809	43.494	0.504	0.000	0.000
25.579	89.996	43.494	0.682	0.000	0.346
25.644	89.996	45.312	0.000	0.000	0.000
25.710	118.136	42.585	0.000	0.000	0.000
25.775	118.136	42.585	0.679	0.000	0.339
25.840	118.136	44.403	0.000	0.000	0.000
25.905	101.251	42.130	0.000	0.000	0.000
25.970	92.809	42.130	0.681	0.000	0.000
26.036	92.809	43.039	0.000	0.000	0.000
26.101	101.251	41.717	0.000	0.000	0.000
26.166	88.589	41.717	0.333	0.333	0.333
26.231	88.589	39.858	1.003	0.000	0.000
26.296	64.676	41.221	1.004	0.000	0.000
26.362	81.555	41.221	0.669	0.000	0.000
26.427	81.555	38.040	0.487	0.000	0.163
26.492	92.809	38.949	0.737	0.000	0.245
26.557	123.765	38.949	1.310	0.000	0.489
26.622	123.765	36.676	1.508	0.000	0.164
26.688	80.992	37.131	1.004	0.000	0.000
26.753	87.182	37.131	0.669	0.000	0.333
26.818	87.182	34.858	1.827	0.000	0.000
26.883	89.996	34.858	1.749	0.000	0.000
26.948	89.996	35.767	2.494	0.000	0.000
27.014	84.369	33.949	0.661	0.000	0.000
27.079	89.996	33.949	0.493	0.000	0.000
27.144	89.996	35.313	0.823	0.000	0.000
27.209	95.623	33.495	0.665	0.000	1.006
27.274	73.397	33.495	0.744	0.000	0.503
27.340	73.397	35.313	0.821	0.000	0.335

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
27.405	87.182	34.404	0.671	0.000	0.165
27.470	118.136	34.404	0.505	0.000	0.248
27.535	118.136	36.676	0.674	0.000	0.169
27.600	87.182	35.767	1.672	0.000	0.000
27.666	112.507	35.767	1.260	0.000	0.000
27.731	112.507	38.040	1.351	0.000	0.170
27.796	98.718	37.585	0.163	0.000	0.000
27.861	95.623	37.585	0.000	0.000	0.000
27.926	95.623	39.651	0.343	0.000	0.171
27.992	81.555	40.767	0.999	0.000	0.167
28.057	73.115	40.767	1.499	0.000	0.505
28.122	73.115	44.403	2.005	0.000	0.670
28.187	70.302	45.312	0.652	0.000	0.000
28.252	78.742	45.312	1.239	0.000	0.000
28.318	78.742	48.948	1.475	0.000	0.000
28.383	78.742	50.311	0.660	0.000	0.162
28.448	73.115	50.311	0.745	0.000	0.000
28.513	73.115	54.402	0.825	0.000	0.000
28.578	118.136	54.402	0.651	0.000	0.000
28.644	118.136	54.856	0.490	0.250	0.000
28.709	136.712	59.401	0.490	0.167	0.000
28.774	95.623	59.401	1.158	0.000	0.000
28.839	95.623	60.765	0.498	0.000	0.000
28.904	118.136	64.442	0.168	0.000	0.000
28.970	118.136	64.442	0.823	0.000	0.000
29.035	118.136	68.037	0.494	0.000	0.000
29.100	59.051	68.390	0.651	0.000	0.000
29.165	80.992	68.390	0.999	0.000	0.000
29.230	80.992	69.855	0.499	0.000	0.000
29.296	73.115	74.854	0.333	0.000	0.000
29.361	98.437	74.854	0.823	0.000	0.501
29.426	98.437	75.309	1.234	0.000	0.250
29.491	98.437	79.399	1.651	0.000	0.334
29.556	73.397	79.399	0.165	0.000	0.000
29.622	73.397	80.763	0.499	0.000	0.000
29.687	78.742	85.514	0.664	0.000	0.166
29.752	92.809	85.514	1.179	0.000	0.163
29.817	92.809	89.398	0.755	0.000	0.244
29.882	56.238	91.671	0.507	0.000	0.488
29.948	106.879	91.671	1.176	0.000	0.000
30.013	106.879	96.670	0.756	0.000	0.000
30.078	96.186	98.185	0.680	0.000	0.000
30.143	70.302	98.185	0.686	0.000	0.336

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
30.208	70.302	101.215	0.512	0.000	0.253
30.274	73.115	101.215	0.849	0.000	0.506
30.339	73.115	107.275	0.000	0.000	0.000
30.404	73.115	107.123	0.254	0.000	0.000
30.469	92.809	107.123	0.340	0.000	0.000
30.534	92.809	109.800	0.671	0.000	0.000
30.600	118.136	113.840	1.005	0.000	0.000
30.665	104.065	113.840	0.507	0.000	0.166
30.730	104.065	113.487	0.164	0.000	0.498
30.795	126.579	114.345	0.251	0.000	0.249
30.860	89.996	114.345	0.167	0.000	0.166
30.926	89.996	117.122	0.664	0.000	0.161
30.991	78.460	115.860	0.493	0.000	0.241
31.056	92.809	115.860	0.168	0.000	0.000
31.121	92.809	118.032	0.325	0.000	0.000
31.186	106.879	116.870	0.244	0.000	0.000
31.252	92.809	116.870	0.000	0.000	0.000
31.317	92.809	116.870	0.661	0.000	0.000
31.382	95.623	108.941	0.753	0.000	0.000
31.447	83.525	108.941	0.502	0.000	0.000
31.512	83.525	99.195	0.165	0.000	0.000
31.578	132.209	108.941	0.252	0.000	0.000
31.643	92.809	108.941	0.168	0.000	0.000
31.708	92.809	113.335	0.667	0.000	0.163
31.773	118.136	-9999.990	0.497	0.000	0.000
31.838	80.992	-9999.990	0.660	0.000	0.000
31.904	80.992	107.123	0.497	0.000	0.166
31.969	101.251	106.265	0.748	0.000	0.000
32.034	101.251	106.265	1.160	0.000	0.000
32.099	106.879	98.943	0.673	0.000	0.167
32.164	106.879	98.943	0.756	0.000	0.250
32.230	106.879	96.670	0.338	0.000	0.169
32.295	92.809	117.122	0.669	0.000	0.492
32.360	98.437	117.122	0.754	0.000	0.737
32.425	98.437	102.730	0.831	0.000	1.475
32.490	98.437	92.125	0.658	0.167	0.000
32.556	86.057	92.125	0.998	0.250	0.000
32.621	86.057	85.560	0.670	0.500	0.170
32.686	87.182	80.763	0.321	0.000	0.000
32.751	78.742	80.763	0.482	0.000	0.000
32.816	78.742	80.005	0.964	0.000	0.000
32.882	87.182	75.309	0.160	0.000	0.321
32.947	89.996	75.309	0.491	0.000	0.481

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
33.012	89.996	73.440	0.814	0.000	0.963
33.077	75.929	63.946	0.656	0.000	0.000
33.142	104.065	63.946	0.485	0.000	0.000
33.208	104.065	58.795	0.166	0.169	0.000
33.273	83.525	58.947	0.500	0.000	0.161
33.338	59.051	58.947	0.250	0.000	0.000
33.403	59.051	55.260	0.167	0.000	0.168
33.468	84.369	52.230	0.159	0.000	0.000
33.534	73.115	52.230	0.239	0.000	0.000
33.599	73.115	50.766	0.478	0.000	0.000
33.664	89.996	46.675	0.000	0.000	0.660
33.729	89.996	46.675	0.000	0.000	0.492
33.794	78.460	44.150	0.000	0.000	0.821
33.860	39.363	44.150	0.492	0.000	0.000
33.925	39.363	43.948	0.741	0.000	0.000
33.990	78.742	40.110	0.167	0.000	0.000
34.055	89.996	40.110	1.330	0.000	0.166
34.120	89.996	38.494	0.998	0.000	0.249
34.186	65.801	40.110	0.997	0.000	0.497
34.251	42.176	40.110	0.000	0.000	0.000
34.316	42.176	36.222	0.000	0.000	0.000
34.381	78.742	36.070	0.000	0.000	0.000
34.446	47.800	36.070	0.836	0.000	1.176
34.512	47.800	36.676	1.270	0.000	0.753
34.577	56.238	35.565	1.348	0.000	1.004
34.642	61.863	35.565	1.359	0.000	0.000
34.707	61.863	36.676	1.270	0.000	0.000
34.772	73.115	35.060	1.355	0.000	0.000
34.838	73.115	35.060	0.331	0.000	0.000
34.903	73.115	34.858	0.497	0.000	0.000
34.968	84.369	37.080	0.493	0.000	0.000
35.033	60.738	37.080	0.835	0.000	0.000
35.098	60.738	34.858	0.750	0.000	0.000
35.164	75.929	35.060	1.155	0.000	0.000
35.229	53.425	35.060	1.152	0.164	0.163
35.294	53.425	37.131	0.739	0.245	0.245
35.359	70.302	35.565	0.656	0.491	0.000
35.424	70.302	35.565	0.499	0.000	0.000
35.490	47.800	37.585	0.249	0.250	0.000
35.555	58.207	37.585	0.333	0.166	0.000
35.620	58.207	36.575	0.486	0.000	0.000
35.685	59.051	36.676	0.000	0.000	0.000
35.750	95.623	36.676	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
35.816	95.623	39.100	0.505	0.000	0.000
35.881	59.051	38.090	0.252	0.000	0.000
35.946	58.207	38.090	0.334	0.000	0.000
36.011	58.207	38.090	0.155	0.000	0.502
36.076	56.238	40.312	0.233	0.000	0.503
36.142	59.051	40.312	0.000	0.000	0.335
36.207	59.051	39.605	0.161	0.163	0.000
36.272	44.988	40.312	0.000	0.245	0.000
36.337	44.988	40.312	0.167	0.489	0.000
36.402	44.988	43.140	0.163	0.000	0.000
36.468	55.675	41.221	0.000	0.000	0.000
36.533	39.363	41.221	0.168	0.000	0.000
36.598	39.363	41.625	0.000	0.000	0.000
36.663	59.051	43.494	0.000	0.000	0.252
36.728	47.800	43.494	0.000	0.000	0.168
36.794	47.800	42.635	1.512	0.000	0.000
36.859	61.863	43.494	1.250	0.000	0.000
36.924	53.425	43.494	1.320	0.000	0.000
36.989	53.425	42.635	0.326	0.000	0.000
37.054	61.863	42.635	0.242	0.000	0.254
37.120	61.863	42.635	0.000	0.000	0.170
37.185	50.613	43.948	0.000	0.162	0.000
37.250	60.738	43.948	0.253	0.244	0.000
37.315	60.738	42.130	0.169	0.000	0.000
37.380	70.302	42.130	0.486	0.504	0.664
37.446	42.176	42.130	0.494	0.252	0.493
37.511	42.176	44.150	0.654	0.168	0.168
37.576	56.238	41.676	0.000	0.000	0.324
37.641	30.927	41.676	0.000	0.000	0.486
37.706	30.927	42.130	0.000	0.000	0.000
37.772	63.270	43.494	0.486	0.000	0.000
37.837	47.800	43.494	0.737	0.000	0.000
37.902	47.800	42.130	0.334	0.000	0.000
37.967	39.363	42.635	0.162	0.000	0.000
38.032	59.051	42.635	0.745	0.000	0.000
38.098	59.051	43.494	0.821	0.000	0.000
38.163	39.363	42.635	0.000	0.000	0.166
38.228	48.081	42.635	0.000	0.000	0.249
38.293	48.081	42.635	0.000	0.000	0.000
38.358	33.739	43.948	0.502	0.000	0.164
38.424	36.551	43.948	0.251	0.000	0.245
38.489	36.551	43.140	0.167	0.166	0.000
38.554	44.988	43.140	0.487	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
38.619	43.019	43.140	0.495	0.000	0.000
38.684	43.019	44.403	0.333	0.000	0.000
38.750	44.988	43.140	0.163	0.000	0.163
38.815	44.988	43.140	0.495	0.000	0.000
38.880	53.425	44.857	0.657	0.000	0.000
38.945	67.489	44.857	0.832	0.000	0.167
39.010	67.489	44.150	0.497	0.000	0.251
39.076	47.800	43.948	0.169	0.000	0.671
39.141	50.613	43.948	0.331	0.000	0.165
39.206	50.613	47.180	0.753	0.000	0.248
39.271	47.800	45.312	1.163	0.000	0.496
39.336	53.425	45.312	0.842	0.000	0.000
39.402	53.425	46.675	0.757	0.000	0.000
39.467	30.927	48.493	0.169	0.000	0.000
39.532	44.988	48.493	0.668	0.000	0.000
39.597	44.988	48.190	0.252	0.000	0.000
39.662	68.333	49.200	0.334	0.000	0.000
39.728	44.988	49.200	0.000	0.000	0.499
39.793	44.988	52.129	0.000	0.000	0.250
39.858	59.051	52.230	0.000	0.000	0.166
39.923	42.176	52.230	0.164	0.000	0.325
39.988	42.176	55.765	0.000	0.000	0.487
40.054	78.742	56.270	0.000	0.000	0.485
40.119	37.957	56.270	0.166	0.000	0.000
40.184	37.957	58.290	0.249	0.000	0.000
40.249	53.425	61.674	0.000	0.000	0.000
40.314	50.613	61.674	0.000	0.000	0.000
40.380	50.613	62.835	0.000	0.000	0.000
40.445	78.742	64.350	0.166	0.000	0.000
40.510	78.742	64.350	0.167	0.000	0.000
40.575	50.613	67.582	0.250	0.000	0.000
40.640	63.270	67.582	0.667	0.000	0.000
40.706	63.270	-9999.990	0.164	0.000	0.000
40.771	75.929	69.400	0.246	0.000	0.000
40.836	70.302	69.400	0.491	0.000	0.000
40.901	70.302	71.673	0.495	0.000	0.000
40.966	104.065	71.420	0.247	0.000	0.250
41.032	89.996	71.420	0.333	0.000	0.167
41.097	89.996	72.127	0.505	0.000	0.000
41.162	89.996	75.460	0.758	0.000	0.000
41.227	86.057	75.460	1.014	0.000	0.000
41.292	86.057	73.945	0.169	0.000	0.000
41.358	70.302	74.450	0.253	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
41.423	70.302	74.450	0.506	0.000	0.000
41.488	70.302	77.985	0.167	0.000	0.000
41.553	92.809	75.763	0.502	0.000	0.000
41.618	56.238	75.763	0.336	0.000	0.000
41.684	56.238	76.470	0.167	0.000	0.168
41.749	78.742	78.036	0.251	0.000	0.000
41.814	80.992	78.036	0.000	0.000	0.000
41.879	80.992	76.975	0.000	0.495	0.167
41.944	78.742	76.975	0.000	0.248	0.000
42.010	64.676	76.975	0.000	0.165	0.000
42.075	64.676	78.036	0.000	0.000	0.000
42.140	55.675	76.470	0.000	0.000	0.000
42.205	55.675	76.470	0.000	0.000	0.000
42.270	61.863	77.581	0.000	0.000	0.000
42.336	80.992	77.581	0.000	0.000	0.000
42.401	80.992	75.460	0.000	0.000	0.166
42.466	53.425	74.955	0.663	0.000	0.169
42.531	59.051	74.955	0.500	0.000	0.253
42.596	59.051	76.218	0.671	0.000	0.506
42.662	63.270	73.945	0.170	0.000	0.000
42.727	84.369	73.945	0.255	0.000	0.000
42.792	84.369	73.036	0.509	0.000	0.000
42.857	65.801	75.965	0.834	0.000	0.000
42.922	42.176	75.965	0.496	0.000	0.000
42.988	42.176	72.582	0.330	0.000	0.000
43.053	39.363	72.935	0.830	0.000	0.000
43.118	55.675	72.935	0.754	0.000	0.000
43.183	55.675	74.854	1.344	0.000	0.000
43.248	47.800	72.582	0.513	0.000	0.000
43.314	68.333	72.582	0.257	0.000	0.000
43.379	68.333	74.955	0.000	0.000	0.000
43.444	53.425	72.127	0.000	0.000	0.173
43.509	59.051	72.127	0.000	0.000	0.260
43.574	59.051	74.400	0.000	0.000	0.000
43.640	65.801	72.430	0.000	0.000	0.169
43.705	61.863	72.430	0.000	0.000	0.508
43.770	61.863	71.218	0.000	0.000	0.677
43.835	47.800	73.491	0.669	0.000	0.500
43.900	47.800	73.491	0.755	0.000	0.250
43.966	56.238	71.925	0.334	0.000	0.167
44.031	43.019	71.925	0.000	0.000	0.000
44.096	43.019	73.036	0.246	0.000	0.000
44.161	59.051	70.764	0.164	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
44.226	56.238	70.764	0.171	0.000	0.171
44.292	56.238	70.410	0.502	0.000	0.256
44.357	45.550	72.582	0.164	0.000	0.165
44.422	50.613	72.582	0.340	0.000	0.000
44.487	50.613	70.915	0.246	0.000	0.000
44.552	63.270	72.582	0.164	0.000	0.000
44.618	59.051	72.582	1.003	0.000	0.000
44.683	59.051	-9999.990	0.749	0.000	0.000
44.748	42.176	70.915	0.838	0.000	0.000
44.813	60.738	70.915	0.661	0.000	0.168
44.878	60.738	72.935	0.500	0.000	0.498
44.944	28.115	70.309	0.673	0.000	0.164
45.009	68.333	70.309	0.341	0.000	0.169
45.074	68.333	70.410	0.258	0.000	0.000
45.139	47.800	72.127	0.000	0.000	0.000
45.204	42.176	72.127	0.000	0.000	0.499
45.270	42.176	69.855	0.000	0.000	0.250
45.335	48.081	72.430	0.164	0.000	0.166
45.400	44.988	72.430	0.170	0.000	0.170
45.465	44.988	69.855	0.254	0.000	0.254
45.530	60.738	71.218	0.166	0.000	0.000
45.596	60.738	71.218	0.000	0.000	0.496
45.661	61.863	70.410	0.000	0.000	0.248
45.726	56.238	70.410	0.000	0.000	0.165
45.791	56.238	69.855	0.000	0.000	0.000
45.856	48.081	71.673	0.248	0.000	0.000
45.922	39.363	71.673	0.332	0.000	0.000
45.987	39.363	70.410	0.841	0.000	0.000
46.052	39.363	72.127	0.249	0.000	0.000
46.117	61.863	72.127	0.327	0.000	0.000
46.182	61.863	70.309	0.000	0.000	0.000
46.248	60.738	70.410	0.245	0.000	0.000
46.313	56.238	70.410	0.163	0.000	0.000
46.378	56.238	71.673	0.474	0.000	0.000
46.443	33.739	70.915	0.237	0.000	0.000
46.508	43.019	70.915	0.318	0.000	0.000
46.574	43.019	72.127	1.147	0.000	0.000
46.639	50.613	69.855	1.241	0.000	0.000
46.704	58.207	69.855	1.819	0.000	0.000
46.769	58.207	70.915	0.480	0.000	0.000
46.834	33.739	72.127	0.240	0.000	0.000
46.900	78.742	72.127	0.160	0.000	0.000
46.965	78.742	70.410	0.331	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
47.030	55.675	72.582	0.497	0.000	0.000
47.095	84.369	72.582	0.000	0.000	0.000
47.160	84.369	70.915	0.503	0.000	0.000
47.226	65.801	70.764	0.741	0.000	0.000
47.291	65.801	70.764	0.319	0.000	0.000
47.356	36.551	72.935	0.000	0.000	0.000
47.421	81.555	72.935	0.000	0.000	0.000
47.486	81.555	70.764	0.318	0.000	0.000
47.552	50.613	73.036	0.000	0.000	0.000
47.617	42.176	73.036	0.000	0.000	0.000
47.682	42.176	71.420	0.000	0.000	0.000
47.747	58.207	71.218	0.168	0.000	0.000
47.812	30.927	71.218	0.252	0.000	0.000
47.878	30.927	72.582	0.000	0.000	0.000
47.943	47.800	71.925	0.300	0.000	0.000
48.008	40.488	71.925	0.450	0.000	0.000
48.073	40.488	72.582	0.451	0.000	0.000
48.138	61.863	71.420	0.000	0.000	0.838
48.204	70.302	71.420	0.000	0.000	0.762
48.269	70.302	70.764	0.000	0.000	1.193
48.334	53.425	72.582	0.477	0.000	0.000
48.399	40.488	72.582	0.716	0.000	0.000
48.464	40.488	71.420	0.957	0.000	0.000
48.530	42.176	72.582	0.000	0.000	0.000
48.595	50.613	72.582	0.000	0.000	0.240
48.660	50.613	71.218	0.000	0.000	0.160
48.725	32.895	71.420	0.000	0.000	0.000
48.790	53.425	71.420	0.000	0.000	0.000
48.856	53.425	73.036	0.000	0.000	0.000
48.921	58.207	71.673	0.654	0.000	0.000
48.986	33.739	71.673	0.501	0.000	0.000
49.051	33.739	74.450	0.684	0.000	0.159
49.116	40.488	74.450	0.352	0.000	0.000
49.182	40.488	73.036	0.505	0.000	0.000
49.247	42.176	74.955	0.689	0.000	0.000
49.312	30.927	74.955	0.000	0.000	0.000
49.377	30.927	77.127	0.000	0.000	0.000
49.442	65.801	77.480	0.000	0.000	0.160
49.508	36.551	77.480	0.352	0.000	0.000
49.573	36.551	79.854	0.000	0.000	0.000
49.638	73.397	80.510	0.000	0.000	0.000
49.703	59.051	80.510	0.475	0.000	0.174
49.768	59.051	81.672	0.238	0.000	0.261

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
49.834	59.051	84.853	0.318	0.000	0.000
49.899	73.397	84.853	0.000	0.000	0.177
49.964	73.397	84.550	0.000	0.000	0.265
50.029	50.613	87.126	0.000	0.000	0.530
50.094	47.800	87.126	0.000	0.000	0.000
50.160	47.800	86.671	0.000	0.000	0.000
50.225	78.460	88.085	0.000	0.000	0.000
50.290	47.800	88.085	0.000	0.000	0.000
50.355	47.800	90.307	0.000	0.000	0.000
50.420	47.800	89.398	0.164	0.000	0.000
50.486	61.863	89.398	0.000	0.000	0.358
50.551	61.863	93.135	0.000	0.000	0.537
50.616	63.270	92.125	0.000	0.000	1.074
50.681	67.489	92.125	0.000	0.000	0.000
50.746	67.489	94.852	0.241	0.000	0.241
50.812	96.186	94.852	0.161	0.000	0.161
50.877	96.186	94.145	0.175	0.479	0.000
50.942	92.809	96.216	0.482	0.240	0.000
51.007	75.929	96.216	0.321	0.160	0.000
51.072	75.929	100.205	0.000	0.000	0.174
51.138	78.460	98.488	0.239	0.000	0.261
51.203	75.929	98.488	0.159	0.000	0.522
51.268	75.929	94.398	0.176	0.000	0.000
51.333	70.865	88.085	0.503	0.000	0.000
51.398	89.996	88.085	0.687	0.000	0.000
51.464	89.996	93.943	0.173	0.000	0.000
51.529	81.555	99.700	0.260	0.000	0.000
51.594	83.525	99.700	0.158	0.000	0.000
51.659	83.525	97.125	0.479	0.000	0.000
51.724	75.929	96.670	0.239	0.000	0.000
51.790	65.801	96.670	0.160	0.000	0.000
51.855	65.801	94.852	0.475	0.000	0.000
51.920	87.182	92.125	0.475	0.000	0.000
51.985	59.051	92.125	0.317	0.000	0.000
52.050	59.051	94.398	0.353	0.000	0.000
52.116	126.579	-9999.990	0.529	0.000	0.000
52.181	78.742	-9999.990	0.000	0.000	0.000
52.246	78.742	103.740	0.176	0.000	0.000
52.311	70.865	98.034	0.265	0.241	0.000
52.376	95.623	98.034	0.000	0.323	0.000
52.442	95.623	93.489	0.845	0.000	0.000
52.507	92.809	93.489	0.778	0.000	0.000
52.572	92.809	94.145	0.693	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
52.637	75.929	91.216	0.000	0.000	0.000
52.702	89.996	91.216	0.000	0.000	0.000
52.768	89.996	91.671	0.000	0.000	0.000
52.833	91.121	87.580	0.000	0.000	0.000
52.898	75.929	87.580	0.000	0.000	0.000
52.963	75.929	79.399	0.000	0.000	0.000
53.028	75.929	79.399	0.656	0.000	0.000
53.094	75.929	79.399	0.503	0.000	0.000
53.159	75.929	77.985	0.319	0.000	0.000
53.224	81.555	78.945	0.526	0.000	0.172
53.289	53.144	78.945	0.788	0.000	0.259
53.354	53.144	75.460	0.000	0.000	0.517
53.420	56.238	74.400	0.000	0.000	0.000
53.485	80.992	74.400	0.481	0.000	0.000
53.550	80.992	74.854	0.482	0.000	0.000
53.615	56.238	71.925	0.000	0.000	0.000
53.680	43.019	71.925	0.000	0.000	0.000
53.746	43.019	73.036	0.000	0.000	0.000
53.811	73.115	70.915	1.010	0.000	0.176
53.876	56.238	70.915	0.479	0.000	0.264
53.941	56.238	69.400	0.320	0.000	0.000
54.006	48.081	71.925	0.523	0.000	0.350
54.072	61.863	71.925	0.260	0.240	0.262
54.137	61.863	68.491	0.679	0.160	0.000
54.202	53.144	68.491	1.128	0.000	0.000
54.267	53.144	68.895	0.715	0.000	0.240
54.332	39.363	69.855	0.477	0.000	0.322
54.398	61.863	69.855	0.660	0.177	0.177
54.463	61.863	67.582	0.241	0.265	0.000
54.528	50.613	69.400	0.161	0.000	0.000
54.593	56.238	69.400	0.533	0.000	0.000
54.658	56.238	67.380	0.800	0.000	0.000
54.724	39.363	69.400	1.072	0.000	0.000
54.789	50.613	69.400	0.178	0.000	0.000
54.854	50.613	67.380	0.246	0.000	0.000
54.919	45.550	67.582	0.164	0.162	0.162
54.984	50.613	67.582	0.845	0.000	0.000
55.050	50.613	69.400	0.512	0.000	0.000
55.115	44.988	68.390	0.325	0.000	0.162
55.180	58.207	68.390	0.000	0.000	0.826
55.245	58.207	70.309	0.473	0.000	0.762
55.310	36.551	68.946	0.315	0.000	1.207
55.376	58.207	68.946	0.352	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
55.441	58.207	69.905	0.504	0.000	0.000
55.506	42.176	72.582	0.322	0.000	0.000
55.571	64.676	72.582	0.176	0.000	0.000
55.636	64.676	71.925	0.264	0.000	0.250
55.702	63.270	73.945	0.000	0.000	0.167
55.767	39.363	73.945	0.178	0.000	0.000
55.832	39.363	73.440	0.268	0.000	0.000
55.897	32.895	73.440	0.000	0.170	0.000
55.962	32.895	73.945	0.000	0.000	0.000
56.028	25.303	76.470	0.000	0.000	0.000
56.093	70.302	76.470	0.169	0.000	0.000
56.158	70.302	73.945	1.706	0.175	0.000
56.223	43.019	74.450	0.764	0.262	0.000
56.288	42.176	74.450	0.677	0.000	0.000
56.354	42.176	75.309	0.000	0.000	0.174
56.419	55.675	72.127	0.000	0.000	0.260
56.484	44.988	72.127	0.000	0.000	0.521
56.549	44.988	73.945	0.000	0.000	0.000
56.614	80.992	70.764	0.000	0.000	0.000
56.680	39.363	70.764	0.000	0.000	0.000
56.745	39.363	71.218	0.000	0.000	0.000
56.810	59.051	68.390	0.512	0.000	0.000
56.875	53.425	68.390	0.514	0.000	0.000
56.940	53.425	67.582	0.527	0.000	0.000
57.006	48.081	68.037	0.264	0.000	0.000
57.071	56.238	68.037	0.348	0.000	0.000
57.136	56.238	65.865	1.030	0.000	0.000
57.201	53.425	66.673	0.515	0.000	0.000
57.266	53.425	66.673	0.343	0.000	0.000
57.332	53.425	63.946	0.000	0.000	0.176
57.397	58.207	63.340	0.000	0.000	0.264
57.462	53.425	63.340	0.000	0.000	0.528
57.527	53.425	63.946	0.000	0.000	0.177
57.592	53.144	63.946	0.000	0.000	0.266
57.658	53.144	61.674	0.170	0.000	0.531
57.723	75.929	62.330	0.177	0.000	0.000
57.788	50.613	62.330	0.000	0.000	0.000
57.853	50.613	59.401	0.000	0.000	0.000
57.918	47.800	58.795	0.858	0.000	0.000
57.984	73.115	58.795	0.774	0.000	0.000
58.049	73.115	58.947	0.339	0.000	0.000
58.114	63.270	56.775	0.347	0.000	0.000
58.179	75.929	56.775	0.252	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
58.244	75.929	57.583	0.168	0.000	0.000
58.310	75.929	55.260	0.861	0.000	0.000
58.375	42.176	55.260	0.782	0.000	0.000
58.440	42.176	54.402	1.560	0.000	0.168
58.505	42.176	56.270	0.174	0.000	0.000
58.570	53.144	56.270	0.261	0.000	0.000
58.636	53.144	53.947	0.523	0.000	0.000
58.701	44.988	54.402	0.177	0.000	0.511
58.766	48.081	54.402	0.265	0.000	0.256
58.831	48.081	53.240	0.530	0.000	0.170
58.896	42.176	52.584	1.198	0.000	0.180
58.962	56.238	52.584	1.035	0.000	0.270
59.027	56.238	53.493	1.050	0.000	0.540
59.092	87.182	51.675	0.883	0.000	0.000
59.157	58.207	51.675	1.056	0.000	0.000
59.222	58.207	54.250	0.530	0.000	0.000
59.288	56.238	54.250	0.879	0.000	0.521
59.353	56.238	51.675	0.798	0.000	0.260
59.418	64.676	52.230	0.174	0.000	0.174
59.483	65.801	52.230	0.354	0.000	0.000
59.548	65.801	53.038	0.531	0.000	0.000
59.614	64.676	51.675	0.337	0.000	0.000
59.679	39.363	51.675	0.000	0.176	0.351
59.744	39.363	53.745	0.000	0.264	0.264
59.809	55.675	51.675	0.000	0.000	0.000
59.874	67.489	51.675	0.173	0.000	0.000
59.940	67.489	53.947	1.017	0.000	0.000
60.005	60.738	-9999.990	0.505	0.000	0.000
60.070	59.051	-9999.990	0.512	0.000	0.512
60.135	59.051	51.675	0.509	0.000	0.256
60.200	48.081	54.250	0.340	0.000	0.171
60.266	50.613	54.250	0.000	0.000	0.000
60.331	50.613	51.675	0.000	0.000	0.000
60.396	70.302	52.230	0.000	0.000	0.000
60.461	37.957	52.230	0.501	0.000	0.174
60.526	37.957	53.947	0.504	0.000	0.000
60.592	44.988	52.230	0.336	0.000	0.000
60.657	53.144	52.230	0.000	0.000	0.000
60.722	53.144	53.947	0.000	0.000	0.000
60.787	56.238	52.584	0.000	0.000	0.000
60.852	53.425	52.584	0.176	0.000	0.000
60.918	53.425	52.735	0.264	0.000	0.000
60.983	35.426	52.735	0.698	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
61.048	35.426	54.402	0.000	0.000	0.176
61.113	61.863	52.584	0.000	0.000	0.000
61.178	50.613	52.584	0.000	0.000	0.000
61.244	50.613	55.260	0.176	0.000	0.517
61.309	80.992	53.038	0.000	0.000	0.258
61.374	39.363	53.038	0.000	0.000	0.172
61.439	39.363	54.402	0.000	0.000	0.179
61.504	33.739	52.735	0.000	0.000	0.268
61.570	37.957	52.735	0.000	0.000	0.536
61.635	37.957	52.584	0.000	0.000	0.000
61.700	47.800	54.402	0.000	0.000	0.000
61.765	50.613	54.402	0.167	0.000	0.000
61.830	50.613	52.735	0.505	0.000	0.679
61.896	43.019	54.402	0.252	0.254	0.513
61.961	56.238	54.402	0.338	0.169	0.168
62.026	56.238	52.129	0.508	0.000	0.175
62.091	60.738	52.735	0.507	0.000	0.263
62.156	50.613	52.735	0.677	0.000	0.525
62.222	50.613	53.947	0.000	0.000	0.000
62.287	67.489	52.584	0.000	0.000	0.000
62.352	45.550	52.584	0.000	0.000	0.000
62.417	45.550	54.250	0.511	0.000	0.172
62.482	53.425	-9999.990	0.255	0.000	0.258
62.548	70.865	-9999.990	0.170	0.000	0.517
62.613	70.865	52.735	0.177	0.000	0.174
62.678	39.363	52.735	0.777	0.000	0.256
62.743	39.363	54.250	1.041	0.000	0.170
62.808	48.081	52.129	0.177	0.000	0.176
62.874	44.988	52.129	0.265	0.000	0.000
62.939	44.988	53.493	0.000	0.000	0.169
63.004	56.238	52.230	0.000	0.000	0.000
63.069	55.675	52.230	0.502	0.000	0.000
63.134	55.675	51.675	0.335	0.000	0.000
63.200	53.425	53.947	0.000	0.176	0.000
63.265	30.365	53.947	0.000	0.263	0.000
63.330	30.365	52.230	0.000	0.000	0.000
63.395	56.238	53.947	0.000	0.000	0.000
63.460	61.863	53.947	0.000	0.000	0.000
63.526	61.863	52.129	0.000	0.000	0.174
63.591	44.988	52.230	0.000	0.000	0.693
63.656	43.019	52.230	0.000	0.000	0.259
63.721	43.019	54.402	0.172	0.172	0.172
63.786	64.676	53.038	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
63.852	33.739	53.038	0.000	0.000	0.257
63.917	33.739	55.260	0.170	0.000	0.171
63.982	65.801	53.493	0.350	0.000	0.000
64.047	30.927	53.493	0.265	0.000	0.000
64.112	30.927	55.311	0.336	0.000	0.000
64.178	50.613	54.250	0.510	0.000	0.000
64.243	42.176	54.250	0.767	0.000	0.000
64.308	42.176	54.402	0.511	0.000	0.000
64.373	56.238	54.402	1.350	0.000	0.000
64.438	56.238	56.674	1.024	0.000	0.000
64.504	37.957	54.755	0.502	0.000	0.168
64.569	36.551	54.755	0.000	0.000	0.498
64.634	36.551	57.129	0.000	0.000	0.249
64.699	68.333	55.765	0.000	0.000	0.166
64.764	36.551	55.765	0.846	0.000	0.000
64.830	36.551	55.311	0.773	0.000	0.000
64.895	30.365	57.785	1.018	0.000	0.000
64.960	42.176	57.785	0.000	0.000	0.000
65.025	42.176	55.765	0.000	0.000	0.000
65.090	50.613	58.038	0.000	0.000	0.000
65.156	35.426	58.038	0.000	0.000	0.000
65.221	35.426	56.270	0.177	0.175	0.177
65.286	50.613	56.220	0.266	0.000	0.266
65.351	45.550	56.220	0.494	0.000	0.000
65.416	45.550	58.038	0.423	0.000	0.177
65.482	53.425	56.270	0.165	0.000	0.265
65.547	33.739	56.270	0.000	0.000	0.000
65.612	33.739	58.038	0.000	0.177	0.000
65.677	40.488	56.220	0.000	0.266	0.334
65.742	59.051	56.220	0.509	0.000	0.000
65.808	59.051	56.270	0.607	0.000	0.000
65.873	59.051	57.583	0.434	0.000	0.000
65.938	58.207	57.583	0.529	0.000	0.000
66.003	58.207	55.765	0.179	0.000	0.000
66.068	47.800	55.765	0.000	0.000	0.000
66.134	47.800	57.583	0.000	0.000	0.000
66.199	28.115	55.765	0.000	0.000	0.000
66.264	37.957	55.765	0.000	0.000	0.000
66.329	37.957	57.583	0.000	0.000	0.000
66.394	30.927	55.765	0.696	0.000	0.351
66.460	32.895	55.765	0.518	0.000	0.000
66.525	32.895	55.311	0.033	0.000	0.016
66.590	39.363	57.785	0.000	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
66.655	45.550	57.785	0.000	0.000	0.000
66.720	45.550	55.311	0.000	0.000	0.000
66.786	53.425	57.129	0.000	0.000	0.000
66.851	40.488	57.129	0.000	0.000	0.000
66.916	40.488	55.260	0.164	0.000	0.000
66.981	50.613	55.765	0.173	0.348	0.000
67.046	30.927	55.765	0.247	0.262	0.000
67.112	30.927	57.129	0.331	0.524	0.000
67.177	45.550	55.765	0.173	0.000	0.176
67.242	42.176	55.765	0.260	0.246	0.000
67.307	42.176	55.765	0.000	0.164	0.000
67.372	55.675	57.583	0.176	0.000	0.176
67.438	50.613	57.583	0.264	0.000	0.264
67.503	50.613	55.765	0.529	0.000	0.000
67.568	81.555	55.311	0.000	0.000	0.000
67.633	60.738	55.311	0.000	0.000	0.000
67.698	60.738	58.795	0.000	0.000	0.000
67.764	64.676	58.795	0.499	0.000	0.000
67.829	64.676	56.220	0.249	0.000	0.000
67.894	73.397	57.280	0.166	0.000	0.000
67.959	78.742	57.280	0.000	0.000	0.000
68.024	78.742	60.310	0.000	0.000	0.000
68.090	50.613	57.583	0.000	0.000	0.000
68.155	59.051	57.583	0.000	0.000	0.505
68.220	59.051	58.795	0.000	0.000	0.253
68.285	40.488	61.219	0.000	0.000	0.168
68.350	73.115	61.219	0.173	0.000	0.000
68.416	73.115	60.310	0.259	0.000	0.000
68.481	56.238	62.128	0.000	0.000	0.000
68.546	55.675	62.128	0.350	0.000	0.000
68.611	55.675	61.825	0.513	0.000	0.248
68.676	39.363	62.330	0.166	0.000	0.166
68.742	48.081	62.330	0.494	0.000	0.000
68.807	48.081	64.855	0.247	0.000	0.000
68.872	67.489	63.845	0.165	0.000	0.000
68.937	32.895	63.845	0.000	0.000	0.000
69.002	32.895	64.855	0.247	0.000	0.000
69.068	39.363	67.380	0.165	0.000	0.328
69.133	53.425	67.380	0.494	0.000	0.000
69.198	53.425	-9999.990	0.247	0.000	0.000
69.263	60.738	66.875	0.165	0.000	0.000
69.328	67.489	66.875	0.351	0.000	0.000
69.394	67.489	69.400	0.264	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
69.459	58.207	69.400	0.000	0.000	0.000
69.524	58.207	68.390	0.000	0.000	0.667
69.589	39.363	68.037	0.000	0.000	0.507
69.654	45.550	68.037	0.000	0.000	0.164
69.720	45.550	70.410	0.675	0.000	0.000
69.785	61.863	68.390	0.499	0.000	0.000
69.850	36.551	68.390	0.333	0.000	0.000
69.915	36.551	68.037	0.177	0.000	0.000
69.980	53.144	70.410	0.000	0.000	0.000
70.046	73.115	70.410	0.168	0.000	0.000
70.111	73.115	67.582	0.000	0.000	0.178
70.176	67.489	67.380	0.000	0.000	0.267
70.241	58.207	67.380	0.000	0.000	0.000
70.306	58.207	68.946	0.352	0.501	0.000
70.372	50.613	67.380	0.264	0.251	0.000
70.437	42.176	67.380	0.000	0.167	0.169
70.502	42.176	68.491	0.855	0.000	0.000
70.567	60.738	66.875	0.775	0.000	0.000
70.632	70.302	66.875	0.687	0.000	0.000
70.698	70.302	66.219	0.175	0.000	0.000
70.763	44.988	68.390	0.000	0.000	0.000
70.828	70.865	68.390	0.000	0.000	0.000
70.893	70.865	66.370	0.000	0.000	0.347
70.958	47.800	66.673	0.000	0.000	0.260
71.024	35.426	66.673	0.000	0.165	0.519
71.089	35.426	62.835	0.175	0.000	0.000
71.154	59.051	62.835	0.000	0.000	0.000
71.219	59.051	54.755	0.000	0.000	0.000
71.284	50.613	59.856	0.496	0.000	0.350
71.350	59.051	59.856	0.248	0.000	0.524
71.415	59.051	64.855	0.165	0.000	0.000
71.480	48.081	62.835	0.351	0.000	0.494
71.545	67.489	62.835	0.000	0.000	0.247
71.610	67.489	62.128	0.000	0.000	0.165
71.676	42.176	63.845	0.000	0.000	0.000
71.741	48.081	63.845	0.000	0.000	0.000
71.806	48.081	60.310	0.000	0.000	0.000
71.871	67.489	60.310	0.354	0.000	0.000
71.936	70.865	60.310	0.530	0.000	0.000
72.002	70.865	74.955	0.699	0.000	0.000
72.067	56.238	69.400	0.856	0.000	0.000
72.132	61.863	69.400	1.032	0.000	0.000
72.197	61.863	65.865	0.864	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
72.262	63.270	66.673	1.008	0.000	0.000
72.328	50.613	66.673	0.504	0.000	0.000
72.393	50.613	64.855	0.842	0.000	0.000
72.458	61.863	66.219	0.707	0.000	0.000
72.523	73.397	66.219	0.536	0.000	0.000
72.588	73.397	64.855	1.071	0.000	0.000
72.654	73.115	65.360	0.503	0.000	0.000
72.719	47.800	65.360	0.251	0.000	0.000
72.784	47.800	62.583	0.168	0.000	0.000
72.849	60.738	62.583	0.175	0.000	0.000
72.914	60.738	59.856	0.262	0.000	0.000
72.980	84.369	63.845	0.000	0.000	0.000
73.045	48.081	63.845	0.498	0.000	0.000
73.110	48.081	61.219	0.249	0.000	0.000
73.175	64.676	63.492	0.166	0.000	0.000
73.240	59.051	63.492	0.667	0.000	0.000
73.306	59.051	62.330	0.511	0.000	0.000
73.371	78.460	61.674	0.164	0.000	0.000
73.436	64.676	61.674	0.348	0.000	0.000
73.501	64.676	64.350	0.767	0.000	0.244
73.566	35.426	62.583	0.850	0.000	0.163
73.632	53.425	62.583	0.174	0.000	0.174
73.697	53.425	64.855	0.000	0.000	0.000
73.762	68.333	63.340	0.000	0.000	0.000
73.827	61.863	63.340	1.020	0.000	0.000
73.892	61.863	63.946	0.509	0.000	0.000
73.958	63.270	66.875	0.689	0.000	0.000
74.023	42.176	66.875	0.178	0.000	0.000
74.088	42.176	65.310	0.514	0.000	0.000
74.153	78.742	68.491	0.865	0.000	0.000
74.218	80.992	68.491	0.670	0.177	0.000
74.284	80.992	67.128	0.497	0.265	0.000
74.349	50.613	69.400	0.331	0.530	0.167
74.414	75.929	69.400	0.687	0.000	0.000
74.479	75.929	71.673	0.775	0.000	0.000
74.544	70.865	71.673	0.506	0.000	0.000
74.610	70.865	70.764	1.013	0.000	0.000
74.675	75.929	74.955	0.506	0.000	0.000
74.740	98.437	74.955	0.338	0.000	0.000
74.805	98.437	73.945	0.677	0.000	0.500
74.870	50.613	77.127	0.766	0.000	0.250
74.936	75.929	77.127	0.334	0.000	0.167
75.001	75.929	76.470	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
75.066	68.333	76.672	0.000	0.000	0.000
75.131	87.182	76.672	0.000	0.000	0.164
75.196	87.182	79.854	0.499	0.000	0.175
75.262	75.929	78.490	0.745	0.000	0.262
75.327	60.738	78.490	0.496	0.000	0.524
75.392	60.738	81.015	0.000	0.000	0.000
75.457	73.115	79.399	0.000	0.000	0.000
75.522	78.460	79.399	0.000	0.000	0.000
75.588	78.460	81.672	0.175	0.000	0.175
75.653	61.863	-9999.990	0.262	0.000	0.262
75.718	103.783	-9999.990	0.000	0.000	0.165
75.783	103.783	81.520	0.177	0.000	0.000
75.848	67.489	83.944	0.265	0.000	0.000
75.914	81.555	83.944	0.530	0.000	0.000
75.979	81.555	83.035	0.701	0.000	0.000
76.044	78.460	84.550	1.299	0.000	0.247
76.109	101.251	84.550	1.212	0.000	0.165
76.174	101.251	87.580	0.174	0.177	0.177
76.240	88.589	87.580	0.261	0.266	0.266
76.305	88.589	86.671	0.000	0.531	0.531
76.370	78.742	90.610	0.352	0.000	0.000
76.435	75.929	90.610	0.267	0.000	0.000
76.500	75.929	89.398	0.534	0.000	0.000
76.566	75.929	92.125	0.678	0.176	0.176
76.631	98.437	92.125	0.768	0.000	0.000
76.696	98.437	91.216	0.502	0.000	0.000
76.761	81.555	92.630	0.177	0.000	0.000
76.826	73.397	92.630	0.265	0.000	0.000
76.892	73.397	94.398	0.000	0.000	0.000
76.957	87.182	93.489	0.355	0.000	1.007
77.022	92.809	93.489	0.532	0.000	0.503
77.087	92.809	94.852	0.000	0.000	0.336
77.152	91.121	93.034	0.351	0.000	0.000
77.218	87.182	93.034	0.774	0.000	0.000
77.283	87.182	94.398	0.692	0.000	0.000
77.348	83.525	91.671	0.000	0.000	0.000
77.413	81.555	91.671	0.247	0.000	0.000
77.478	81.555	93.034	0.164	0.000	0.000
77.544	89.996	89.398	0.000	0.000	0.000
77.609	73.397	89.398	0.247	0.000	0.000
77.674	73.397	90.307	0.165	0.000	0.000
77.739	75.929	86.671	0.000	0.000	0.175
77.804	88.589	86.671	0.000	0.000	0.262

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
77.870	88.589	87.126	0.000	0.000	0.525
77.935	81.555	83.035	0.669	0.000	0.173
78.000	81.555	83.035	0.510	0.000	0.260
78.065	75.929	83.490	0.691	0.000	0.000
78.130	89.996	83.490	0.992	0.000	0.000
78.196	89.996	80.308	0.508	0.000	0.000
78.261	103.783	80.763	0.424	0.000	0.000
78.326	118.136	80.763	0.087	0.000	0.263
78.391	118.136	78.903	0.000	0.000	0.453
78.456	108.849	76.672	0.000	0.000	0.876
78.522	78.742	76.672	0.177	0.000	0.000
78.587	78.742	76.837	0.433	0.168	0.168
78.652	149.099	74.854	0.531	0.252	0.252
78.717	86.057	74.854	0.248	0.503	0.591
78.782	86.057	75.598	0.124	0.000	0.000
78.848	92.809	75.309	0.083	0.000	0.000
78.913	95.623	75.309	0.254	0.000	0.000
78.978	95.623	72.706	0.253	0.000	0.330
79.043	93.653	74.400	0.169	0.000	0.579
79.108	123.765	74.400	0.178	0.000	0.000
79.174	123.765	73.532	0.297	0.000	0.000
79.239	106.879	-9999.990	0.350	0.000	0.000
79.304	68.333	-9999.990	0.251	0.000	0.000
79.369	68.333	73.119	0.418	0.000	0.000
79.434	95.623	71.673	0.500	0.000	0.000
79.500	84.369	71.673	1.082	0.000	0.086
79.565	84.369	73.532	0.666	0.164	0.166
79.630	60.738	74.400	0.510	0.000	0.249
79.695	60.738	74.400	0.260	0.087	0.000
79.760	75.929	73.491	0.722	0.294	0.000
79.826	78.460	73.491	0.343	0.506	0.000
79.891	78.460	75.598	0.088	0.249	0.000
79.956	73.115	75.763	0.793	0.125	0.331
80.021	106.316	75.763	1.008	0.083	0.412
80.086	106.316	78.490	0.175	0.000	0.088
80.152	89.996	81.672	0.167	0.000	0.000
80.217	111.381	81.672	0.000	0.000	0.000
80.282	111.381	82.581	0.175	0.000	0.000
80.347	87.182	87.580	0.792	0.000	0.000
80.412	88.589	87.580	0.846	0.000	0.000
80.478	88.589	89.233	0.499	0.000	0.247
80.543	78.742	95.431	0.626	0.167	0.123
80.608	67.489	95.431	0.415	0.000	0.082

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
80.673	67.489	100.389	0.591	0.000	0.000
80.738	83.525	105.347	0.425	0.169	0.124
80.804	56.238	105.347	0.418	0.253	0.082
80.869	56.238	111.441	0.089	0.000	0.089
80.934	47.800	116.916	0.428	0.168	0.133
80.999	60.738	116.916	0.351	0.000	0.000
81.064	60.738	124.319	0.269	0.000	0.090
81.130	59.051	131.377	0.439	0.000	0.136
81.195	50.613	131.377	0.794	0.000	0.271
81.260	50.613	137.575	0.502	0.089	0.000
81.325	58.207	144.599	0.326	0.133	0.000
81.390	58.207	144.599	0.241	0.000	0.000
81.456	59.051	150.452	0.505	0.000	0.000
81.521	109.693	150.452	0.378	0.000	0.126
81.586	109.693	157.408	0.416	0.000	0.166
81.651	58.207	-9999.990	0.174	0.000	0.247
81.716	89.996	-9999.990	0.255	0.000	0.123
81.782	89.996	167.496	0.083	0.000	0.082
81.847	86.057	172.695	0.088	0.000	0.088
81.912	89.996	172.695	0.123	0.162	0.000
81.977	89.996	177.344	0.082	0.000	0.000
82.042	86.057	182.612	0.000	0.000	0.245
82.108	115.321	182.612	0.123	0.000	0.122
82.173	115.321	187.570	0.247	0.000	0.164
82.238	91.121	190.979	0.425	0.176	0.000
82.303	81.555	190.979	0.877	0.264	0.000
82.368	81.555	194.594	0.567	0.000	0.000
82.434	80.992	199.552	1.233	0.000	0.000
82.499	146.283	199.552	0.563	0.000	0.000
82.564	146.283	203.684	0.512	0.000	0.000
82.629	101.251	206.129	0.087	0.000	0.000
82.694	89.996	206.129	0.000	0.000	0.245
82.760	89.996	209.882	0.000	0.000	0.163
82.825	101.251	211.431	0.000	0.088	0.000
82.890	112.507	211.431	0.288	0.132	0.000
82.955	112.507	212.361	0.165	0.264	0.000
83.020	84.369	215.219	0.088	0.000	0.088
83.086	84.369	215.219	0.287	0.163	0.295
83.151	70.865	218.336	0.410	0.245	0.244
83.216	98.437	218.336	0.989	0.000	0.578
83.281	98.437	218.086	0.415	0.000	0.300
83.346	109.693	219.953	0.251	0.000	0.084
83.412	98.437	219.953	0.175	0.000	0.263

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
83.477	98.437	220.722	0.455	0.000	0.557
83.542	104.065	222.593	0.749	0.000	1.033
83.607	129.394	222.593	0.992	0.000	0.739
83.672	129.394	222.510	0.734	0.000	0.288
83.738	89.996	223.395	0.649	0.000	0.084
83.803	93.653	223.395	0.086	0.000	0.000
83.868	93.653	223.930	0.620	0.000	0.000
83.933	106.879	224.465	0.995	0.000	0.000
83.998	101.251	224.465	0.000	0.000	0.087
84.064	101.251	224.782	0.492	0.000	0.130
84.129	118.136	226.336	0.082	0.000	0.261
84.194	103.783	226.336	0.087	0.000	0.000
84.259	103.783	225.634	0.453	0.000	0.124
84.324	101.251	225.801	0.000	0.000	0.082
84.390	112.507	225.801	0.000	0.000	0.000
84.455	112.507	226.202	0.124	0.000	0.000
84.520	112.507	225.801	0.083	0.000	0.000
84.585	87.182	225.801	0.000	0.334	0.000
84.650	87.182	226.487	0.568	0.253	0.000
84.716	101.251	226.069	0.729	0.165	0.000
84.781	101.251	226.069	0.741	0.000	0.000
84.846	112.507	226.771	0.259	0.000	0.328
84.911	86.057	226.771	0.341	0.000	0.492
84.976	86.057	227.673	0.333	0.000	0.572
85.042	91.121	226.336	0.253	0.000	0.253
85.107	80.992	226.336	0.082	0.000	0.082
85.172	80.992	226.336	0.173	0.000	0.088
85.237	75.929	226.336	0.588	0.327	0.000
85.302	121.973	226.336	0.598	0.490	0.000
85.368	121.973	226.771	0.423	0.491	0.000
85.433	106.316	227.138	0.417	0.161	0.161
85.498	103.553	227.138	0.345	0.000	0.242
85.563	103.553	226.336	0.174	0.000	0.088
85.628	108.158	226.487	0.131	0.000	0.131
85.694	91.121	226.487	0.263	0.000	0.347
85.759	91.121	225.534	0.087	0.000	0.000
85.824	96.646	226.455	0.578	0.000	0.000
85.889	110.460	226.455	0.672	0.000	0.000
85.954	110.460	225.789	0.085	0.000	0.173
86.020	98.948	226.112	0.289	0.000	0.287
86.085	66.722	-9999.990	0.242	0.000	0.082
86.150	66.722	-9999.990	0.483	0.000	0.247
86.215	69.024	-9999.990	0.000	0.000	0.408

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
86.280	92.042	-9999.990	0.000	0.000	0.405
86.346	92.042	-9999.990	0.683	0.000	0.565
86.411	97.030	-9999.990	1.064	0.000	0.377
86.476	97.030	-9999.990	1.541	0.000	0.165
86.541	78.230	-9999.990	0.494	0.000	0.667
86.606	116.025	-9999.990	0.493	0.000	0.506
86.672	116.025	-9999.990	0.493	0.000	0.165
86.737	91.511	-9999.990	0.338	0.000	1.990
86.802	105.147	-9999.990	0.506	0.000	1.244
86.867	105.147	-9999.990	0.502	0.000	1.499
86.932	73.819	-9999.990	0.000	0.000	0.000
86.998	103.199	-9999.990	0.497	0.000	0.248
87.063	103.199	-9999.990	0.495	0.000	0.166
87.128	81.354	-9999.990	0.840	0.000	0.170
87.193	80.992	-9999.990	0.770	0.000	0.000
87.258	80.992	-9999.990	0.754	0.000	0.165
87.324	85.424	-9999.990	0.343	0.000	0.173
87.389	84.369	-9999.990	0.257	0.000	0.755
87.454	84.369	-9999.990	0.000	0.000	0.849
87.519	91.341	-9999.990	0.960	0.000	0.502
87.584	113.914	-9999.990	0.951	0.251	0.251
87.650	113.914	-9999.990	0.784	0.167	0.167
87.715	132.086	-9999.990	0.373	0.006	0.036
87.780	138.695	-9999.990	0.335	0.009	0.054
87.845	138.695	-9999.990	-9999.990	-9999.990	-9999.990
87.910	112.262	-9999.990	-9999.990	-9999.990	-9999.990

Notes
-9999.99 - no data
API - American Petroleum Institute
cps - counts per second
mS/m - milliSiemens per meter

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
2.21	116.73	-9999.99	-9999.99	-9999.99	-9999.99
2.27	89.33	-9999.99	-9999.99	-9999.99	-9999.99
2.34	89.33	-9999.99	-9999.99	-9999.99	-9999.99
2.40	135.52	-9999.99	-9999.99	-9999.99	-9999.99
2.47	108.00	-9999.99	-9999.99	-9999.99	-9999.99
2.53	108.00	-9999.99	-9999.99	-9999.99	-9999.99
2.60	114.76	-9999.99	-9999.99	-9999.99	-9999.99
2.66	126.58	-9999.99	-9999.99	-9999.99	-9999.99
2.73	126.58	-9999.99	-9999.99	-9999.99	-9999.99
2.79	99.56	-9999.99	-9999.99	-9999.99	-9999.99
2.86	87.74	-9999.99	-9999.99	-9999.99	-9999.99
2.92	87.74	-9999.99	-9999.99	-9999.99	-9999.99
2.99	90.40	-9999.99	-9999.99	-9999.99	-9999.99
3.05	90.40	-9999.99	-9999.99	-9999.99	-9999.99
3.12	90.40	-9999.99	-9999.99	-9999.99	-9999.99
3.18	103.20	-9999.99	-9999.99	-9999.99	-9999.99
3.25	103.20	-9999.99	-9999.99	-9999.99	-9999.99
3.32	118.14	-9999.99	-9999.99	-9999.99	-9999.99
3.38	84.37	-9999.99	-9999.99	-9999.99	-9999.99
3.45	84.37	-2.08	-9999.99	-9999.99	-9999.99
3.51	105.47	-1.46	-9999.99	-9999.99	-9999.99
3.58	103.36	-1.46	-9999.99	-9999.99	-9999.99
3.64	103.36	-1.65	-9999.99	-9999.99	-9999.99
3.71	96.65	-3.32	-9999.99	-9999.99	-9999.99
3.77	118.14	-3.32	-9999.99	-9999.99	-9999.99
3.84	118.14	-2.75	-9999.99	-9999.99	-9999.99
3.90	86.06	-9999.99	-9999.99	-9999.99	-9999.99
3.97	104.07	-9999.99	-9999.99	-9999.99	-9999.99
4.03	104.07	-4.84	-9999.99	-9999.99	-9999.99
4.10	91.12	-1.62	0.00	0.00	0.00
4.16	109.69	-1.62	1.18	0.04	0.03
4.23	109.69	-3.32	1.33	0.22	0.02
4.29	60.74	-6.96	1.95	0.00	0.00
4.36	78.74	-6.96	0.49	0.17	0.00
4.42	78.74	-7.26	0.65	0.25	0.00
4.49	108.85	-6.35	0.00	0.50	0.00
4.55	86.06	-6.35	0.16	0.16	0.00
4.62	86.06	-0.29	0.24	0.24	0.00
4.68	109.69	-0.29	0.49	0.00	0.00
4.75	75.93	-3.62	0.16	0.00	0.00
4.81	75.93	-2.71	0.41	0.17	0.00
4.88	104.07	-2.71	0.49	0.49	0.00
4.95	104.07	-3.93	0.33	0.25	0.41

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
5.01	96.19	-6.24	0.25	0.33	0.41
5.08	136.71	-6.24	0.00	0.00	0.49
5.14	136.71	-4.53	0.49	0.16	0.00
5.21	116.45	-0.29	0.74	0.25	0.00
5.27	92.81	-0.29	0.49	0.00	0.00
5.34	92.81	3.32	0.65	0.16	0.00
5.40	98.72	-2.87	0.73	0.00	0.00
5.47	98.72	-2.87	1.46	0.00	0.00
5.53	98.72	-1.96	0.58	0.33	0.00
5.60	87.18	-4.33	0.99	0.41	0.00
5.66	75.93	-4.33	0.50	0.98	0.00
5.73	75.93	-3.83	0.17	0.24	0.00
5.79	70.86	-0.59	0.42	0.33	0.00
5.86	92.81	-0.59	0.50	0.00	0.00
5.92	92.81	-0.80	0.50	0.41	0.00
5.99	98.72	-1.50	0.67	0.16	0.00
6.05	112.51	-1.50	1.51	0.50	0.00
6.12	112.51	-6.35	1.33	0.67	0.00
6.18	88.59	-9999.99	1.91	0.59	0.00
6.25	78.46	-9999.99	2.01	0.50	0.00
6.31	78.46	-5.59	1.00	0.00	0.17
6.38	75.93	-5.59	0.59	0.00	0.25
6.44	75.93	-3.32	0.50	0.00	0.00
6.51	75.93	-5.34	0.58	0.00	0.00
6.58	126.58	-5.34	0.83	0.00	0.00
6.64	126.58	-4.68	0.98	0.00	0.00
6.71	80.99	-2.31	0.82	0.41	0.00
6.77	80.99	-2.31	0.82	0.16	0.00
6.84	80.99	-4.33	1.00	0.50	0.00
6.90	109.69	-2.41	0.99	0.41	0.00
6.97	93.65	-2.41	0.99	0.41	0.00
7.03	93.65	-4.33	0.49	0.49	0.00
7.10	86.06	-2.87	0.33	0.00	0.00
7.16	-9999.99	-2.87	0.25	0.00	0.00
7.23	-9999.99	-2.82	0.49	0.00	0.00
7.29	93.65	-0.29	0.33	0.16	0.00
7.36	86.06	-0.29	0.49	0.00	0.00
7.42	86.06	-2.41	1.98	0.00	0.00
7.49	78.74	-0.80	1.47	0.00	0.00
7.55	118.98	-0.80	0.33	0.00	0.00
7.62	118.98	2.24	0.50	0.00	0.00
7.68	73.40	0.22	0.25	0.00	0.00
7.75	109.69	0.22	0.49	0.49	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
7.81	109.69	-1.05	0.74	0.00	0.00
7.88	131.65	1.73	0.49	0.00	0.00
7.94	101.25	1.73	0.82	0.00	0.16
8.01	101.25	-1.50	0.98	0.00	0.24
8.07	91.12	-1.50	0.99	0.00	0.00
8.14	118.14	-1.81	1.00	0.50	0.00
8.21	118.14	2.24	1.00	0.00	0.00
8.27	78.46	2.24	1.75	0.00	0.00
8.34	78.46	0.32	0.83	0.17	0.00
8.40	111.38	-0.80	0.25	0.00	0.00
8.47	104.07	-0.80	0.75	0.00	0.00
8.53	104.07	2.24	0.83	0.17	0.00
8.60	96.19	-1.05	0.25	0.25	0.00
8.66	92.81	-1.05	0.50	0.50	0.00
8.73	92.81	0.72	0.83	0.16	0.00
8.79	93.65	-2.31	1.98	0.24	0.00
8.86	98.44	-2.31	1.49	0.00	0.00
8.92	98.44	-1.50	0.99	0.00	0.00
8.99	83.52	-4.33	0.98	0.00	0.00
9.05	75.93	-4.33	0.49	0.00	0.00
9.12	75.93	1.68	1.15	0.17	0.00
9.18	64.68	-2.82	1.74	0.00	0.00
9.25	75.93	-2.82	1.97	0.00	0.00
9.31	75.93	-1.50	1.15	0.16	0.00
9.38	78.46	-9999.99	0.25	0.25	0.00
9.44	84.37	-9999.99	0.75	0.00	0.00
9.51	84.37	-4.33	0.66	0.16	0.00
9.57	58.21	-4.33	0.49	0.24	0.00
9.64	53.14	-4.33	1.48	0.00	0.00
9.70	53.14	-1.50	0.99	0.17	0.00
9.77	59.05	-1.50	1.98	0.00	0.00
9.84	96.19	-2.82	1.98	0.25	0.00
9.90	96.19	-3.83	0.49	0.33	0.00
9.97	88.59	-3.83	0.24	0.74	0.00
10.03	88.59	-2.87	0.00	0.25	0.00
10.10	-9999.99	-2.31	0.49	0.16	0.00
10.16	55.68	-2.31	0.25	0.00	0.00
10.23	55.68	-5.34	0.25	0.00	0.00
10.29	73.40	-3.32	0.33	0.16	0.00
10.36	44.99	-3.32	0.75	0.00	0.00
10.42	44.99	-5.34	0.75	0.00	0.00
10.49	65.80	-3.32	0.50	0.00	0.00
10.55	88.59	-3.32	1.00	0.00	0.00

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
10.62	88.59	-4.84	0.25	0.00	0.00
10.68	47.80	-6.86	0.50	0.00	0.16
10.75	55.68	-6.86	0.25	0.00	0.00
10.81	55.68	-2.87	0.00	0.00	0.00
10.88	81.56	-9999.99	0.00	0.17	0.17
10.94	73.40	-9999.99	0.00	0.00	0.25
11.01	73.40	-7.36	0.00	0.00	0.00
11.07	47.80	-4.23	0.00	0.00	0.00
11.14	65.80	-4.23	0.49	0.00	0.00
11.20	65.80	-4.33	0.25	0.00	0.00
11.27	63.27	-5.59	0.33	0.00	0.00
11.33	42.18	-5.59	0.00	0.00	0.00
11.40	42.18	0.72	0.25	0.00	0.00
11.47	60.74	0.72	0.66	0.00	0.00
11.53	63.27	-4.84	0.25	0.49	0.00
11.60	63.27	-5.14	0.00	0.25	0.00
11.66	53.43	-5.14	0.33	0.16	0.00
11.73	53.43	-2.31	0.00	0.00	0.00
11.79	55.68	-2.82	0.00	0.00	0.00
11.86	43.02	-2.82	0.49	0.00	0.16
11.92	43.02	-5.14	0.73	0.00	0.24
11.99	50.61	-2.31	0.24	0.25	0.00
12.05	70.86	-2.31	0.16	0.33	0.00
12.12	70.86	-4.84	0.50	0.00	0.00
12.18	48.08	-3.32	0.25	0.00	0.00
12.25	53.43	-3.32	0.99	0.17	0.00
12.31	53.43	-3.83	1.00	0.25	0.00
12.38	45.55	-9999.99	1.00	0.00	0.00
12.44	60.74	-9999.99	0.16	0.00	0.00
12.51	60.74	-6.50	0.25	0.00	0.00
12.57	70.30	-3.32	0.49	0.00	0.00
12.64	53.14	-3.32	0.17	0.00	0.00
12.70	53.14	-4.68	0.49	0.00	0.00
12.77	60.74	-4.33	0.25	0.00	0.00
12.83	59.05	-4.33	0.50	0.00	0.00
12.90	59.05	-3.32	0.75	0.00	0.00
12.96	55.68	-4.23	0.75	0.00	0.00
13.03	48.08	-4.23	1.00	0.00	0.00
13.10	48.08	-6.86	0.75	0.00	0.00
13.16	44.99	-6.86	1.00	0.00	0.00
13.23	55.68	-2.31	0.66	0.17	0.00
13.29	55.68	-2.87	0.74	0.00	0.00
13.36	67.49	-2.87	0.99	0.00	0.00

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
13.42	67.49	-6.35	0.83	0.00	0.00
13.49	53.14	-3.32	0.25	0.00	0.00
13.55	70.30	-3.32	0.74	0.00	0.00
13.62	70.30	-5.59	0.49	0.16	0.00
13.68	60.74	-4.84	1.48	0.25	0.00
13.75	68.33	-4.84	1.72	0.00	0.00
13.81	68.33	-3.77	0.50	0.00	0.00
13.88	61.86	-3.32	0.49	0.00	0.00
13.94	50.61	-3.32	0.50	0.50	0.00
14.01	50.61	-1.96	0.82	0.33	0.00
14.07	88.59	-9999.99	0.25	0.00	0.00
14.14	67.49	-9999.99	0.49	0.00	0.00
14.20	67.49	-3.32	0.50	0.00	0.00
14.27	68.33	-2.87	0.99	0.00	0.00
14.33	65.80	-2.87	1.49	0.25	0.00
14.40	65.80	-3.32	1.31	0.33	0.00
14.46	43.02	-3.83	1.22	0.00	0.49
14.53	67.49	-3.83	0.25	0.00	0.25
14.59	67.49	-3.83	0.33	0.00	0.16
14.66	63.27	-6.50	0.25	0.00	0.00
14.73	60.74	-6.50	0.00	0.00	0.00
14.79	60.74	-5.34	0.16	0.00	0.00
14.86	53.43	-5.34	0.50	0.00	0.00
14.92	63.27	-3.32	0.25	0.00	0.00
14.99	63.27	-3.32	0.83	0.00	0.00
15.05	65.80	-3.32	1.25	0.00	0.00
15.12	65.80	-7.36	1.50	0.00	0.00
15.18	64.68	-3.32	0.66	0.00	0.00
15.25	75.93	-3.32	0.49	0.00	0.00
15.31	75.93	-3.83	0.98	0.00	0.00
15.38	78.74	-5.59	0.34	0.00	0.00
15.44	70.86	-5.59	0.76	0.00	0.00
15.51	70.86	-3.83	0.50	0.00	0.00
15.57	65.80	-2.82	0.67	0.17	0.00
15.64	56.24	-2.82	0.50	0.25	0.00
15.70	56.24	-3.77	0.99	0.50	0.00
15.77	63.27	-3.32	0.66	0.16	0.16
15.83	59.05	-3.32	0.24	0.24	0.00
15.90	59.05	-4.23	0.49	0.49	0.00
15.96	65.80	-4.33	0.33	0.00	0.00
16.03	78.46	-4.33	0.24	0.00	0.00
16.09	78.46	-0.80	0.73	0.24	0.00
16.16	56.24	-7.87	0.33	0.16	0.00

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
16.22	48.08	-7.87	0.50	0.00	0.00
16.29	48.08	-3.32	0.25	0.00	0.00
16.36	106.32	-4.68	0.17	0.00	0.00
16.42	64.68	-4.68	0.49	0.00	0.00
16.49	64.68	-5.85	0.25	0.00	0.00
16.55	63.27	-5.85	0.66	0.00	0.00
16.62	75.93	-2.82	0.98	0.00	0.00
16.68	75.93	-3.77	0.74	0.00	0.00
16.75	70.30	-3.77	0.66	0.00	0.00
16.81	70.30	-5.85	1.71	0.00	0.00
16.88	50.61	-2.31	1.23	0.25	0.00
16.94	106.32	-2.31	0.66	0.16	0.00
17.01	106.32	-1.05	1.24	0.00	0.00
17.07	43.02	-6.35	0.50	0.25	0.00
17.14	104.07	-6.35	0.33	0.33	0.00
17.20	104.07	-3.83	0.00	0.25	0.00
17.27	70.86	-3.77	0.00	0.49	0.00
17.33	50.61	-3.77	0.33	0.00	0.00
17.40	50.61	-4.33	0.50	0.00	0.00
17.46	39.36	-3.83	0.25	0.00	0.00
17.53	73.40	-3.83	0.83	0.00	0.00
17.59	73.40	-3.77	0.50	0.00	0.00
17.66	50.61	-4.33	0.49	0.00	0.00
17.72	80.99	-4.33	0.16	0.00	0.00
17.79	80.99	-4.23	0.24	0.50	0.00
17.85	65.80	-3.83	0.50	0.25	0.00
17.92	47.80	-3.83	0.50	0.33	0.00
17.99	47.80	-8.88	0.24	0.00	0.00
18.05	70.86	-2.87	0.25	0.00	0.00
18.12	64.68	-2.87	0.49	0.00	0.00
18.18	64.68	-4.33	0.98	0.00	0.00
18.25	63.27	-4.33	1.23	0.00	0.00
18.31	53.14	-5.14	0.83	0.00	0.00
18.38	53.14	-2.82	0.00	0.00	0.00
18.44	61.86	-2.82	0.00	0.00	0.00
18.51	61.86	-6.96	0.16	0.00	0.00
18.57	58.21	-5.34	0.24	0.00	0.00
18.64	70.86	-5.34	0.49	0.00	0.00
18.70	70.86	-3.32	0.33	0.00	0.00
18.77	80.99	-5.59	0.25	0.49	0.00
18.83	59.05	-5.59	0.50	0.25	0.00
18.90	59.05	-5.34	0.49	0.33	0.16
18.96	78.46	-2.31	0.00	0.49	0.00

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
19.03	50.61	-2.31	0.25	0.25	0.00
19.09	50.61	-5.59	0.33	0.33	0.00
19.16	78.74	-6.86	0.00	0.24	0.00
19.22	43.02	-6.86	0.00	0.00	0.00
19.29	43.02	-1.30	0.33	0.00	0.00
19.35	59.05	-4.23	0.50	0.00	0.00
19.42	65.80	-4.23	0.25	0.00	0.00
19.48	65.80	-6.86	0.50	0.00	0.00
19.55	56.24	-3.83	0.75	0.00	0.00
19.62	73.40	-3.83	1.01	0.00	0.00
19.68	73.40	-5.59	0.50	0.00	0.00
19.75	59.05	-7.87	0.74	0.00	0.00
19.81	65.80	-7.87	0.99	0.00	0.00
19.88	65.80	-1.96	0.82	0.00	0.00
19.94	59.05	-1.96	0.25	0.51	0.00
20.01	70.30	-4.33	0.74	0.26	0.00
20.07	70.30	-2.31	0.17	0.50	0.00
20.14	63.27	-2.31	0.50	0.50	0.00
20.20	63.27	-1.50	0.25	0.25	0.00
20.27	67.49	-2.82	0.50	0.17	0.00
20.33	55.68	-2.82	0.74	0.00	0.00
20.40	55.68	-5.14	0.24	0.00	0.00
20.46	81.56	-3.32	0.49	0.33	0.16
20.53	40.49	-3.32	0.48	0.00	0.24
20.59	40.49	-6.35	0.49	0.00	0.49
20.66	59.05	-4.23	0.49	0.00	0.00
20.72	59.05	-4.23	0.98	0.49	0.00
20.79	59.05	-4.84	0.98	0.25	0.00
20.85	55.68	-4.68	0.49	0.16	0.00
20.92	47.80	-4.68	1.00	0.00	0.00
20.98	47.80	-4.33	0.50	0.00	0.00
21.05	92.81	-3.32	0.66	0.00	0.00
21.11	70.86	-3.32	0.98	0.00	0.00
21.18	70.86	-4.84	0.73	0.00	0.00
21.25	95.62	-5.14	0.65	0.16	0.00
21.31	50.61	-5.14	0.73	0.00	0.00
21.38	50.61	-5.34	0.74	0.00	0.00
21.44	78.74	-4.23	1.32	0.00	0.00
21.51	80.99	-4.23	0.74	0.00	0.00
21.57	80.99	-5.85	0.74	0.00	0.00
21.64	73.12	-5.85	0.49	0.00	0.00
21.70	98.44	-5.59	0.25	0.00	0.50
21.77	98.44	-5.85	0.49	0.00	0.25

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
21.83	68.33	-5.85	0.50	0.00	0.17
21.90	68.33	-2.31	0.50	0.00	0.00
21.96	78.74	-5.59	0.99	0.00	0.00
22.03	78.74	-5.59	0.49	0.33	0.00
22.09	78.74	-5.34	0.49	0.49	0.00
22.16	78.46	-3.83	0.00	0.49	0.00
22.22	95.62	-3.83	0.33	0.00	0.00
22.29	95.62	-8.32	0.74	0.00	0.00
22.35	81.56	-4.33	1.73	0.00	0.00
22.42	83.52	-4.33	1.16	0.16	0.00
22.48	83.52	-4.68	0.25	0.00	0.00
22.55	67.49	-3.83	0.74	0.25	0.00
22.61	84.37	-3.83	0.49	0.16	0.00
22.68	84.37	-5.59	0.24	0.49	0.00
22.74	63.27	-4.84	0.99	0.25	0.00
22.81	95.62	-4.84	0.66	0.16	0.00
22.88	95.62	-2.82	0.98	0.00	0.00
22.94	96.19	-3.77	0.49	0.00	0.00
23.01	84.37	-3.77	0.65	0.16	0.16
23.07	84.37	-5.34	0.48	0.00	0.24
23.14	84.37	-4.23	0.96	0.00	0.00
23.20	80.99	-4.23	0.82	0.16	0.00
23.27	80.99	-3.83	0.74	0.00	0.00
23.33	95.62	-3.83	0.49	0.00	0.00
23.40	65.80	-2.82	0.16	0.00	0.00
23.46	65.80	-4.33	0.00	0.00	0.00
23.53	95.62	-4.33	0.50	0.00	0.00
23.59	95.62	-6.05	0.66	0.00	0.00
23.66	75.93	-5.85	0.97	0.00	0.00
23.72	78.74	-5.85	0.98	0.00	0.00
23.79	78.74	-4.33	0.98	0.33	0.16
23.85	75.93	-1.96	0.24	0.50	0.00
23.92	83.52	-1.96	0.49	0.25	0.00
23.98	83.52	-2.82	0.99	0.33	0.00
24.05	53.43	-3.32	0.75	0.25	0.00
24.11	75.93	-3.32	0.75	0.75	0.00
24.18	75.93	-1.30	0.50	0.17	0.00
24.24	80.99	-4.23	0.50	0.00	0.00
24.31	70.30	-4.23	0.75	0.00	0.00
24.37	70.30	-3.32	0.83	0.16	0.00
24.44	70.30	-2.41	0.74	0.74	0.00
24.51	68.33	-2.41	0.76	0.25	0.00
24.57	68.33	-3.83	1.15	0.20	0.16

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
24.64	98.44	-4.33	0.00	0.00	0.00
24.70	73.12	-4.33	0.00	0.00	0.00
24.77	73.12	-2.87	0.33	0.00	0.00
24.83	106.32	0.22	0.99	0.99	0.00
24.90	104.07	0.22	0.49	0.49	0.00
24.96	104.07	-2.87	0.33	0.33	0.00
25.03	75.93	-2.87	1.95	0.97	0.00
25.09	63.27	-4.33	0.97	0.49	0.00
25.16	63.27	0.77	0.97	0.32	0.00
25.22	95.62	0.77	0.00	0.00	0.00
25.29	95.62	4.76	0.00	0.00	0.00
25.35	88.59	2.24	0.33	0.00	0.00
25.42	75.93	2.24	0.00	0.00	0.00
25.48	75.93	1.68	0.00	0.00	0.00
25.55	78.74	2.24	0.99	0.00	0.00
25.61	103.78	2.24	1.23	0.00	0.24
25.68	103.78	0.72	1.96	0.00	0.49
25.74	104.07	2.13	1.14	0.16	0.00
25.81	63.27	2.13	0.98	0.24	0.00
25.87	63.27	8.80	1.96	0.49	0.00
25.94	90.00	3.25	1.15	0.00	0.00
26.00	78.46	3.25	1.48	0.00	0.00
26.07	78.46	6.22	1.23	0.25	0.00
26.14	73.12	11.33	0.99	0.16	0.00
26.20	75.93	11.33	0.74	0.00	0.00
26.27	75.93	9.41	0.74	0.73	0.00
26.33	112.51	8.80	0.33	0.65	0.00
26.40	106.88	8.80	0.25	0.00	0.00
26.46	106.88	10.32	0.00	0.00	0.00
26.53	98.72	10.32	0.33	0.00	0.00
26.59	95.62	10.32	0.74	0.00	0.00
26.66	95.62	11.83	0.99	0.00	0.00
26.72	95.62	11.83	0.66	0.16	0.00
26.79	121.51	13.85	0.49	0.24	0.00
26.85	121.51	-9999.99	1.47	0.49	0.00
26.92	90.00	-9999.99	0.49	0.00	0.00
26.98	90.00	15.31	0.73	0.00	0.00
27.05	-9999.99	12.34	0.73	0.00	0.00
27.11	90.00	12.34	0.97	0.32	0.00
27.18	90.00	12.84	0.48	0.49	0.00
27.24	134.18	16.68	0.97	0.48	0.00
27.31	81.56	16.68	0.49	0.00	0.00
27.37	81.56	15.87	0.98	0.00	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
27.44	126.58	14.86	0.25	0.50	0.00
27.50	112.51	14.86	0.49	0.65	0.00
27.57	112.51	15.87	0.73	0.48	0.00
27.63	98.72	14.86	0.24	0.00	0.00
27.70	112.51	14.86	0.32	0.00	0.00
27.77	112.51	18.95	0.49	0.00	0.00
27.83	104.07	17.89	0.74	0.00	0.00
27.90	98.72	17.89	0.76	0.19	0.02
27.96	98.72	16.88	0.00	0.00	0.00
28.03	143.47	15.77	0.00	0.00	0.00
28.09	118.98	15.77	0.00	0.00	0.00
28.16	118.98	20.92	0.00	0.00	0.00
28.22	118.14	18.40	0.00	0.49	0.00
28.29	106.32	18.40	0.65	0.33	0.00
28.35	106.32	20.31	0.99	0.00	0.00
28.42	132.21	20.31	1.48	0.49	0.00
28.48	112.51	20.42	0.99	0.33	0.00
28.55	112.51	22.13	0.00	0.00	0.00
28.61	111.38	22.13	0.00	0.00	0.00
28.68	111.38	21.43	0.00	0.33	0.00
28.74	87.18	25.31	0.00	0.00	0.00
28.81	126.58	25.31	0.00	0.50	0.00
28.87	126.58	22.94	0.33	1.00	0.00
28.94	78.46	25.47	0.99	0.99	0.00
29.00	112.51	25.47	0.50	0.50	0.00
29.07	112.51	29.40	0.33	0.33	0.00
29.13	95.62	27.99	0.00	0.99	0.00
29.20	113.91	27.99	0.50	0.49	0.00
29.26	113.91	31.68	0.33	0.66	0.00
29.33	87.18	27.99	0.98	0.00	0.00
29.40	124.05	27.99	0.98	0.00	0.00
29.46	124.05	31.53	1.31	0.00	0.00
29.53	98.44	32.13	0.00	0.00	0.00
29.59	101.25	32.13	0.96	0.00	0.00
29.66	101.25	33.55	0.72	0.00	0.16
29.72	131.65	32.59	0.97	0.00	0.00
29.79	112.51	32.59	0.64	0.00	0.16
29.85	112.51	35.57	0.48	0.00	0.24
29.92	63.27	35.57	0.48	0.00	0.48
29.98	132.21	35.57	0.41	0.32	0.00
30.05	132.21	34.86	0.16	0.49	0.00
30.11	106.88	34.86	0.50	0.97	0.00
30.18	-9999.99	38.09	0.81	0.00	0.00

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
30.24	-9999.99	37.13	0.89	0.16	0.00
30.31	126.58	37.13	0.47	0.00	0.00
30.37	126.58	40.11	0.32	0.00	0.00
30.44	111.38	39.10	0.48	0.00	0.00
30.50	92.81	39.10	0.00	0.49	0.00
30.57	92.81	38.09	0.98	0.82	0.00
30.63	83.52	37.13	0.98	0.57	0.00
30.70	104.07	37.13	0.49	0.49	0.00
30.76	104.07	39.61	0.73	0.16	0.00
30.83	98.44	38.04	0.57	0.24	0.00
30.89	96.19	38.04	0.00	0.00	0.00
30.96	96.19	41.12	0.99	0.16	0.00
31.03	120.95	39.86	0.99	0.24	0.00
31.09	108.85	39.86	0.00	0.48	0.00
31.16	108.85	42.13	0.16	0.25	0.00
31.22	118.14	38.60	0.58	0.17	0.00
31.29	73.12	38.60	0.49	0.50	0.00
31.35	73.12	43.49	0.80	0.25	0.00
31.42	87.18	42.64	0.89	0.17	0.00
31.48	108.85	42.64	0.48	0.00	0.00
31.55	108.85	40.77	0.56	0.40	0.00
31.61	98.44	43.65	0.81	0.16	0.00
31.68	134.18	43.65	0.97	0.00	0.00
31.74	134.18	41.22	0.97	0.24	0.00
31.81	104.07	41.22	0.57	0.16	0.00
31.87	106.88	44.15	0.48	0.00	0.00
31.94	106.88	41.68	0.57	0.25	0.16
32.00	103.78	41.68	0.98	0.16	0.24
32.07	103.78	42.64	1.96	0.00	0.00
32.13	106.88	45.31	1.22	0.64	0.00
32.20	91.12	45.31	0.97	0.95	0.00
32.26	91.12	43.65	0.48	0.96	0.00
32.33	106.88	45.16	0.48	0.00	0.00
32.39	101.25	45.16	0.48	0.00	0.00
32.46	101.25	48.19	0.49	0.00	0.00
32.52	93.65	46.22	0.81	0.00	0.00
32.59	109.69	46.22	0.33	0.16	0.00
32.66	109.69	45.67	0.49	0.00	0.00
32.72	118.98	48.19	0.41	0.16	0.00
32.79	120.95	48.19	0.90	0.25	0.00
32.85	120.95	43.04	0.00	0.00	0.00
32.92	103.78	46.17	0.00	0.16	0.00
32.98	98.44	46.17	0.16	0.00	0.00

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
33.05	98.44	46.22	0.49	0.00	0.00
33.11	118.14	47.18	0.49	0.32	0.00
33.18	103.78	47.18	0.33	0.24	0.00
33.24	103.78	48.04	0.00	0.49	0.00
33.31	84.37	45.16	0.00	0.00	0.00
33.37	92.81	45.16	0.00	0.00	0.00
33.44	92.81	44.40	0.50	0.00	0.00
33.50	86.06	47.69	0.41	0.16	0.00
33.57	98.44	47.69	0.41	0.24	0.16
33.63	98.44	43.14	0.00	0.48	0.00
33.70	123.77	43.14	0.78	0.41	0.17
33.76	123.77	41.68	0.49	0.41	0.25
33.83	96.19	44.66	1.45	0.48	0.00
33.89	118.14	44.66	1.05	0.16	0.00
33.96	118.14	41.22	0.97	0.00	0.00
34.02	91.12	41.63	0.49	0.00	0.00
34.09	109.69	41.63	0.56	0.00	0.16
34.15	109.69	38.04	0.64	0.00	0.00
34.22	118.14	33.04	0.47	0.00	0.00
34.29	93.65	33.04	0.32	0.00	0.00
34.35	93.65	35.57	0.48	0.00	0.00
34.42	90.00	35.31	1.95	0.00	0.00
34.48	88.59	35.31	0.65	0.16	0.00
34.55	88.59	31.53	0.89	0.00	0.00
34.61	104.07	33.55	0.00	0.00	0.00
34.68	73.40	33.55	0.48	0.16	0.41
34.74	73.40	33.04	0.80	0.24	0.16
34.81	90.00	30.52	0.47	0.00	0.00
34.87	70.30	30.52	0.56	0.00	0.00
34.94	70.30	31.02	0.33	0.00	0.00
35.00	83.52	32.13	0.00	0.00	0.00
35.07	92.81	32.13	0.32	0.89	0.00
35.13	92.81	31.53	0.56	0.88	0.16
35.20	80.99	31.22	0.48	0.95	0.00
35.26	75.93	31.22	0.00	0.00	0.00
35.33	75.93	-9999.99	0.00	0.00	0.00
35.39	68.33	-9999.99	0.49	0.00	0.00
35.46	68.33	30.31	0.72	0.16	0.16
35.52	84.37	32.54	0.64	0.00	0.00
35.59	120.95	32.54	0.00	0.00	0.00
35.65	120.95	29.51	0.82	0.16	0.16
35.72	80.99	33.95	0.81	0.17	0.24
35.78	87.18	33.95	0.00	0.00	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
35.85	87.18	38.09	0.25	0.00	0.00
35.92	90.00	37.59	0.33	0.00	0.00
35.98	98.44	37.59	0.00	0.00	0.00
36.05	98.44	41.63	0.25	0.00	0.00
36.11	91.12	44.40	0.16	0.00	0.00
36.18	98.44	44.40	0.00	0.00	0.49
36.24	98.44	46.68	0.56	0.00	0.24
36.31	111.38	50.72	0.16	0.00	0.16
36.37	98.44	50.72	2.47	0.49	0.00
36.44	98.44	54.86	1.55	0.49	0.00
36.50	68.33	54.25	1.06	0.33	0.00
36.57	106.88	54.25	0.48	0.00	0.00
36.63	106.88	59.40	0.72	0.16	0.16
36.70	86.06	57.79	0.64	0.00	0.24
36.76	90.00	57.79	0.49	0.49	0.47
36.83	90.00	61.22	0.56	0.24	0.00
36.89	106.88	65.36	0.40	0.16	0.00
36.96	98.72	65.36	0.00	0.00	0.00
37.02	98.72	-9999.99	0.90	0.16	0.00
37.09	92.81	-9999.99	0.73	0.00	0.00
37.15	92.81	65.87	0.48	0.00	0.00
37.22	101.25	66.22	0.40	0.00	0.00
37.28	87.18	66.22	0.16	0.00	0.00
37.35	87.18	63.34	0.00	0.00	0.00
37.41	55.68	64.86	0.40	0.17	0.00
37.48	92.81	64.86	0.40	0.25	0.00
37.55	92.81	68.39	0.00	0.50	0.00
37.61	59.05	63.49	1.56	0.00	0.00
37.68	93.65	63.49	1.48	0.00	0.00
37.74	93.65	64.35	0.50	0.00	0.00
37.81	70.30	66.88	0.41	0.25	0.00
37.87	68.33	66.88	0.58	0.17	0.00
37.94	68.33	64.86	0.49	0.00	0.00
38.00	75.93	64.35	0.51	0.15	0.00
38.07	61.86	64.35	0.34	0.39	0.00
38.13	61.86	64.40	0.00	0.46	0.00
38.20	55.68	63.34	0.16	0.00	0.00
38.26	64.68	63.34	0.00	0.00	0.00
38.33	64.68	63.49	0.00	0.00	0.00
38.39	75.93	59.81	0.24	0.00	0.17
38.46	55.68	59.81	0.16	0.00	0.25
38.52	55.68	57.13	0.00	0.00	0.50
38.59	59.05	59.40	0.16	0.32	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
38.65	32.90	59.40	0.16	0.24	0.00
38.72	32.90	58.29	0.48	0.48	0.00
38.78	61.86	58.29	0.64	0.16	0.00
38.85	61.86	57.58	0.32	0.24	0.00
38.91	78.46	55.77	0.49	0.49	0.00
38.98	50.61	55.77	0.24	0.24	0.00
39.04	50.61	57.58	0.32	0.16	0.00
39.11	81.56	55.26	0.48	0.00	0.00
39.18	48.08	55.26	1.13	0.24	0.00
39.24	48.08	57.13	0.81	0.16	0.00
39.31	50.61	55.31	0.48	0.00	0.47
39.37	42.18	55.31	0.56	0.00	0.24
39.44	42.18	57.28	0.55	0.16	0.16
39.50	43.02	54.86	0.95	0.00	0.00
39.57	61.86	54.86	0.24	0.00	0.00
39.63	61.86	58.29	0.16	0.00	0.00
39.70	60.74	55.77	0.00	0.00	0.00
39.76	73.40	55.77	0.33	0.00	0.00
39.83	73.40	55.31	0.33	0.00	0.00
39.89	78.74	57.79	0.00	0.00	0.00
39.96	65.80	57.79	0.59	0.00	0.00
40.02	65.80	56.67	0.17	0.00	0.16
40.09	53.43	56.27	0.48	0.00	0.00
40.15	68.33	56.27	0.41	0.00	0.24
40.22	68.33	57.58	0.32	0.00	0.16
40.28	64.68	58.29	0.48	0.00	0.00
40.35	65.80	58.29	0.48	0.00	0.00
40.41	65.80	59.40	0.49	0.00	0.00
40.48	56.24	59.40	0.00	0.00	0.00
40.54	56.24	57.58	0.41	0.00	0.00
40.61	73.40	59.81	0.33	0.00	0.00
40.67	59.05	59.81	0.00	0.00	0.00
40.74	59.05	60.76	0.16	0.16	0.00
40.81	-9999.99	56.78	0.24	0.00	0.00
40.87	48.08	56.78	0.00	0.00	0.00
40.94	48.08	58.04	0.41	0.00	0.00
41.00	53.43	59.40	0.73	0.00	0.00
41.07	43.02	59.40	0.49	0.00	0.00
41.13	43.02	62.33	0.16	0.00	0.00
41.20	50.61	59.40	0.24	0.00	0.00
41.26	73.40	59.40	0.48	0.00	0.00
41.33	73.40	62.33	0.24	0.00	0.00
41.39	63.27	64.86	0.32	0.00	0.16

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
41.46	59.05	64.86	0.00	0.00	0.00
41.52	59.05	62.84	0.24	0.00	0.00
41.59	68.33	63.95	0.16	0.00	0.00
41.65	59.05	63.95	0.00	0.00	0.00
41.72	59.05	66.37	0.47	0.00	0.00
41.78	45.55	64.86	0.32	0.00	0.00
41.85	50.61	64.86	0.48	0.00	0.00
41.91	50.61	69.85	0.64	0.00	0.00
41.98	33.74	69.40	0.48	0.00	0.00
42.04	43.02	69.40	0.48	0.00	0.00
42.11	43.02	67.58	0.98	0.17	0.00
42.17	61.86	67.58	0.82	0.25	0.00
42.24	61.86	72.94	0.50	0.00	0.00
42.30	58.21	68.95	0.00	0.16	0.00
42.37	84.37	68.95	0.16	0.00	0.00
42.44	84.37	72.43	0.48	0.00	0.00
42.50	65.80	76.67	0.40	0.00	0.16
42.57	58.21	76.67	0.40	0.16	0.24
42.63	58.21	73.95	0.96	0.00	0.00
42.70	50.61	75.46	0.24	0.00	0.00
42.76	63.27	75.46	0.16	0.00	0.00
42.83	63.27	75.76	0.00	0.00	0.00
42.89	70.30	76.98	0.33	0.00	0.00
42.96	73.40	76.98	0.65	0.00	0.00
43.02	73.40	77.58	0.49	0.00	0.00
43.09	61.86	77.48	0.49	0.00	0.00
43.15	96.19	77.48	0.40	0.00	0.00
43.22	96.19	78.94	0.00	0.00	0.00
43.28	65.80	79.85	0.16	0.00	0.00
43.35	64.68	79.85	0.24	0.00	0.00
43.41	64.68	81.52	0.97	0.00	0.00
43.48	75.93	80.76	0.24	0.00	0.00
43.54	75.93	80.76	0.16	0.00	0.00
43.61	75.93	81.52	0.00	0.00	0.00
43.67	55.68	83.49	0.16	0.00	0.00
43.74	63.27	83.49	0.25	0.00	0.00
43.80	63.27	83.54	0.49	0.00	0.00
43.87	67.49	83.54	0.33	0.00	0.00
43.93	67.49	85.76	0.65	0.00	0.00
44.00	40.49	89.10	0.96	0.00	0.00
44.07	73.12	89.10	1.04	0.24	0.00
44.13	73.12	84.40	0.96	0.16	0.00
44.20	53.14	88.49	0.00	0.00	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
44.26	103.78	88.49	0.33	0.00	0.00
44.33	103.78	86.57	0.66	0.00	0.00
44.39	56.24	85.31	0.50	0.00	0.00
44.46	93.65	85.31	0.58	0.00	0.00
44.52	93.65	89.60	0.57	0.00	0.00
44.59	84.37	88.03	0.00	0.00	0.00
44.65	86.06	88.03	0.81	0.00	0.00
44.72	86.06	91.12	0.81	0.00	0.00
44.78	101.25	92.13	1.46	0.00	0.00
44.85	50.61	92.13	0.64	0.00	0.00
44.91	50.61	88.49	0.56	0.00	0.00
44.98	95.62	95.16	1.44	0.00	0.00
45.04	75.93	95.16	0.64	0.00	0.00
45.11	75.93	91.67	0.32	0.16	0.00
45.17	68.33	89.60	0.00	0.00	0.00
45.24	109.69	89.60	0.16	0.00	0.00
45.30	109.69	92.58	0.00	0.16	0.00
45.37	86.06	92.13	0.48	0.00	0.00
45.43	75.93	92.13	0.40	0.16	0.00
45.50	75.93	92.13	0.16	0.25	0.00
45.56	-9999.99	92.13	0.00	0.97	0.00
45.63	-9999.99	93.94	0.89	0.24	0.16
45.70	88.59	95.16	1.14	0.32	0.16
45.76	70.30	95.16	0.98	0.00	0.00
45.83	70.30	94.85	0.33	0.16	0.16
45.89	80.99	96.67	0.24	0.25	0.24
45.96	75.93	96.67	0.48	0.47	0.48
46.02	75.93	96.22	0.33	0.24	0.00
46.09	91.12	93.64	0.41	0.16	0.00
46.15	92.81	93.64	0.49	0.00	0.00
46.22	92.81	94.40	0.50	0.00	0.00
46.28	93.65	94.15	0.74	0.00	0.16
46.35	75.93	94.15	0.99	0.00	0.00
46.41	75.93	92.58	0.00	0.00	0.00
46.48	106.88	95.31	0.00	0.00	0.00
46.54	83.52	95.31	0.00	0.00	0.00
46.61	83.52	92.13	0.50	0.50	0.00
46.67	112.51	91.67	0.24	0.00	0.00
46.74	86.06	91.67	0.49	0.00	0.00
46.80	86.06	94.65	0.65	0.17	0.00
46.87	92.81	88.49	0.32	0.25	0.00
46.93	113.91	88.49	0.00	0.50	0.00
47.00	113.91	90.76	0.33	0.16	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
47.06	75.93	90.11	0.16	0.24	0.00
47.13	106.88	90.11	0.47	0.95	0.47
47.19	106.88	87.13	0.24	0.87	0.24
47.26	88.59	87.13	0.16	0.47	0.16
47.33	88.59	91.12	0.00	0.48	0.00
47.39	70.30	87.13	0.00	0.57	0.00
47.46	78.46	87.13	0.00	0.16	0.00
47.52	78.46	85.06	0.48	0.48	0.00
47.59	84.37	85.76	0.40	0.24	0.00
47.65	60.74	85.76	0.41	0.16	0.00
47.72	60.74	80.31	0.00	0.00	0.00
47.78	101.25	84.05	0.00	0.00	0.16
47.85	70.30	84.05	0.00	0.00	0.25
47.91	70.30	-9999.99	0.47	0.00	0.49
47.98	80.99	79.50	1.21	0.00	0.00
48.04	-9999.99	79.50	0.48	0.00	0.00
48.11	-9999.99	79.85	0.00	0.00	0.00
48.17	63.27	77.48	0.33	0.16	0.00
48.24	53.14	77.48	0.49	0.25	0.16
48.30	53.14	77.13	0.49	0.00	0.00
48.37	73.12	75.46	0.24	0.00	0.00
48.43	48.08	75.46	0.48	0.00	0.00
48.50	48.08	74.85	0.00	0.00	0.00
48.56	68.33	73.95	0.57	0.00	0.00
48.63	36.55	73.95	0.65	0.00	0.00
48.69	36.55	71.93	0.48	0.00	0.00
48.76	58.21	73.49	0.24	0.00	0.00
48.82	70.30	73.49	0.16	0.16	0.16
48.89	70.30	71.93	0.00	0.00	0.00
48.96	50.61	71.93	0.33	0.00	0.00
49.02	50.61	70.76	0.41	0.00	0.00
49.09	50.61	70.92	0.49	0.00	0.00
49.15	48.08	70.92	0.16	0.00	0.00
49.22	48.08	66.22	0.25	0.00	0.00
49.28	56.24	67.58	0.00	0.00	0.00
49.35	75.93	67.58	0.16	0.00	0.00
49.41	75.93	64.86	0.41	0.00	0.00
49.48	67.49	65.31	0.00	0.00	0.00
49.54	73.40	65.31	0.41	0.00	0.00
49.61	73.40	64.86	0.16	0.16	0.00
49.67	73.40	64.35	0.48	0.00	0.00
49.74	73.12	64.35	0.41	0.00	0.00
49.80	73.12	60.76	0.16	0.00	0.00

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
49.87	73.40	62.84	0.00	0.00	0.00
49.93	73.12	62.84	0.33	0.24	0.00
50.00	73.12	58.95	0.41	0.16	0.00
50.06	53.14	62.84	0.00	0.00	0.00
50.13	67.49	62.84	0.00	0.17	0.00
50.19	67.49	61.22	0.16	0.25	0.00
50.26	45.55	58.29	0.48	0.00	0.00
50.32	-9999.99	58.29	0.24	0.00	0.00
50.39	-9999.99	60.31	0.16	0.00	0.16
50.45	36.55	56.78	0.00	0.00	0.00
50.52	63.27	56.78	0.23	0.00	0.00
50.59	63.27	62.13	0.31	0.00	0.00
50.65	65.80	62.13	0.00	0.00	0.00
50.72	78.74	60.82	0.50	0.00	0.00
50.78	78.74	59.86	0.91	0.16	0.00
50.85	45.55	59.86	0.00	0.00	0.00
50.91	45.55	63.49	0.00	0.00	0.17
50.98	44.99	62.33	0.16	0.00	0.25
51.04	63.27	62.33	0.00	0.00	0.51
51.11	63.27	60.76	0.24	0.00	0.00
51.17	84.37	62.13	0.16	0.16	0.00
51.24	73.40	62.13	0.00	0.00	0.00
51.30	73.40	60.82	0.41	0.00	0.00
51.37	87.18	65.31	0.41	0.00	0.00
51.43	43.02	65.31	0.48	0.00	0.00
51.50	43.02	66.37	0.41	0.00	0.00
51.56	48.08	65.31	0.41	0.00	0.00
51.63	59.05	65.31	0.00	0.00	0.00
51.69	59.05	64.35	0.24	0.00	0.00
51.76	48.08	65.76	0.16	0.00	0.00
51.82	47.80	65.76	0.00	0.00	0.00
51.89	47.80	71.67	0.00	0.16	0.16
51.95	45.55	69.91	0.00	0.00	0.00
52.02	58.21	69.91	0.00	0.00	0.00
52.08	58.21	74.40	0.00	0.17	0.00
52.15	53.43	72.43	0.00	0.00	0.00
52.22	58.21	72.43	0.00	0.00	0.00
52.28	58.21	75.76	0.00	0.00	0.24
52.35	78.74	75.76	0.32	0.00	0.16
52.41	75.93	78.49	0.00	0.00	0.00
52.48	75.93	78.04	0.00	0.00	0.00
52.54	75.93	78.04	0.00	0.00	0.00
52.61	75.93	80.01	0.00	0.00	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
52.67	98.44	80.76	0.73	0.00	0.00
52.74	78.46	80.76	0.90	0.00	0.00
52.80	78.46	79.00	0.50	0.00	0.00
52.87	103.78	80.31	0.17	0.17	0.00
52.93	92.81	80.31	0.00	0.00	0.00
53.00	92.81	78.04	0.00	0.00	0.00
53.06	68.33	78.94	0.33	0.00	0.00
53.13	101.25	78.94	0.66	0.16	0.00
53.19	101.25	78.49	1.46	0.48	0.00
53.26	104.07	76.22	0.73	0.24	0.00
53.32	98.72	76.22	0.65	0.16	0.16
53.39	98.72	80.51	0.00	0.00	0.00
53.45	81.56	74.40	0.00	0.33	0.00
53.52	80.99	74.40	0.16	0.50	0.00
53.58	80.99	75.46	0.48	0.00	0.00
53.65	59.05	77.13	0.74	0.00	0.00
53.71	83.52	77.13	0.41	0.00	0.00
53.78	83.52	70.76	0.96	0.00	0.00
53.85	75.93	73.44	0.64	0.00	0.00
53.91	93.65	73.44	0.32	0.00	0.00
53.98	93.65	70.76	0.00	0.00	0.00
54.04	75.93	70.76	0.40	0.00	0.00
54.11	61.86	72.43	0.41	0.00	0.00
54.17	61.86	72.58	0.50	0.00	0.00
54.24	73.40	72.58	0.33	0.00	0.00
54.30	73.40	70.92	0.50	0.00	0.00
54.37	50.61	70.31	0.50	0.48	0.00
54.43	53.14	70.31	0.16	0.24	0.00
54.50	53.14	65.36	0.40	0.16	0.00
54.56	73.40	68.49	0.49	0.00	0.00
54.63	44.99	68.49	0.33	0.00	0.00
54.69	44.99	70.41	0.41	0.00	0.00
54.76	58.21	65.76	0.00	0.00	0.00
54.82	68.33	65.76	0.49	0.00	0.00
54.89	68.33	66.37	0.49	0.00	0.00
54.95	56.24	64.86	0.96	0.00	0.00
55.02	43.02	64.86	1.43	0.00	0.00
55.08	43.02	64.86	0.48	0.00	0.00
55.15	59.05	66.67	0.00	0.00	0.00
55.21	48.08	66.67	0.48	0.00	0.00
55.28	48.08	62.84	0.99	0.00	0.17
55.34	61.86	64.86	0.76	0.00	0.25
55.41	68.33	64.86	0.50	0.00	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
55.48	68.33	64.86	0.17	0.00	0.17
55.54	45.55	62.13	0.00	0.00	0.49
55.61	75.93	62.13	0.24	0.00	0.24
55.67	75.93	62.84	0.82	0.00	0.16
55.74	48.08	62.84	0.73	0.00	0.00
55.80	59.05	59.40	0.24	0.24	0.00
55.87	59.05	64.40	0.16	0.16	0.00
55.93	48.08	64.40	0.48	0.00	0.00
56.00	48.08	62.33	0.48	0.00	0.00
56.06	53.43	61.67	0.65	0.00	0.00
56.13	48.08	61.67	0.25	0.00	0.00
56.19	48.08	65.87	0.50	0.00	0.00
56.26	60.74	63.04	0.33	0.16	0.00
56.32	56.24	63.04	0.97	0.72	0.00
56.39	56.24	66.22	0.96	0.73	0.00
56.45	65.80	65.36	0.31	0.16	0.00
56.52	67.49	65.36	0.00	0.00	0.00
56.58	67.49	67.58	0.00	0.00	0.00
56.65	45.55	66.88	0.33	0.00	0.00
56.71	59.05	66.88	0.25	0.48	0.00
56.78	59.05	65.31	0.00	0.24	0.00
56.84	60.74	62.84	0.16	0.33	0.00
56.91	50.61	62.84	0.00	0.00	0.00
56.97	50.61	68.49	0.24	0.00	0.00
57.04	53.43	65.87	0.80	0.16	0.00
57.11	45.55	65.87	0.00	0.00	0.00
57.17	45.55	66.22	0.24	0.00	0.00
57.24	60.74	66.88	0.81	0.16	0.00
57.30	33.74	66.88	0.50	0.00	0.00
57.37	33.74	64.40	0.74	0.00	0.00
57.43	40.49	64.40	0.33	0.17	0.00
57.50	50.61	68.49	0.25	0.25	0.00
57.56	50.61	66.37	0.51	0.51	0.00
57.63	50.61	66.37	0.32	0.00	0.00
57.69	50.61	67.13	0.48	0.00	0.00
57.76	27.83	64.86	0.24	0.00	0.00
57.82	59.05	64.86	0.16	0.00	0.00
57.89	59.05	64.40	0.00	0.00	0.00
57.95	59.05	68.49	0.00	0.00	0.00
58.02	48.08	68.49	0.00	0.16	0.00
58.08	48.08	64.86	0.00	0.72	0.00
58.15	47.80	67.13	0.00	0.73	0.00
58.21	60.74	67.13	0.32	0.16	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
58.28	60.74	64.86	0.00	0.00	0.00
58.34	63.27	66.67	0.00	0.00	0.00
58.41	33.74	66.67	0.48	0.00	0.00
58.47	33.74	65.31	0.00	0.00	0.00
58.54	60.74	64.86	0.24	0.00	0.00
58.60	47.80	64.86	0.33	0.00	0.00
58.67	47.80	68.04	0.72	0.00	0.00
58.74	60.74	65.31	0.73	0.00	0.00
58.80	40.49	65.31	0.16	0.00	0.00
58.87	40.49	64.35	0.00	0.00	0.00
58.93	44.99	68.04	0.24	0.00	0.00
59.00	53.14	68.04	0.32	0.00	0.00
59.06	53.14	65.87	0.73	0.00	0.00
59.13	80.99	65.87	0.73	0.00	0.00
59.19	50.61	64.35	0.65	0.00	0.00
59.26	50.61	68.95	0.25	0.00	0.00
59.32	48.08	68.95	0.48	0.00	0.00
59.39	48.08	68.49	0.82	0.00	0.00
59.45	43.02	68.90	0.76	0.00	0.00
59.52	47.80	68.90	0.50	0.00	0.00
59.58	47.80	67.13	0.16	0.00	0.00
59.65	37.96	67.38	0.00	0.00	0.00
59.71	42.18	67.38	0.00	0.00	0.00
59.78	42.18	72.58	0.00	0.00	0.00
59.84	45.55	69.40	0.00	0.00	0.00
59.91	47.80	69.40	0.00	0.00	0.00
59.97	47.80	73.44	0.34	0.00	0.00
60.04	80.99	69.40	0.25	0.00	0.00
60.10	53.43	69.40	0.50	0.00	0.00
60.17	53.43	70.92	0.00	0.16	0.00
60.23	48.08	73.04	0.00	0.25	0.00
60.30	25.30	73.04	0.00	0.73	0.00
60.37	25.30	73.04	0.00	0.16	0.17
60.43	58.21	73.95	0.00	0.00	0.25
60.50	64.68	73.95	0.24	0.00	0.50
60.56	64.68	74.85	0.16	0.00	0.00
60.63	65.80	73.95	0.48	0.48	0.00
60.69	48.08	73.95	0.72	0.48	0.00
60.76	48.08	77.58	0.64	0.32	0.00
60.82	61.86	77.58	0.48	0.48	0.00
60.89	53.14	76.98	0.24	0.24	0.00
60.95	53.14	79.40	0.32	0.16	0.00
61.02	78.46	79.40	0.72	0.00	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
61.08	78.46	78.04	0.97	0.00	0.00
61.15	39.36	77.48	0.65	0.00	0.00
61.21	60.74	77.48	0.50	0.00	0.00
61.28	60.74	84.55	1.01	0.00	0.00
61.34	40.49	80.76	0.16	0.16	0.00
61.41	53.43	80.76	0.25	0.00	0.00
61.47	53.43	83.54	0.00	0.00	0.00
61.54	43.02	86.67	0.33	0.00	0.00
61.60	63.27	86.67	0.25	0.00	0.00
61.67	63.27	85.76	0.24	0.00	0.00
61.73	73.12	88.09	0.16	0.00	0.00
61.80	50.61	88.09	0.00	0.00	0.00
61.86	50.61	87.58	0.00	0.24	0.00
61.93	42.18	90.61	0.17	0.16	0.00
62.00	65.80	90.61	0.74	0.00	0.00
62.06	65.80	91.67	0.24	0.00	0.00
62.13	64.68	93.03	0.32	0.00	0.00
62.19	50.61	93.03	0.00	0.00	0.00
62.26	50.61	96.17	0.00	0.00	0.00
62.32	59.05	93.49	0.00	0.16	0.00
62.39	58.21	93.49	0.00	0.00	0.00
62.45	58.21	95.31	0.24	0.00	0.00
62.52	67.49	95.31	0.48	0.00	0.00
62.58	75.93	97.18	0.00	0.00	0.00
62.65	75.93	98.03	0.00	0.00	0.00
62.71	88.59	98.03	0.50	0.00	0.00
62.78	88.59	97.68	0.99	0.00	0.00
62.84	78.74	99.40	0.48	0.00	0.00
62.91	78.46	99.40	0.32	0.16	0.00
62.97	78.46	100.76	0.95	0.72	0.00
63.04	67.49	97.18	0.48	0.24	0.00
63.10	68.33	97.18	0.98	0.32	0.00
63.17	68.33	101.22	0.99	0.25	0.00
63.23	68.33	100.21	1.97	0.49	0.00
63.30	59.05	100.21	0.17	0.00	0.00
63.36	59.05	101.22	0.25	0.00	0.00
63.43	53.14	101.22	0.00	0.00	0.00
63.49	73.40	101.22	0.33	0.00	0.17
63.56	73.40	103.94	0.00	0.00	0.25
63.63	67.49	105.76	0.23	0.23	0.50
63.69	55.68	105.76	0.16	0.16	0.00
63.76	55.68	108.94	0.00	0.00	0.00
63.82	55.68	107.78	0.00	0.00	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
63.89	50.61	107.78	0.66	0.00	0.00
63.95	50.61	103.94	1.23	0.00	0.00
64.02	60.74	108.49	1.48	0.00	0.00
64.08	47.80	108.49	0.65	0.00	0.00
64.15	47.80	107.28	0.48	0.00	0.00
64.21	43.02	107.28	0.48	0.00	0.00
64.28	84.37	112.58	0.49	0.00	0.00
64.34	84.37	106.27	0.00	0.00	0.00
64.41	80.99	106.27	0.00	0.00	0.00
64.47	80.99	104.40	0.34	0.00	0.00
64.54	59.05	103.74	0.50	0.00	0.00
64.60	43.02	103.74	1.01	0.00	0.00
64.67	43.02	101.22	0.17	0.16	0.00
64.73	65.80	103.49	0.00	0.25	0.00
64.80	59.05	103.49	0.00	0.00	0.00
64.86	59.05	101.22	0.17	0.00	0.00
64.93	60.74	101.22	0.25	0.00	0.00
64.99	53.43	101.22	0.24	0.00	0.00
65.06	53.43	107.28	0.33	0.00	0.00
65.12	75.93	108.94	0.25	0.00	0.00
65.19	56.24	108.94	0.00	0.00	0.00
65.26	56.24	106.22	0.00	0.16	0.17
65.32	83.52	107.28	0.48	0.00	0.25
65.39	53.43	107.28	0.24	0.00	0.50
65.45	53.43	108.49	0.16	0.00	0.00
65.52	43.02	111.82	0.00	0.00	0.00
65.58	53.43	111.82	0.00	0.00	0.00
65.65	53.43	120.30	0.17	0.33	0.00
65.71	55.68	126.47	0.73	0.73	0.00
65.78	67.49	126.47	0.48	0.24	0.00
65.84	67.49	126.67	0.81	0.16	0.00
65.91	55.68	126.67	0.50	0.00	0.00
65.97	95.62	135.05	1.00	0.00	0.00
66.04	95.62	133.03	0.33	0.00	0.00
66.10	88.59	133.03	0.25	0.00	0.00
66.17	88.59	121.92	0.24	0.24	0.00
66.23	73.12	120.76	0.49	0.16	0.00
66.30	70.86	120.76	0.25	0.00	0.00
66.36	70.86	130.76	0.50	0.00	0.00
66.43	95.62	144.65	0.33	0.00	0.00
66.49	68.33	144.65	0.25	0.00	0.00
66.56	68.33	138.94	0.50	0.24	0.00
66.62	81.56	146.16	0.34	0.66	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
66.69	67.49	146.16	0.74	0.25	0.00
66.75	67.49	154.39	0.75	0.75	0.00
66.82	91.12	160.76	0.65	0.16	0.00
66.89	75.93	160.76	0.25	0.00	0.48
66.95	75.93	162.83	0.49	0.00	0.24
67.02	87.18	167.57	0.32	0.16	0.16
67.08	70.30	167.57	0.00	0.00	0.00
67.15	70.30	166.36	0.00	0.00	0.00
67.21	88.59	170.30	0.00	0.00	0.00
67.28	56.24	170.30	0.00	0.00	0.00
67.34	56.24	165.30	0.24	0.00	0.24
67.41	73.40	163.33	0.82	0.16	0.16
67.47	50.61	163.33	0.50	0.00	0.00
67.54	50.61	170.75	0.50	0.00	0.00
67.60	78.74	170.75	0.33	0.32	0.16
67.67	86.06	167.37	0.97	0.00	0.25
67.73	86.06	161.66	1.71	0.00	0.49
67.80	61.86	161.66	0.81	0.17	0.00
67.86	61.86	160.81	0.73	0.25	0.00
67.93	70.86	158.03	0.98	0.00	0.00
67.99	112.51	158.03	0.82	0.00	0.00
68.06	112.51	154.75	1.22	0.00	0.00
68.12	92.81	151.21	1.46	0.00	0.00
68.19	86.06	151.21	0.80	0.00	0.00
68.25	86.06	147.17	0.73	0.00	0.00
68.32	70.30	144.85	0.24	0.00	0.00
68.38	111.38	144.85	0.33	0.17	0.00
68.45	111.38	140.30	0.00	0.25	0.00
68.52	-9999.99	138.08	0.24	0.00	0.00
68.58	84.37	138.08	0.32	0.17	0.00
68.65	84.37	133.48	0.00	0.25	0.00
68.71	96.19	128.49	0.00	0.00	0.00
68.78	81.56	128.49	0.67	0.00	0.00
68.84	81.56	129.50	1.49	0.00	0.00
68.91	84.37	123.03	0.74	0.00	0.00
68.97	75.93	123.03	0.33	0.00	0.00
69.04	75.93	117.38	0.00	0.00	0.00
69.10	80.99	116.21	0.24	0.00	0.00
69.17	75.93	116.21	0.48	0.00	0.00
69.23	75.93	111.21	0.48	0.00	0.00
69.30	98.44	111.21	0.24	0.00	0.00
69.36	68.33	110.81	0.33	0.00	0.00
69.43	68.33	106.22	0.73	0.00	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
69.49	81.56	106.22	0.24	0.00	0.00
69.56	81.56	104.25	0.65	0.16	0.00
69.62	80.99	99.40	1.45	0.25	0.00
69.69	64.68	99.40	0.97	0.00	0.00
69.75	64.68	94.65	0.64	0.16	0.00
69.82	104.07	93.03	0.95	0.48	0.00
69.88	-9999.99	93.03	0.71	0.24	0.00
69.95	-9999.99	88.03	1.46	0.32	0.00
70.01	-9999.99	90.61	1.48	0.00	0.00
70.08	53.14	90.61	1.74	0.00	0.00
70.15	53.14	89.40	0.65	0.00	0.16
70.21	70.30	86.07	0.48	0.00	0.25
70.28	84.37	86.07	0.48	0.00	0.00
70.34	84.37	86.67	0.80	0.00	0.00
70.41	108.85	83.54	0.00	0.00	0.00
70.47	73.12	83.54	0.00	0.00	0.00
70.54	73.12	79.85	0.00	0.16	0.00
70.60	108.85	79.40	0.96	0.48	0.00
70.67	92.81	79.40	0.48	0.24	0.00
70.73	92.81	79.00	0.32	0.16	0.17
70.80	75.93	78.49	0.00	0.00	0.25
70.86	75.93	78.49	0.24	0.00	0.00
70.93	75.93	76.47	0.66	0.17	0.00
70.99	67.49	76.47	1.24	0.25	0.00
71.06	98.44	72.13	1.24	0.50	0.00
71.12	98.44	73.04	0.16	0.17	0.00
71.19	75.93	73.04	0.00	0.25	0.00
71.25	75.93	71.42	0.00	0.00	0.00
71.32	70.30	69.40	0.17	0.00	0.00
71.38	90.00	69.40	0.25	0.00	0.00
71.45	90.00	68.95	0.73	0.00	0.00
71.51	87.18	70.41	0.16	0.16	0.00
71.58	45.55	70.41	0.00	0.00	0.00
71.64	45.55	69.40	0.24	0.24	0.00
71.71	98.44	62.84	0.49	0.33	0.00
71.78	70.86	62.84	0.72	0.72	0.00
71.84	70.86	68.04	0.73	0.73	0.00
71.91	90.00	66.37	0.33	0.16	0.00
71.97	50.61	66.37	1.21	0.48	0.00
72.04	50.61	64.86	0.72	0.24	0.00
72.10	75.93	66.22	0.64	0.32	0.00
72.17	87.18	66.22	0.00	0.25	0.00
72.23	87.18	62.84	0.00	0.50	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
72.30	80.99	62.84	0.00	0.17	0.00
72.36	98.44	62.84	0.48	0.48	0.00
72.43	98.44	66.67	0.24	0.24	0.00
72.49	83.52	61.83	0.49	0.16	0.16
72.56	53.43	61.83	0.72	0.00	0.00
72.62	53.43	68.49	0.97	0.00	0.00
72.69	84.37	68.49	0.49	0.00	0.00
72.75	78.46	66.22	0.00	0.00	0.00
72.82	78.46	67.89	0.00	0.00	0.00
72.88	78.74	67.89	0.33	0.17	0.00
72.95	78.74	68.95	0.74	0.25	0.00
73.01	106.32	65.87	1.00	0.00	0.00
73.08	81.56	65.87	0.66	0.17	0.00
73.14	81.56	70.76	0.50	0.49	0.00
73.21	73.12	66.22	0.50	0.25	0.24
73.27	63.27	66.22	0.17	0.33	0.16
73.34	63.27	69.40	0.25	0.74	0.00
73.41	90.00	70.31	0.50	0.24	0.00
73.47	61.86	70.31	0.81	0.32	0.00
73.54	61.86	71.67	0.73	0.00	0.00
73.60	70.30	74.45	1.21	0.00	0.00
73.67	68.33	74.45	0.64	0.00	0.00
73.73	68.33	73.04	0.00	0.00	0.48
73.80	95.62	71.42	0.00	0.00	0.24
73.86	86.06	71.42	0.49	0.00	0.32
73.93	86.06	73.49	0.72	0.00	0.00
73.99	64.68	72.13	0.48	0.00	0.00
74.06	84.37	72.13	0.32	0.32	0.00
74.12	84.37	74.96	0.48	0.00	0.00
74.19	83.52	72.13	0.24	0.00	0.00
74.25	78.74	72.13	0.16	0.16	0.17
74.32	78.74	77.48	0.47	0.00	0.25
74.38	98.44	77.48	0.24	0.00	0.50
74.45	96.19	78.94	0.16	0.00	0.00
74.51	96.19	77.99	0.48	0.00	0.00
74.58	75.93	77.99	0.48	0.00	0.00
74.64	75.93	84.40	0.32	0.00	0.00
74.71	-9999.99	83.54	0.00	0.00	0.00
74.77	73.12	83.54	0.00	0.00	0.00
74.84	73.12	84.40	0.16	0.00	0.00
74.90	63.27	89.10	0.73	0.00	0.00
74.97	59.05	89.10	0.98	0.00	0.00
75.04	59.05	88.49	0.65	0.17	0.00

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
75.10	75.93	93.64	0.00	0.25	0.00
75.17	75.93	93.64	0.24	0.00	0.00
75.23	75.93	101.22	0.33	0.00	0.00
75.30	61.86	105.31	0.25	0.00	0.00
75.36	73.12	105.31	0.00	0.24	0.00
75.43	73.12	116.37	0.16	0.16	0.00
75.49	63.27	118.94	0.98	0.00	0.00
75.56	84.37	118.94	0.74	0.00	0.00
75.62	84.37	127.48	0.82	0.16	0.00
75.69	75.93	134.85	0.25	0.48	0.00
75.75	78.74	134.85	0.49	0.24	0.00
75.82	78.74	141.67	0.32	0.16	0.00
75.88	70.86	150.20	0.00	0.00	0.00
75.95	98.44	150.20	0.00	0.00	0.00
76.01	98.44	153.48	0.00	0.00	0.00
76.08	75.93	153.48	0.00	0.00	0.00
76.14	104.07	159.85	0.48	0.00	0.00
76.21	104.07	-9999.99	1.30	0.16	0.00
76.27	73.12	-9999.99	0.99	0.25	0.00
76.34	73.12	168.94	0.74	0.00	0.00
76.40	63.27	176.46	0.16	0.00	0.16
76.47	98.44	176.46	0.48	0.00	0.00
76.53	98.44	178.48	0.48	0.00	0.24
76.60	103.78	184.84	0.98	0.00	0.16
76.67	87.18	184.84	1.46	0.00	0.00
76.73	87.18	188.08	1.95	0.00	0.24
76.80	111.38	191.66	0.97	0.00	0.33
76.86	109.69	191.66	2.40	0.48	0.25
76.93	109.69	197.67	1.45	0.24	0.50
76.99	95.62	198.93	1.13	0.16	0.17
77.06	78.46	198.93	0.73	0.00	0.25
77.12	78.46	203.23	0.75	0.00	0.00
77.19	95.62	208.48	0.66	0.16	0.00
77.25	134.18	208.48	0.98	0.00	0.00
77.32	134.18	208.28	0.48	0.00	0.00
77.38	92.81	212.11	0.99	0.00	0.00
77.45	88.59	212.11	0.76	0.00	0.00
77.51	88.59	213.33	0.99	0.00	0.00
77.58	81.56	214.39	1.15	0.33	0.00
77.64	109.69	214.39	0.50	0.25	0.00
77.71	109.69	217.37	1.25	0.00	0.00
77.77	101.25	217.37	0.33	0.16	0.00
77.84	108.85	218.02	0.25	0.00	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
77.90	108.85	220.75	0.74	0.24	0.00
77.97	112.51	220.75	0.80	0.49	0.00
78.03	112.51	219.84	0.49	0.49	0.00
78.10	106.88	222.57	0.00	0.00	0.00
78.16	73.40	222.57	0.16	0.33	0.00
78.23	73.40	222.11	0.95	0.25	0.00
78.30	101.25	224.39	0.48	0.73	0.00
78.36	120.95	224.39	0.64	0.48	0.00
78.43	120.95	223.48	0.00	0.48	0.00
78.49	96.19	225.75	0.00	0.24	0.00
78.56	112.51	225.75	0.00	0.48	0.00
78.62	112.51	224.84	0.48	0.24	0.00
78.69	113.91	227.57	0.24	0.24	0.00
78.75	115.32	227.57	0.16	0.32	0.00
78.82	115.32	225.29	0.48	0.25	0.48
78.88	98.44	228.02	0.24	0.49	0.24
78.95	136.71	228.02	0.99	0.16	0.32
79.01	136.71	226.20	1.47	0.00	0.25
79.08	90.00	227.24	1.47	0.00	0.49
79.14	121.51	227.24	0.48	0.33	0.00
79.21	121.51	227.57	0.48	0.50	0.00
79.27	87.18	228.48	0.48	0.50	0.00
79.34	68.33	228.48	0.98	0.16	0.00
79.40	68.33	230.13	0.25	0.49	0.00
79.47	87.18	228.02	0.74	0.24	0.00
79.53	86.06	228.02	0.82	0.33	0.00
79.60	86.06	230.95	0.99	0.97	0.48
79.66	112.51	230.95	1.48	0.48	0.24
79.73	112.51	230.54	0.82	0.66	0.16
79.79	106.88	231.37	0.74	0.25	0.00
79.86	104.07	231.37	0.99	0.75	0.00
79.93	104.07	231.13	0.66	0.16	0.00
79.99	106.32	-9999.99	0.25	0.00	0.00
80.06	132.21	-9999.99	0.99	0.24	0.24
80.12	132.21	232.19	0.97	0.16	0.16
80.19	75.93	233.02	0.72	0.00	0.00
80.25	113.91	233.02	0.95	0.00	0.00
80.32	113.91	232.26	1.29	0.33	0.00
80.38	101.25	232.32	0.00	0.48	0.00
80.45	90.00	232.32	0.00	0.24	0.00
80.51	90.00	234.54	0.32	0.32	0.00
80.58	103.78	235.82	0.24	0.47	0.00
80.64	106.88	235.82	0.72	0.24	0.00

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
80.71	106.88	234.77	0.64	0.16	0.16
80.77	80.99	235.29	0.48	0.00	0.00
80.84	95.62	235.29	0.72	0.00	0.00
80.90	95.62	236.17	0.48	0.49	0.00
80.97	98.44	236.81	0.48	0.49	0.00
81.03	101.25	236.81	0.24	0.00	0.00
81.10	101.25	237.22	0.66	0.00	0.00
81.16	101.25	237.94	0.00	0.48	0.00
81.23	121.51	237.94	0.24	0.24	0.00
81.29	121.51	239.66	0.48	0.65	0.00
81.36	106.88	239.66	0.25	0.25	0.00
81.42	106.88	238.37	0.00	0.00	0.00
81.49	118.14	239.38	0.17	0.33	0.00
81.56	78.46	239.38	0.25	0.50	0.00
81.62	78.46	239.61	0.50	0.50	0.00
81.69	123.77	240.52	0.49	0.33	0.16
81.75	121.51	240.52	0.99	0.00	0.00
81.82	121.51	241.88	0.49	0.00	0.00
81.88	135.02	241.88	1.14	0.17	0.00
81.95	106.88	241.88	0.48	0.25	0.00
82.01	106.88	242.11	1.68	0.24	0.00
82.08	75.93	243.25	1.47	0.16	0.00
82.14	132.21	243.25	1.24	0.00	0.00
82.21	132.21	243.25	1.25	0.24	0.00
82.27	87.18	242.34	1.15	0.16	0.00
82.34	88.59	242.34	0.74	0.00	0.00
82.40	88.59	243.93	1.23	0.24	0.00
82.47	106.88	244.61	0.65	0.49	0.00
82.53	90.00	244.61	1.21	0.73	0.00
82.60	90.00	244.16	0.98	0.48	0.00
82.66	111.38	244.84	1.29	0.32	0.00
82.73	-9999.99	244.84	0.72	0.00	0.00
82.79	-9999.99	245.52	0.72	0.00	0.00
82.86	104.07	245.75	0.65	0.00	0.16
82.92	139.25	245.75	0.73	0.00	0.47
82.99	139.25	246.43	0.96	0.24	0.24
83.05	96.19	246.43	0.80	0.16	0.16
83.12	96.19	245.75	0.00	0.00	0.00
83.19	98.44	246.20	0.24	0.00	0.00
83.25	115.32	246.20	1.44	0.32	0.33
83.32	115.32	247.79	1.94	0.00	0.73
83.38	101.25	248.09	1.70	0.00	0.73
83.45	73.12	248.09	1.13	0.00	0.48

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
83.51	73.12	248.93	0.49	0.48	0.24
83.58	78.46	248.47	0.73	0.24	0.00
83.64	104.07	248.47	0.32	0.16	0.00
83.71	104.07	249.16	1.21	0.00	0.00
83.77	118.98	248.70	0.97	0.00	0.00
83.84	109.69	248.70	0.98	0.00	0.00
83.90	109.69	248.93	1.46	0.00	0.00
83.97	123.77	249.61	1.21	0.00	0.00
84.03	83.52	249.61	0.80	0.00	0.00
84.10	83.52	249.61	0.25	0.00	0.00
84.16	109.69	250.29	0.74	0.00	0.00
84.23	115.32	250.29	0.33	0.17	0.00
84.29	115.32	250.52	0.49	0.25	0.00
84.36	123.77	250.06	0.49	0.25	0.00
84.42	101.25	250.06	0.80	0.16	0.00
84.49	101.25	250.06	0.47	0.00	0.00
84.55	104.07	250.98	1.17	0.00	0.00
84.62	123.77	250.98	0.63	0.00	0.00
84.68	123.77	251.20	0.00	0.00	0.00
84.75	116.45	251.20	0.00	0.00	0.00
84.82	116.45	249.90	0.82	0.00	0.17
84.88	93.65	250.75	0.51	0.00	0.26
84.95	101.25	250.75	1.46	0.00	0.51
85.01	101.25	249.84	1.29	0.00	0.00
85.08	106.32	-52.79	0.25	0.00	0.00
85.14	88.59	-9999.99	0.00	0.00	0.00
85.21	88.59	-9999.99	0.32	0.00	0.00
85.27	101.25	-9999.99	0.48	0.00	0.00
85.34	103.55	-9999.99	0.70	0.00	0.00
85.40	103.55	-9999.99	0.28	0.20	0.01
85.47	139.25	-9999.99	0.18	0.06	0.02
85.53	110.46	-9999.99	0.60	0.36	0.03
85.60	110.46	-9999.99	0.53	0.32	0.00
85.66	87.44	-9999.99	-9999.99	-9999.99	-9999.99
85.73	117.37	-9999.99	-9999.99	-9999.99	-9999.99
85.79	117.37	-9999.99	-9999.99	-9999.99	-9999.99
85.86	124.47	-9999.99	-9999.99	-9999.99	-9999.99
85.92	121.97	-9999.99	-9999.99	-9999.99	-9999.99
85.99	121.97	-9999.99	-9999.99	-9999.99	-9999.99
86.05	135.02	-9999.99	-9999.99	-9999.99	-9999.99
86.12	113.91	-9999.99	-9999.99	-9999.99	-9999.99
86.18	113.91	-9999.99	-9999.99	-9999.99	-9999.99
86.25	113.91	-9999.99	-9999.99	-9999.99	-9999.99

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
86.31	118.66	-9999.99	-9999.99	-9999.99	-9999.99
86.38	118.66	-9999.99	-9999.99	-9999.99	-9999.99
86.45	-9999.99	-9999.99	-9999.99	-9999.99	-9999.99
86.51	-9999.99	-9999.99	-9999.99	-9999.99	-9999.99
86.58	109.69	-9999.99	-9999.99	-9999.99	-9999.99
86.64	99.67	-9999.99	-9999.99	-9999.99	-9999.99
86.71	99.67	-9999.99	-9999.99	-9999.99	-9999.99
86.77	94.50	-9999.99	-9999.99	-9999.99	-9999.99
86.84	95.29	-9999.99	-9999.99	-9999.99	-9999.99

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
2.249	8.484	-9999.990	-9999.990	-9999.990	-9999.990
2.314	101.251	-9999.990	-9999.990	-9999.990	-9999.990
2.380	101.251	-9999.990	-9999.990	-9999.990	-9999.990
2.445	81.203	-9999.990	-9999.990	-9999.990	-9999.990
2.510	91.754	-9999.990	-9999.990	-9999.990	-9999.990
2.575	91.754	-9999.990	-9999.990	-9999.990	-9999.990
2.640	91.121	-9999.990	-9999.990	-9999.990	-9999.990
2.706	99.562	-9999.990	-9999.990	-9999.990	-9999.990
2.771	99.562	-9999.990	-9999.990	-9999.990	-9999.990
2.836	96.186	-9999.990	-9999.990	-9999.990	-9999.990
2.901	69.177	-9999.990	-9999.990	-9999.990	-9999.990
2.966	69.177	-9999.990	-9999.990	-9999.990	-9999.990
3.032	86.780	-9999.990	-9999.990	-9999.990	-9999.990
3.097	95.824	-9999.990	-9999.990	-9999.990	-9999.990
3.162	95.824	-9999.990	-9999.990	-9999.990	-9999.990
3.227	106.678	-9999.990	-9999.990	-9999.990	-9999.990
3.292	106.678	-9999.990	-9999.990	-9999.990	-9999.990
3.358	122.960	-9999.990	-9999.990	-9999.990	-9999.990
3.423	101.251	-9999.990	-9999.990	-9999.990	-9999.990
3.488	101.251	10.506	-9999.990	-9999.990	-9999.990
3.553	81.772	10.933	-9999.990	-9999.990	-9999.990
3.618	74.120	10.933	-9999.990	-9999.990	-9999.990
3.684	74.120	11.905	-9999.990	-9999.990	-9999.990
3.749	91.511	12.511	-9999.990	-9999.990	-9999.990
3.814	73.397	12.511	-9999.990	-9999.990	-9999.990
3.879	73.397	13.283	-9999.990	-9999.990	-9999.990
3.944	69.024	13.826	-9999.990	-9999.990	-9999.990
4.010	111.381	13.826	-9999.990	-9999.990	-9999.990
4.075	111.381	14.483	-9999.990	-9999.990	-9999.990
4.140	106.316	15.059	0.000	0.000	0.000
4.205	88.589	15.059	1.716	0.679	0.349
4.270	88.589	15.764	2.574	0.524	0.524
4.336	91.121	16.126	3.141	1.047	1.047
4.401	94.344	16.126	0.357	0.000	0.000
4.466	94.344	16.426	0.536	0.000	0.000
4.531	103.783	16.848	1.072	0.000	0.000
4.596	96.186	16.848	0.344	0.707	0.000
4.662	96.186	16.946	0.516	0.524	0.000
4.727	116.447	17.386	1.032	0.000	0.000
4.792	111.381	17.386	0.349	0.000	0.000
4.857	111.381	17.293	0.523	0.000	0.000
4.922	75.929	17.146	1.047	0.000	0.000
4.988	75.929	17.146	0.697	0.343	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
5.053	86.057	17.306	1.045	0.000	0.000
5.118	98.718	17.306	2.090	0.000	0.000
5.183	98.718	17.026	0.345	0.345	0.000
5.248	98.437	17.248	0.518	0.518	0.000
5.314	106.316	17.248	0.000	0.000	0.000
5.379	106.316	16.906	0.000	0.680	0.000
5.444	98.718	17.066	0.000	0.511	0.000
5.509	83.525	17.066	0.000	1.021	0.000
5.574	83.525	16.982	0.348	0.000	0.000
5.640	73.397	17.026	0.523	0.000	0.000
5.705	83.525	17.026	0.000	0.000	0.000
5.770	83.525	17.226	0.685	0.000	0.000
5.835	91.121	17.159	0.000	0.000	0.000
5.900	93.653	17.159	0.000	0.000	0.000
5.966	93.653	17.346	0.000	0.689	0.340
6.031	95.623	17.026	0.000	0.000	0.509
6.096	68.333	17.026	0.000	0.000	0.000
6.161	68.333	16.986	0.685	0.341	0.000
6.226	98.718	17.248	1.027	0.512	0.000
6.292	78.742	17.248	0.000	1.024	0.000
6.357	78.742	17.146	0.350	0.350	0.000
6.422	86.057	17.382	0.525	0.525	0.000
6.487	70.865	17.382	1.049	1.049	0.000
6.552	70.865	17.786	0.347	0.000	0.000
6.618	75.929	17.871	0.521	0.000	0.000
6.683	75.929	17.871	0.000	0.000	0.000
6.748	84.369	18.266	0.705	0.352	0.000
6.813	91.121	18.266	0.000	0.528	0.000
6.878	91.121	18.182	0.000	1.056	0.000
6.944	78.460	18.493	0.000	0.351	0.000
7.009	64.676	18.493	0.000	0.527	0.000
7.074	64.676	18.746	0.000	1.054	0.000
7.139	75.929	18.666	0.344	0.000	0.000
7.204	75.929	18.666	0.516	0.000	0.000
7.270	75.929	18.626	1.032	0.000	0.000
7.335	78.460	18.546	0.685	0.000	0.000
7.400	109.693	18.546	0.520	0.000	0.000
7.465	109.693	18.315	1.039	0.000	0.000
7.530	86.057	18.004	0.695	0.000	0.000
7.596	115.321	18.004	0.000	0.000	0.000
7.661	115.321	17.866	0.000	0.000	0.000
7.726	106.316	17.426	0.696	0.000	0.000
7.791	88.589	17.426	0.522	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
7.856	88.589	17.266	0.000	0.000	0.000
7.922	87.182	16.804	0.000	0.000	0.000
7.987	139.246	16.804	0.000	0.000	0.000
8.052	139.246	16.546	0.000	0.000	0.000
8.117	87.182	16.582	0.693	0.000	0.000
8.182	86.057	16.582	1.040	0.000	0.000
8.248	86.057	16.146	1.044	0.000	0.000
8.313	101.251	15.870	1.388	0.347	0.348
8.378	101.251	15.870	2.082	0.521	0.000
8.443	89.996	15.959	3.124	1.041	0.000
8.508	98.718	15.959	0.681	0.000	0.000
8.574	98.718	15.546	1.021	0.000	0.000
8.639	101.251	15.292	2.042	0.000	0.000
8.704	61.863	15.292	0.693	0.347	0.000
8.769	61.863	15.426	1.039	0.520	0.000
8.834	63.270	14.906	0.000	1.041	0.000
8.900	86.057	14.906	0.000	0.000	0.000
8.965	86.057	14.848	0.000	0.000	0.000
9.030	95.623	14.826	0.000	0.000	0.000
9.095	80.992	14.826	0.348	0.000	0.000
9.160	80.992	14.448	0.523	0.000	0.000
9.226	95.623	14.226	1.045	0.000	0.000
9.291	88.589	14.226	0.000	0.000	0.000
9.356	88.589	13.781	0.000	0.000	0.000
9.421	78.742	13.305	0.000	0.000	0.000
9.486	91.121	13.305	0.346	0.000	0.000
9.552	91.121	13.159	0.520	0.000	0.000
9.617	95.623	12.465	0.000	0.000	0.000
9.682	68.333	12.465	0.351	0.000	0.000
9.747	68.333	12.225	0.527	0.000	0.000
9.812	87.182	11.985	0.000	0.000	0.000
9.878	93.653	11.985	0.346	0.000	0.000
9.943	93.653	11.381	0.000	0.000	0.000
10.008	106.879	10.985	0.000	0.000	0.000
10.073	106.879	10.985	0.692	0.000	0.000
10.138	83.525	10.403	0.516	0.000	0.000
10.204	101.251	10.403	1.033	0.000	0.000
10.269	101.251	10.185	0.695	0.000	0.000
10.334	89.996	10.225	0.000	0.000	0.000
10.399	86.057	10.225	0.000	0.000	0.000
10.464	86.057	9.665	0.692	0.349	0.000
10.530	75.929	9.336	0.522	0.523	0.000
10.595	67.489	9.336	1.044	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
10.660	67.489	9.291	0.344	0.000	0.000
10.725	65.801	8.585	0.000	0.000	0.000
10.790	73.397	8.585	0.000	0.000	0.000
10.856	73.397	8.447	0.699	0.000	0.000
10.921	89.996	8.269	0.526	0.000	0.000
10.986	83.525	8.269	1.052	0.000	0.000
11.051	83.525	7.865	1.410	0.000	0.000
11.116	56.238	7.736	1.588	0.000	0.000
11.182	40.488	7.736	2.119	0.000	0.000
11.247	40.488	7.504	0.000	0.356	0.000
11.312	78.460	7.158	0.000	0.535	0.000
11.377	64.676	7.158	0.000	0.000	0.000
11.442	64.676	7.144	0.000	0.355	0.000
11.508	78.460	7.024	0.000	0.533	0.000
11.573	87.182	7.024	0.000	1.066	0.000
11.638	87.182	6.664	0.000	0.355	0.000
11.703	68.333	6.802	0.000	0.000	0.000
11.768	68.333	6.802	0.000	0.000	0.000
11.834	81.555	6.504	0.692	0.345	0.000
11.899	75.929	6.504	1.038	0.518	0.000
11.964	75.929	6.447	1.036	1.036	0.000
12.029	47.800	6.664	0.347	0.349	0.000
12.094	68.333	6.664	0.520	0.524	0.000
12.160	68.333	6.358	0.000	1.048	0.000
12.225	59.051	6.504	0.696	0.000	0.000
12.290	88.589	6.504	1.045	0.000	0.000
12.355	88.589	6.091	1.051	0.000	0.000
12.420	75.929	6.104	1.052	0.000	0.000
12.486	47.800	6.104	1.048	0.000	0.000
12.551	47.800	6.269	0.000	0.000	0.000
12.616	70.865	5.864	0.693	0.346	0.000
12.681	78.460	5.864	1.040	0.519	0.000
12.746	78.460	5.780	1.042	0.000	0.000
12.812	59.051	6.002	0.700	0.000	0.000
12.877	80.992	6.002	1.050	0.000	0.000
12.942	80.992	5.584	2.101	0.000	0.000
13.007	59.051	5.513	0.345	0.000	0.000
13.072	48.081	5.513	0.517	0.000	0.000
13.138	48.081	5.646	0.000	0.000	0.000
13.203	63.270	5.344	0.352	0.343	0.000
13.268	59.051	5.344	0.000	0.514	0.000
13.333	59.051	5.380	0.000	1.028	0.000
13.398	73.397	5.624	0.705	0.000	0.349

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
13.464	73.397	5.624	0.533	0.000	0.000
13.529	73.397	5.380	1.067	0.000	0.000
13.594	87.182	5.380	1.430	0.357	0.000
13.659	87.182	5.624	2.145	0.535	0.000
13.724	96.186	5.735	1.070	1.070	0.000
13.790	73.115	5.735	1.405	0.704	0.000
13.855	73.115	6.144	1.577	0.526	0.000
13.920	40.488	6.713	2.105	1.052	0.000
13.985	61.863	6.713	0.689	0.000	0.000
14.050	61.863	6.944	1.034	0.000	0.000
14.116	75.929	7.513	2.067	0.000	0.000
14.181	67.489	7.513	0.706	0.000	0.000
14.246	67.489	8.065	1.059	0.000	0.000
14.311	78.460	8.313	1.063	0.000	0.000
14.376	98.437	8.313	1.047	0.000	0.000
14.442	98.437	8.905	0.000	0.000	0.000
14.507	68.333	9.069	0.000	0.000	0.000
14.572	63.270	9.069	0.000	0.000	0.000
14.637	63.270	9.425	0.000	0.000	0.000
14.702	73.115	10.136	0.000	0.000	0.000
14.768	101.251	10.136	0.696	0.000	0.000
14.833	101.251	10.225	0.520	0.000	0.000
14.898	59.051	10.892	1.039	0.000	0.000
14.963	55.675	10.892	0.354	0.351	0.000
15.028	55.675	13.465	0.000	0.527	0.000
15.094	91.121	15.204	0.000	1.054	0.000
15.159	91.121	15.204	0.000	0.000	0.000
15.224	87.182	13.025	0.000	0.000	0.000
15.289	63.270	13.514	0.000	0.000	0.000
15.354	63.270	13.514	0.353	0.000	0.000
15.420	80.992	12.185	0.529	0.000	0.000
15.485	70.302	12.185	1.058	0.000	0.000
15.550	70.302	15.826	0.703	0.000	0.000
15.615	83.525	13.986	0.000	0.000	0.000
15.680	78.460	13.986	0.000	0.000	0.000
15.746	78.460	8.891	0.712	0.358	0.000
15.811	84.369	-8.018	0.530	0.000	0.000
15.876	68.333	-8.018	1.060	0.000	0.000
15.941	68.333	-34.138	0.702	0.000	0.000
16.006	78.742	-29.542	0.529	0.000	0.000
16.072	53.144	-29.542	0.000	0.000	0.000
16.137	53.144	-39.917	1.055	0.000	0.000
16.202	78.742	-38.463	1.583	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
16.267	63.270	-38.463	0.000	0.000	0.000
16.332	63.270	-28.937	1.052	0.000	0.000
16.398	75.929	-3.097	0.523	0.000	0.000
16.463	65.801	-3.097	0.000	0.000	0.000
16.528	65.801	12.003	1.045	0.346	0.000
16.593	75.929	12.945	1.049	0.000	0.000
16.658	73.397	12.945	2.098	0.000	0.000
16.724	73.397	11.914	0.697	0.000	0.000
16.789	96.186	11.185	1.046	0.000	0.000
16.854	96.186	11.185	1.053	0.000	0.000
16.919	70.302	8.047	0.352	0.000	0.000
16.984	73.397	-12.939	0.000	0.000	0.000
17.050	73.397	-12.939	0.000	0.000	0.000
17.115	78.742	-18.669	0.343	0.000	0.000
17.180	88.589	-18.669	0.515	0.000	0.000
17.245	88.589	-2.457	1.029	0.000	0.000
17.310	78.460	9.114	0.000	0.000	0.000
17.376	64.676	9.114	0.000	0.000	0.000
17.441	64.676	4.313	0.000	0.000	0.000
17.506	73.397	-7.258	0.351	0.000	0.000
17.571	86.057	-7.258	0.526	0.000	0.000
17.636	86.057	-23.692	0.000	0.000	0.000
17.702	87.182	-35.462	1.038	0.000	0.000
17.767	73.397	-35.462	1.557	0.000	0.000
17.832	73.397	6.402	1.039	0.000	0.000
17.897	48.081	6.304	1.055	0.000	0.354
17.962	78.742	6.304	1.060	0.000	0.531
18.028	78.742	5.513	1.061	0.000	1.061
18.093	48.081	0.090	0.359	0.358	0.000
18.158	104.065	0.090	0.538	0.536	0.000
18.223	104.065	-10.939	0.000	1.073	0.000
18.288	80.992	1.544	0.000	0.000	0.356
18.354	61.863	1.544	0.000	0.000	0.534
18.419	61.863	7.024	0.000	0.000	0.000
18.484	65.801	5.264	0.691	0.346	0.000
18.549	65.801	5.264	1.037	0.518	0.000
18.614	95.623	6.980	2.074	0.000	0.000
18.680	63.270	4.864	1.046	0.349	0.000
18.745	63.270	4.864	0.521	0.000	0.000
18.810	50.613	4.624	1.042	0.000	0.000
18.875	55.675	4.624	0.352	0.000	0.000
18.940	55.675	5.984	0.528	0.000	0.000
19.006	60.738	8.402	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
19.071	61.863	8.402	0.342	0.000	0.000
19.136	61.863	0.783	0.000	0.000	0.000
19.201	103.783	-21.825	0.000	0.000	0.000
19.266	63.270	-21.825	1.389	0.686	0.000
19.332	63.270	0.103	1.035	1.029	0.000
19.397	67.489	3.157	1.041	0.000	0.000
19.462	80.992	3.157	0.353	0.000	0.000
19.527	80.992	2.904	0.530	0.000	0.000
19.592	83.525	3.157	0.000	0.000	0.000
19.658	84.369	3.157	0.349	0.000	0.349
19.723	84.369	3.024	0.523	0.000	0.523
19.788	70.865	3.024	0.000	0.000	0.000
19.853	64.676	3.024	0.352	0.000	0.000
19.918	64.676	3.335	0.528	0.000	0.000
19.984	75.929	3.246	1.056	0.000	0.000
20.049	73.397	3.246	0.348	0.000	0.000
20.114	73.397	3.264	0.522	0.000	0.000
20.179	81.555	3.602	0.000	0.000	0.000
20.244	81.555	3.602	0.000	0.000	0.000
20.310	65.801	3.384	0.000	0.000	0.000
20.375	65.801	3.468	0.000	0.000	0.000
20.440	65.801	3.468	0.354	0.000	0.000
20.505	81.555	3.704	0.000	0.000	0.000
20.570	106.316	3.704	0.000	0.000	0.000
20.636	106.316	3.704	0.357	0.704	0.000
20.701	81.555	4.179	0.536	0.532	0.000
20.766	55.675	4.179	1.071	0.000	0.000
20.831	55.675	3.784	0.000	0.000	0.000
20.896	73.115	3.913	0.000	0.000	0.000
20.962	80.992	3.913	0.000	0.000	0.000
21.027	80.992	3.904	1.046	0.000	0.000
21.092	75.929	3.779	0.520	0.000	0.000
21.157	65.801	3.779	0.000	0.000	0.000
21.222	65.801	4.024	0.696	0.000	0.000
21.288	92.809	3.735	1.043	0.000	0.000
21.353	50.613	3.735	1.047	0.000	0.000
21.418	50.613	3.624	0.353	0.000	0.000
21.483	55.675	3.868	0.530	0.000	0.000
21.548	75.929	3.868	0.000	0.000	0.000
21.614	75.929	3.784	0.346	0.342	0.000
21.679	80.992	3.913	0.519	0.514	0.000
21.744	70.865	3.913	1.037	0.000	0.000
21.809	70.865	4.357	0.692	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
21.874	75.929	4.504	0.516	0.000	0.000
21.940	75.929	4.504	1.032	0.000	0.000
22.005	75.929	4.846	0.349	0.000	0.000
22.070	87.182	5.557	0.000	0.000	0.000
22.135	87.182	5.557	0.000	0.000	0.000
22.200	80.992	5.824	0.705	0.000	0.000
22.266	75.929	5.824	1.058	0.000	0.000
22.331	75.929	6.447	1.058	0.000	0.000
22.396	87.182	7.464	0.000	0.355	0.000
22.461	73.397	7.464	0.000	0.532	0.000
22.526	73.397	8.313	0.000	1.064	0.000
22.592	83.525	9.945	0.357	0.000	0.000
22.657	87.182	9.945	0.000	0.000	0.000
22.722	87.182	11.470	0.000	0.000	0.000
22.787	98.718	13.065	0.712	0.000	0.000
22.852	75.929	13.065	0.534	0.000	0.000
22.918	75.929	14.492	0.000	0.000	0.000
22.983	80.992	13.025	0.351	0.000	0.000
23.048	78.742	13.025	0.000	0.000	0.000
23.113	78.742	6.713	0.000	0.000	0.000
23.178	106.316	-7.218	1.033	0.343	0.000
23.244	56.238	-7.218	1.029	0.515	0.000
23.309	56.238	-24.403	0.000	0.000	0.000
23.374	98.718	-36.463	1.061	0.354	0.000
23.439	67.489	-36.463	1.061	0.531	0.000
23.504	67.489	-36.743	0.000	0.000	0.000
23.570	93.653	-24.714	0.696	0.000	0.000
23.635	93.653	-24.714	0.521	0.000	0.000
23.700	101.251	-6.418	1.043	0.000	0.000
23.765	95.623	11.114	0.694	0.000	0.000
23.830	95.623	11.114	1.041	0.000	0.000
23.896	70.865	24.747	0.000	0.000	0.000
23.961	93.653	24.747	0.348	0.000	0.000
24.026	93.653	38.452	0.522	0.000	0.000
24.091	98.437	53.965	0.000	0.000	0.000
24.156	93.653	53.965	1.047	0.000	0.000
24.222	93.653	70.675	1.571	0.000	0.000
24.287	108.849	81.925	1.032	0.000	0.000
24.352	112.507	81.925	0.349	0.000	0.000
24.417	112.507	84.797	0.524	0.000	0.000
24.482	131.646	80.503	1.047	0.000	0.000
24.548	98.437	80.503	0.707	0.000	0.000
24.613	98.437	71.124	1.061	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
24.678	118.980	58.633	2.122	0.000	0.000
24.743	93.653	58.633	1.432	1.079	0.000
24.808	93.653	44.110	1.083	1.618	0.000
24.874	84.369	30.050	2.167	2.167	0.000
24.939	96.186	30.050	1.050	0.000	0.000
25.004	96.186	18.906	1.575	0.000	0.000
25.069	109.693	13.159	1.037	0.000	0.000
25.134	116.447	13.159	1.417	0.354	0.000
25.200	116.447	13.545	1.597	0.531	0.000
25.265	70.302	17.337	2.133	0.000	0.000
25.330	70.302	17.337	1.399	0.000	0.000
25.395	63.270	20.347	0.525	0.000	0.000
25.460	106.879	21.649	1.050	0.000	0.000
25.526	106.879	21.649	0.000	0.000	0.000
25.591	75.929	21.707	0.000	0.000	0.000
25.656	112.507	21.707	0.000	0.000	0.000
25.721	112.507	20.627	0.346	0.000	0.000
25.786	113.914	19.626	0.519	0.000	0.000
25.852	83.525	19.626	0.000	0.000	0.000
25.917	83.525	18.537	1.054	0.000	0.000
25.982	84.369	17.706	1.582	0.000	0.000
26.047	111.381	17.706	2.106	0.000	0.000
26.112	111.381	17.337	0.351	0.349	0.349
26.178	101.251	16.746	0.527	0.000	0.524
26.243	87.182	16.746	1.053	0.000	0.000
26.308	87.182	16.670	0.000	0.000	0.000
26.373	91.121	16.626	0.000	0.000	0.000
26.438	96.186	16.626	0.000	0.000	0.000
26.504	96.186	16.386	0.000	0.349	0.000
26.569	73.115	16.670	0.000	0.523	0.000
26.634	96.186	16.670	0.000	0.000	0.000
26.699	96.186	17.026	0.352	0.000	0.000
26.764	81.555	17.293	0.000	0.000	0.000
26.830	96.186	17.293	0.000	0.000	0.000
26.895	96.186	18.346	0.347	0.347	0.000
26.960	91.121	18.493	0.000	0.000	0.000
27.025	91.121	18.493	0.000	0.000	0.000
27.090	95.623	19.426	-9999.990	-9999.990	-9999.990
27.156	83.525	20.893	0.357	0.000	0.000
27.221	83.525	20.893	0.536	0.000	0.000
27.286	93.653	22.187	0.000	0.000	0.000
27.351	89.996	22.187	0.000	0.000	0.000
27.416	89.996	23.827	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
27.482	87.182	25.947	0.000	0.000	0.000
27.547	103.783	25.947	1.407	0.000	0.000
27.612	103.783	27.917	1.041	0.000	0.000
27.677	68.333	30.468	0.000	0.000	0.000
27.742	67.489	30.468	0.352	0.352	0.000
27.808	67.489	32.984	0.528	0.528	0.000
27.873	101.251	35.669	1.055	1.055	0.000
27.938	116.447	35.669	0.000	0.000	0.000
28.003	116.447	38.407	0.000	0.000	0.000
28.068	103.783	40.750	0.000	0.000	0.000
28.134	98.437	40.750	0.351	0.000	0.000
28.199	98.437	43.590	0.000	0.000	0.000
28.264	126.579	45.920	0.000	0.000	0.000
28.329	93.653	45.920	0.342	0.000	0.000
28.394	93.653	48.320	0.514	0.000	0.000
28.460	95.623	50.791	1.027	0.000	0.000
28.525	113.914	50.791	0.000	0.352	0.000
28.590	113.914	52.676	0.000	0.529	0.000
28.655	108.849	54.392	0.000	1.057	0.000
28.720	108.849	54.392	1.048	0.000	0.000
28.786	84.369	56.010	1.048	0.000	0.000
28.851	103.783	56.632	1.045	0.000	0.000
28.916	103.783	56.632	0.000	0.346	0.000
28.981	118.136	56.992	0.000	0.000	0.000
29.046	146.846	56.992	0.000	0.000	0.000
29.112	146.846	57.255	0.702	0.349	0.000
29.177	118.980	56.472	0.524	0.524	0.000
29.242	135.023	56.472	1.048	1.048	0.000
29.307	135.023	55.743	0.720	0.725	0.000
29.372	136.712	55.032	0.543	1.087	0.000
29.438	96.186	55.032	1.087	0.000	0.000
29.503	96.186	53.743	1.405	0.352	0.703
29.568	157.545	52.632	1.580	0.000	0.527
29.633	124.046	52.632	1.053	0.000	0.000
29.698	124.046	51.120	0.349	0.000	0.000
29.764	132.209	49.711	0.523	0.000	0.000
29.829	121.513	49.711	0.000	0.000	0.000
29.894	121.513	48.391	0.350	0.350	0.000
29.959	118.136	46.809	0.000	0.525	0.000
30.024	116.447	46.809	0.000	0.000	0.000
30.090	116.447	45.351	1.751	0.000	0.000
30.155	120.950	43.475	0.521	0.000	0.000
30.220	103.783	43.475	1.042	0.000	0.000

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			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
30.285	103.783	41.590	0.342	0.000	0.000
30.350	118.980	39.919	0.000	0.000	0.000
30.416	118.980	39.919	0.000	0.000	0.000
30.481	120.950	37.789	0.349	0.349	0.000
30.546	108.849	35.962	0.000	0.000	0.000
30.611	108.849	35.962	0.000	0.000	0.000
30.676	123.765	34.549	0.000	0.351	0.000
30.742	78.460	34.549	0.000	0.000	0.000
30.807	78.460	32.895	0.000	0.000	0.000
30.872	80.992	31.917	0.697	0.000	0.000
30.937	106.879	31.917	1.045	0.000	0.000
31.002	106.879	31.148	1.043	0.000	0.000
31.068	111.381	30.361	0.000	0.348	0.000
31.133	68.333	30.361	0.000	0.522	0.000
31.198	68.333	30.188	0.000	0.000	0.000
31.263	109.693	29.739	1.059	0.000	0.000
31.328	96.186	29.739	1.589	0.000	0.000
31.394	96.186	29.508	2.119	0.000	0.000
31.459	96.186	29.739	0.349	0.000	0.000
31.524	132.209	29.739	0.524	0.000	0.000
31.589	132.209	29.708	1.048	0.000	0.000
31.654	88.589	30.095	0.709	0.000	0.000
31.720	120.950	30.095	1.063	0.000	0.000
31.785	120.950	31.188	2.126	0.000	0.000
31.850	93.653	30.495	0.000	0.000	0.000
31.915	106.879	30.495	0.000	0.000	0.000
31.980	106.879	30.548	0.000	0.000	0.000
32.046	108.849	30.939	0.348	0.348	0.000
32.111	108.849	30.939	0.523	0.523	0.000
32.176	81.555	31.388	0.000	0.000	0.000
32.241	83.525	32.540	0.694	0.000	0.000
32.306	83.525	32.540	1.040	0.000	0.000
32.372	84.369	33.629	0.000	0.000	0.000
32.437	113.914	33.629	0.702	0.351	0.000
32.502	113.914	35.207	0.527	0.000	0.000
32.567	73.397	37.829	1.053	0.000	0.000
32.632	106.879	37.829	0.000	0.353	0.353
32.698	106.879	37.785	0.000	0.529	0.529
32.763	86.057	38.870	0.000	1.058	1.058
32.828	78.460	38.870	0.694	0.000	0.000
32.893	78.460	38.007	0.518	0.000	0.000
32.958	56.238	34.589	1.036	0.000	0.000
33.024	80.992	34.589	0.693	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
33.089	80.992	31.828	0.000	0.000	0.000
33.154	104.065	22.494	0.000	0.000	0.000
33.219	78.460	22.494	0.353	0.000	0.000
33.284	78.460	33.789	0.530	0.000	0.000
33.350	91.121	29.472	0.000	0.000	0.000
33.415	104.065	29.472	0.000	0.346	0.000
33.480	104.065	37.589	0.000	0.000	0.000
33.545	78.460	39.118	0.000	0.000	0.000
33.610	103.783	39.118	0.702	0.000	0.000
33.676	103.783	40.430	0.526	0.000	0.000
33.741	75.929	38.141	1.052	0.000	0.000
33.806	75.929	38.141	0.358	0.716	0.000
33.871	88.589	39.670	0.538	0.000	0.000
33.936	98.437	38.407	1.075	0.000	0.000
34.002	98.437	38.407	0.353	0.000	0.000
34.067	75.929	26.187	0.529	0.000	0.000
34.132	75.929	26.187	1.058	0.000	0.000
34.197	75.929	32.362	0.700	0.351	0.000
34.262	104.065	42.630	0.527	0.527	0.000
34.328	78.460	42.630	0.000	0.000	0.000
34.393	78.460	44.497	0.000	0.349	0.000
34.458	129.394	43.350	0.000	0.523	0.000
34.523	93.653	43.350	0.000	1.047	0.000
34.588	93.653	43.990	0.353	0.706	0.000
34.654	112.507	45.164	0.529	0.000	0.000
34.719	106.316	45.164	0.000	0.000	0.000
34.784	106.316	44.990	1.036	0.000	0.000
34.849	121.513	45.608	1.555	0.000	0.000
34.914	106.879	45.608	1.034	0.000	0.000
34.980	106.879	46.431	0.000	0.000	0.000
35.045	91.121	46.897	0.000	0.000	0.000
35.110	129.394	46.897	0.000	0.000	0.000
35.175	129.394	47.951	0.700	0.000	0.000
35.240	108.849	48.631	0.525	0.000	0.000
35.306	101.251	48.631	1.050	0.000	0.000
35.371	101.251	49.609	0.353	0.343	0.000
35.436	112.507	50.871	0.000	0.515	0.000
35.501	112.507	50.871	0.000	1.029	0.000
35.566	106.316	52.009	1.042	0.346	0.000
35.632	111.381	53.298	1.563	0.519	0.000
35.697	111.381	53.298	1.050	0.000	0.000
35.762	104.065	53.965	0.709	0.000	0.000
35.827	108.849	53.965	1.064	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
35.892	108.849	55.152	2.128	0.000	0.000
35.958	113.914	55.877	0.355	0.350	0.000
36.023	112.507	55.877	0.000	0.525	0.000
36.088	112.507	56.712	0.000	0.000	0.000
36.153	103.783	56.988	1.408	0.709	0.000
36.218	120.950	56.988	1.049	1.063	0.000
36.284	120.950	56.944	2.097	0.000	0.000
36.349	101.251	56.855	1.058	0.000	0.355
36.414	106.316	56.855	0.000	0.000	0.532
36.479	106.316	56.766	0.000	0.000	0.000
36.544	84.369	56.152	0.000	0.000	0.000
36.610	113.914	56.152	0.000	0.000	0.000
36.675	113.914	55.788	0.000	0.000	0.000
36.740	95.623	56.188	0.347	0.000	0.000
36.805	118.980	56.188	0.000	0.000	0.000
36.870	118.980	55.432	0.000	0.000	0.000
36.936	109.693	55.077	1.042	0.701	0.000
37.001	91.121	55.077	1.037	0.000	0.000
37.066	91.121	54.854	2.074	0.000	0.000
37.131	106.879	55.032	0.348	0.000	0.000
37.196	106.879	55.032	0.000	0.000	0.000
37.262	80.992	55.077	0.000	0.000	0.000
37.327	96.186	55.121	0.350	0.000	0.000
37.392	96.186	55.121	0.524	0.000	0.000
37.457	81.555	55.254	0.000	0.000	0.000
37.522	101.251	55.254	0.695	0.695	0.344
37.588	101.251	54.899	0.526	1.042	0.000
37.653	93.653	54.765	1.052	1.052	0.000
37.718	78.742	54.765	1.038	0.000	0.000
37.783	78.742	54.321	1.557	0.000	0.000
37.848	108.849	54.054	3.115	0.000	0.000
37.914	108.849	54.054	0.704	0.000	0.000
37.979	108.849	53.432	1.056	0.000	0.000
38.044	78.742	53.032	2.112	0.000	0.000
38.109	106.316	53.032	0.696	0.345	0.000
38.174	106.316	53.032	0.526	0.000	0.000
38.240	118.980	52.854	1.052	0.000	0.000
38.305	112.507	52.854	0.354	0.000	0.000
38.370	112.507	52.454	0.000	0.000	0.000
38.435	108.849	52.276	0.000	0.000	0.000
38.500	120.950	52.276	2.147	0.000	0.000
38.566	120.950	52.187	1.597	0.000	0.000
38.631	111.381	51.472	1.054	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
38.696	84.369	51.472	1.051	0.000	0.000
38.761	84.369	51.209	1.576	0.000	0.000
38.826	126.579	50.898	1.050	0.000	0.000
38.892	126.579	50.898	1.041	0.347	0.347
38.957	131.646	50.054	1.561	0.000	0.000
39.022	106.879	49.876	2.084	0.000	0.000
39.087	106.879	49.876	0.348	0.348	0.000
39.152	96.186	49.698	0.000	0.000	0.000
39.218	95.623	49.698	0.000	0.000	0.000
39.283	95.623	49.871	0.699	0.000	0.000
39.348	88.589	49.698	0.519	0.000	0.000
39.413	75.929	49.698	0.000	0.000	0.000
39.478	75.929	49.876	0.000	0.000	0.000
39.544	98.437	50.320	0.000	0.000	0.000
39.609	96.186	50.320	0.000	0.000	0.000
39.674	96.186	50.498	0.698	0.000	0.000
39.739	96.186	50.720	1.047	0.000	0.000
39.804	109.693	50.720	0.000	0.000	0.000
39.870	109.693	50.809	0.707	0.000	0.000
39.935	83.525	51.254	0.000	0.000	0.000
40.000	92.809	51.254	0.000	0.000	0.000
40.065	92.809	51.191	0.689	0.346	0.000
40.130	75.929	51.209	0.514	0.000	0.000
40.196	96.186	51.209	0.000	0.000	0.000
40.261	96.186	51.787	0.000	0.348	0.000
40.326	137.838	51.832	0.000	0.000	0.000
40.391	111.381	51.832	0.000	0.000	0.000
40.456	111.381	52.098	0.698	0.000	0.000
40.522	113.914	52.543	1.048	0.000	0.000
40.587	113.914	52.543	1.050	0.000	0.000
40.652	75.929	53.343	1.025	0.681	0.340
40.717	75.929	53.752	0.511	1.022	0.510
40.782	75.929	53.752	0.000	0.000	1.020
40.848	86.057	54.010	0.000	0.338	0.000
40.913	92.809	54.010	0.000	0.000	0.000
40.978	92.809	54.365	0.000	0.000	0.000
41.043	101.251	54.010	0.339	0.000	0.339
41.108	137.838	54.010	0.509	0.000	0.509
41.174	137.838	53.787	1.017	0.000	1.017
41.239	111.381	53.192	0.667	0.000	0.000
41.304	131.646	53.192	1.001	0.000	0.000
41.369	131.646	52.943	1.006	0.000	0.000
41.434	103.783	52.276	1.329	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
41.500	156.982	52.276	1.494	0.000	0.000
41.565	156.982	51.876	0.998	0.000	0.000
41.630	103.783	51.565	0.670	0.000	0.000
41.695	113.914	51.565	0.503	0.000	0.000
41.760	113.914	50.943	0.000	0.000	0.000
41.826	92.809	50.431	0.000	0.000	0.000
41.891	91.121	50.431	0.000	0.000	0.000
41.956	91.121	50.276	0.000	0.000	0.000
42.021	68.333	49.698	0.668	0.000	0.000
42.086	103.783	49.698	1.002	0.000	0.000
42.152	103.783	49.298	1.008	0.000	0.000
42.217	80.992	49.031	0.335	0.333	0.000
42.282	80.992	49.031	0.000	0.500	0.000
42.347	98.718	49.031	0.000	1.000	0.000
42.412	73.397	48.431	0.000	0.339	0.000
42.478	73.397	48.431	0.000	0.508	0.000
42.543	80.992	48.142	0.000	0.000	0.000
42.608	91.121	48.142	1.342	0.000	0.000
42.673	91.121	48.053	1.506	0.000	0.000
42.738	80.992	47.391	2.006	0.000	0.000
42.804	84.369	47.391	1.039	0.000	0.000
42.869	84.369	46.942	1.558	0.000	0.000
42.934	50.613	46.675	2.090	0.000	0.000
42.999	75.929	46.675	1.033	0.000	0.000
43.064	75.929	46.031	0.512	0.000	0.000
43.130	78.460	45.831	0.000	0.000	0.000
43.195	47.800	45.831	0.000	0.000	0.000
43.260	47.800	45.471	0.000	0.000	0.000
43.325	65.801	44.897	0.000	0.000	0.000
43.390	65.801	44.897	1.005	0.000	0.000
43.456	65.801	44.586	0.502	0.000	0.000
43.521	60.738	44.310	0.000	0.000	0.000
43.586	59.051	44.310	0.000	0.000	0.000
43.651	59.051	43.564	0.000	0.000	0.000
43.716	73.397	41.830	0.000	0.000	0.000
43.782	70.865	41.830	1.018	0.000	0.000
43.847	70.865	35.740	0.509	0.000	0.000
43.912	93.653	43.119	1.018	0.000	0.000
43.977	93.653	43.119	0.340	0.000	0.340
44.042	68.333	43.070	0.000	0.000	0.000
44.108	80.992	42.586	0.000	0.000	0.000
44.173	80.992	42.586	0.340	0.000	0.000
44.238	50.613	42.363	0.511	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
44.303	70.865	42.363	0.000	0.000	0.000
44.368	70.865	42.230	0.689	0.344	0.000
44.434	73.397	41.741	1.033	0.517	0.000
44.499	64.676	41.741	1.032	0.000	0.000
44.564	64.676	41.030	0.340	0.337	0.000
44.629	45.550	40.852	0.510	0.505	0.000
44.694	55.675	40.852	1.021	0.000	0.000
44.760	55.675	40.270	0.000	0.000	0.000
44.825	50.613	38.718	0.000	0.000	0.000
44.890	37.957	38.718	0.000	0.000	0.000
44.955	37.957	34.762	0.691	0.000	0.000
45.020	48.081	14.786	0.000	0.000	0.000
45.086	40.488	14.786	0.000	0.000	0.000
45.151	40.488	-31.337	0.348	0.000	0.000
45.216	30.365	-16.046	0.523	0.000	0.000
45.281	56.238	-16.046	1.045	0.000	0.000
45.346	56.238	-57.146	0.691	0.342	0.000
45.412	43.019	-48.807	0.519	0.513	0.000
45.477	65.801	-48.807	1.037	0.000	0.000
45.542	65.801	-48.273	0.695	0.000	0.000
45.607	44.988	-27.941	0.517	0.000	0.000
45.672	44.988	-27.941	0.000	0.000	0.000
45.738	48.081	34.007	0.000	0.000	0.000
45.803	53.144	23.467	0.000	0.000	0.000
45.868	53.144	23.467	0.000	0.000	0.000
45.933	56.238	-0.710	0.686	0.000	0.000
45.998	48.081	-0.710	1.028	0.000	0.000
46.064	48.081	-17.424	2.057	0.000	0.000
46.129	68.333	28.588	0.000	0.000	0.350
46.194	53.144	28.588	0.000	0.000	0.524
46.259	53.144	36.629	0.000	0.000	1.049
46.324	75.929	37.118	0.694	0.000	0.000
46.390	39.363	37.118	1.041	0.000	0.000
46.455	39.363	35.029	1.038	0.000	0.000
46.520	53.144	24.583	0.345	0.000	0.000
46.585	80.992	24.583	0.517	0.000	0.000
46.650	80.992	-16.002	1.035	0.000	0.000
46.716	43.019	1.512	0.341	0.000	0.346
46.781	73.115	1.512	0.000	0.000	0.519
46.846	73.115	36.585	0.000	0.000	0.000
46.911	73.397	41.150	0.351	0.351	0.000
46.976	88.589	41.150	0.000	0.000	0.000
47.042	88.589	41.519	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
47.107	73.397	42.097	0.357	0.707	0.000
47.172	81.555	42.097	0.000	1.060	0.000
47.237	81.555	42.190	0.000	1.060	0.000
47.302	98.718	42.719	0.717	0.716	0.000
47.368	98.718	42.719	1.076	1.073	0.000
47.433	75.929	43.075	1.073	2.147	0.000
47.498	98.437	43.030	1.063	0.000	0.352
47.563	98.437	43.030	0.538	0.000	0.000
47.628	108.849	43.208	1.076	0.000	0.000
47.694	86.057	43.208	0.000	0.353	0.000
47.759	86.057	43.608	0.000	0.530	0.000
47.824	87.182	43.350	0.000	0.000	0.000
47.889	108.849	43.350	0.699	0.000	0.000
47.954	108.849	43.297	0.523	0.000	0.000
48.020	83.525	43.475	0.000	0.000	0.000
48.085	106.879	43.475	1.413	0.352	0.000
48.150	106.879	43.208	1.590	0.528	0.000
48.215	103.783	43.030	1.055	1.055	0.000
48.280	96.186	43.030	0.709	0.000	0.000
48.346	96.186	42.986	0.538	0.000	0.000
48.411	103.783	42.350	1.076	0.000	0.000
48.476	89.996	42.350	0.000	0.000	0.000
48.541	89.996	41.786	0.000	0.000	0.000
48.606	88.589	40.630	0.000	0.000	0.000
48.672	96.186	40.630	0.000	0.354	0.000
48.737	96.186	36.362	0.000	0.531	0.000
48.802	73.397	41.474	0.000	1.062	0.000
48.867	95.623	41.474	0.713	0.000	0.000
48.932	95.623	41.208	0.536	0.000	0.000
48.998	88.589	41.110	0.000	0.000	0.000
49.063	75.929	41.110	1.074	0.355	0.000
49.128	75.929	40.719	1.611	0.000	0.000
49.193	63.270	40.585	2.142	0.000	0.000
49.258	63.270	40.585	0.712	0.358	0.000
49.324	50.613	40.590	0.537	0.537	0.000
49.389	61.863	40.590	1.075	1.075	0.000
49.454	61.863	40.363	1.089	0.728	0.365
49.519	55.675	40.319	1.089	1.092	0.548
49.584	50.613	40.319	2.179	1.089	0.000
49.650	50.613	40.470	0.000	0.000	0.000
49.715	73.115	40.230	0.000	0.000	0.000
49.780	48.081	40.230	0.000	0.000	0.000
49.845	48.081	40.185	0.354	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
49.910	67.489	40.496	0.531	0.000	0.000
49.976	53.144	40.496	0.000	0.000	0.000
50.041	53.144	40.310	0.706	0.000	0.000
50.106	58.207	40.541	1.059	0.000	0.000
50.171	78.742	40.541	1.068	0.000	0.000
50.236	78.742	40.852	0.361	0.361	0.000
50.302	55.675	40.750	0.542	0.000	0.000
50.367	75.929	40.750	0.000	0.000	0.000
50.432	75.929	40.897	0.356	0.356	0.000
50.497	88.589	41.430	0.534	0.000	0.000
50.562	67.489	41.430	0.000	0.000	0.000
50.628	67.489	41.470	0.000	0.355	0.000
50.693	58.207	41.874	0.000	0.533	0.000
50.758	60.738	41.874	0.000	1.066	0.000
50.823	60.738	42.452	0.000	0.000	0.000
50.888	86.057	42.541	0.000	0.000	0.000
50.954	86.057	42.541	0.000	0.000	0.000
51.019	78.742	42.950	0.349	0.000	0.000
51.084	83.525	42.950	0.524	0.000	0.000
51.149	83.525	43.386	1.048	0.000	0.000
51.214	63.270	43.430	0.000	0.000	0.354
51.280	86.057	43.430	0.000	0.000	0.532
51.345	86.057	43.697	0.000	0.000	0.000
51.410	70.302	44.008	1.071	0.359	0.000
51.475	73.397	44.008	1.076	0.538	0.000
51.540	73.397	44.390	0.000	0.000	0.000
51.606	63.270	44.408	0.000	0.000	0.000
51.671	75.929	44.408	0.000	0.000	0.000
51.736	75.929	44.453	0.000	0.000	0.000
51.801	87.182	44.750	1.803	0.360	0.000
51.866	91.121	44.750	1.608	0.539	0.000
51.932	91.121	44.675	2.138	0.000	0.000
51.997	86.057	44.897	0.363	0.000	0.000
52.062	67.489	44.897	0.544	0.000	0.000
52.127	67.489	45.151	0.000	0.000	0.000
52.192	103.783	45.075	0.712	0.000	0.000
52.258	95.623	45.075	0.536	0.000	0.000
52.323	95.623	45.119	0.000	0.000	0.000
52.388	80.992	45.511	0.354	0.000	0.000
52.453	80.992	45.511	0.531	0.000	0.000
52.518	80.992	45.386	1.061	0.000	0.000
52.584	63.270	45.653	0.352	0.000	0.000
52.649	63.270	45.653	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
52.714	61.863	46.151	0.000	0.000	0.000
52.779	55.675	46.151	0.721	0.000	0.000
52.844	55.675	46.409	1.081	0.000	0.000
52.910	58.207	46.853	1.081	0.000	0.000
52.975	91.121	46.853	0.718	0.000	0.000
53.040	91.121	47.742	1.077	0.000	0.000
53.105	59.051	48.111	2.155	0.000	0.000
53.170	70.865	48.111	1.064	0.000	0.000
53.236	70.865	48.942	1.061	0.000	0.000
53.301	58.207	50.054	1.064	0.000	0.000
53.366	55.675	50.054	0.355	0.357	0.000
53.431	55.675	50.587	0.000	0.535	0.000
53.496	67.489	51.343	0.000	0.000	0.000
53.562	73.397	51.343	0.000	0.000	0.000
53.627	73.397	52.432	0.000	0.000	0.000
53.692	83.525	52.987	0.000	0.000	0.000
53.757	60.738	52.987	0.000	0.000	0.000
53.822	60.738	53.521	0.000	0.000	0.000
53.888	37.957	54.152	0.000	0.000	0.000
53.953	53.425	54.152	0.000	0.000	0.000
54.018	53.425	54.321	0.000	0.000	0.000
54.083	78.460	54.365	0.000	0.000	0.000
54.148	70.302	54.365	1.089	0.360	0.000
54.214	70.302	54.312	1.087	0.540	0.000
54.279	63.270	54.010	1.080	1.080	0.000
54.344	63.270	54.010	1.778	0.356	0.000
54.409	83.525	53.832	2.126	0.534	0.000
54.474	95.623	53.832	2.115	0.000	0.000
54.540	95.623	53.610	0.357	0.000	0.000
54.605	88.589	53.592	0.535	0.000	0.000
54.670	83.525	53.592	0.000	0.000	0.000
54.735	83.525	53.343	1.076	0.000	0.000
54.800	87.182	53.165	1.077	0.000	0.000
54.866	96.186	53.165	2.154	0.000	0.000
54.931	96.186	53.232	0.000	0.000	0.000
54.996	50.613	53.076	0.000	0.000	0.000
55.061	108.849	53.076	0.000	0.000	0.000
55.126	108.849	53.032	1.762	0.000	0.000
55.192	93.653	53.112	1.046	0.000	0.000
55.257	84.369	53.112	1.063	0.000	0.000
55.322	84.369	52.987	0.715	0.000	0.000
55.387	86.057	52.276	0.000	0.000	0.000
55.452	63.270	52.276	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
55.518	63.270	52.587	0.360	0.000	0.000
55.583	86.057	51.920	0.000	0.000	0.000
55.648	87.182	51.920	0.000	0.000	0.000
55.713	87.182	51.632	0.000	0.000	0.000
55.778	101.251	51.476	0.000	0.000	0.000
55.844	93.653	51.476	0.000	0.000	0.000
55.909	93.653	50.587	1.076	0.355	0.000
55.974	73.397	50.187	1.081	0.000	0.000
56.039	73.397	50.187	0.000	0.000	0.000
56.104	75.929	50.191	0.000	0.000	0.000
56.170	70.865	50.191	0.000	0.000	0.000
56.235	70.865	49.698	0.000	0.000	0.000
56.300	91.121	49.476	1.447	0.000	0.000
56.365	56.238	49.476	1.620	0.000	0.000
56.430	56.238	48.951	1.070	0.000	0.000
56.496	70.865	48.498	1.783	0.000	0.000
56.561	73.397	48.498	1.604	0.000	0.000
56.626	73.397	48.364	1.064	0.000	0.000
56.691	81.555	48.311	0.716	0.000	0.000
56.756	73.397	48.311	1.075	0.000	0.000
56.822	73.397	47.964	0.000	0.000	0.000
56.887	87.182	47.164	0.000	0.355	0.000
56.952	80.992	47.164	0.000	0.532	0.000
57.017	80.992	46.511	0.000	1.065	0.000
57.082	103.783	45.831	0.707	0.000	0.000
57.148	88.589	45.831	0.530	0.000	0.000
57.213	88.589	45.697	1.059	0.000	0.000
57.278	75.929	45.119	1.069	0.000	0.000
57.343	98.437	45.119	1.603	0.000	0.000
57.408	98.437	44.790	3.206	0.000	0.000
57.474	78.460	44.008	0.357	0.361	0.357
57.539	88.589	44.008	0.000	0.542	0.000
57.604	88.589	43.875	0.000	0.000	0.000
57.669	86.057	44.497	0.351	0.000	0.000
57.734	86.057	44.497	0.527	0.000	0.000
57.800	81.555	43.870	0.000	0.000	0.000
57.865	70.865	43.870	0.715	0.361	0.000
57.930	70.865	43.919	0.000	0.541	0.000
57.995	108.849	43.608	0.000	0.000	0.000
58.060	65.801	43.608	0.000	0.363	0.000
58.126	65.801	43.075	0.000	0.544	0.000
58.191	64.676	40.030	0.000	0.000	0.000
58.256	88.589	40.030	1.460	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
58.321	88.589	43.519	1.645	0.000	0.000
58.386	75.929	42.763	1.092	0.000	0.000
58.452	64.676	42.763	0.000	0.000	0.000
58.517	64.676	42.710	0.000	0.000	0.000
58.582	78.460	40.185	0.000	0.000	0.000
58.647	80.992	40.185	0.364	0.000	0.000
58.712	80.992	42.497	0.000	0.000	0.000
58.778	95.623	41.710	0.000	0.000	0.000
58.843	53.144	41.710	0.718	0.360	0.000
58.908	53.144	38.007	1.077	0.540	0.000
58.973	73.115	42.350	1.075	0.000	0.000
59.038	50.613	42.350	0.355	0.000	0.000
59.104	50.613	42.186	0.532	0.000	0.000
59.169	131.646	39.252	0.000	0.000	0.000
59.234	83.525	39.252	1.071	0.356	0.000
59.299	83.525	37.709	1.606	0.000	0.000
59.364	98.718	39.474	2.150	0.000	0.000
59.430	98.718	39.474	0.721	0.000	0.000
59.495	106.879	39.919	1.082	0.000	0.000
59.560	68.333	39.919	0.000	0.000	0.000
59.625	68.333	38.407	1.065	0.000	0.000
59.690	80.992	29.308	1.063	0.000	0.000
59.756	75.929	29.308	1.063	0.000	0.000
59.821	75.929	25.872	0.000	0.000	0.000
59.886	73.115	38.629	0.000	0.000	0.000
59.951	65.801	38.629	0.000	0.000	0.000
60.016	65.801	38.318	1.428	0.000	0.000
60.082	88.589	37.874	1.610	0.000	0.000
60.147	98.718	37.874	0.000	0.000	0.000
60.212	98.718	37.509	0.000	0.000	0.000
60.277	81.555	36.807	0.000	0.000	0.000
60.342	83.525	36.807	0.000	0.000	0.000
60.408	83.525	36.407	0.000	0.000	0.725
60.473	83.525	36.274	0.000	0.000	0.548
60.538	88.589	36.274	0.000	0.000	0.000
60.603	88.589	35.469	0.367	0.000	0.000
60.668	98.437	34.984	0.550	0.000	0.000
60.734	78.460	34.984	1.100	0.000	0.000
60.799	78.460	34.509	1.448	0.365	0.000
60.864	78.742	33.962	1.625	0.000	0.000
60.929	58.207	33.962	2.162	0.000	0.000
60.994	58.207	33.562	0.352	0.351	0.000
61.060	91.121	33.349	0.528	0.526	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
61.125	91.121	33.349	0.000	1.053	0.000
61.190	75.929	32.717	0.716	0.000	0.000
61.255	60.738	32.495	0.538	0.000	0.000
61.320	60.738	32.495	0.000	0.000	0.000
61.386	83.525	32.629	0.356	0.356	0.000
61.451	81.555	32.629	0.000	0.000	0.000
61.516	81.555	32.268	0.000	0.000	0.000
61.581	68.333	32.051	0.357	0.000	0.000
61.646	75.929	32.051	0.000	0.000	0.000
61.712	75.929	31.917	0.000	0.000	0.000
61.777	91.121	31.388	0.710	0.355	0.000
61.842	65.801	31.388	1.065	0.533	0.000
61.907	65.801	31.206	2.130	1.065	0.000
61.972	73.115	31.428	0.000	0.000	0.000
62.038	65.801	31.428	0.000	0.000	0.000
62.103	65.801	31.117	0.000	0.000	0.000
62.168	73.397	31.206	1.070	0.000	0.000
62.233	78.460	31.206	1.604	0.000	0.000
62.298	78.460	31.388	0.000	0.000	0.000
62.364	101.251	31.162	0.000	0.000	0.000
62.429	86.057	31.162	0.000	0.000	0.000
62.494	86.057	31.028	0.000	0.000	0.000
62.559	70.865	31.117	0.366	0.000	0.000
62.624	80.992	31.117	0.549	0.000	0.000
62.690	80.992	31.108	1.099	0.000	0.000
62.755	44.988	30.939	0.735	0.000	0.000
62.820	44.988	30.939	0.000	0.000	0.000
62.885	68.333	30.984	0.000	0.000	0.000
62.950	58.207	31.268	0.000	0.000	0.000
63.016	58.207	31.268	0.000	0.000	0.000
63.081	78.742	31.117	0.000	0.000	0.000
63.146	88.589	31.117	0.352	0.352	0.000
63.211	88.589	31.073	0.528	0.528	0.000
63.276	67.489	31.268	0.000	0.000	0.000
63.342	68.333	31.268	0.363	0.000	0.000
63.407	68.333	31.117	0.544	0.000	0.000
63.472	63.270	31.073	0.000	0.000	0.000
63.537	101.251	31.073	-9999.990	-9999.990	-9999.990
63.602	101.251	31.108	0.353	0.000	0.000
63.668	65.801	31.073	0.529	0.000	0.000
63.733	75.929	31.073	1.059	0.000	0.000
63.798	75.929	31.117	0.714	0.357	0.000
63.863	73.397	31.206	0.536	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
63.928	70.302	31.206	1.072	0.000	0.000
63.994	70.302	30.788	0.000	0.000	0.000
64.059	78.460	30.806	0.000	0.000	0.000
64.124	68.333	30.806	0.000	0.000	0.000
64.189	68.333	30.584	0.360	0.000	0.354
64.254	48.081	27.694	0.000	0.000	0.531
64.320	68.333	27.694	0.000	0.000	1.062
64.385	68.333	17.070	0.354	0.000	0.000
64.450	70.302	28.108	0.000	0.000	0.000
64.515	70.302	28.108	0.000	0.000	0.000
64.580	65.801	30.984	0.365	0.000	0.000
64.646	80.992	31.606	0.547	0.000	0.000
64.711	80.992	31.606	1.094	0.000	0.000
64.776	61.863	31.651	0.732	0.000	0.000
64.841	75.929	31.651	1.098	0.000	0.000
64.906	75.929	31.788	1.103	0.000	0.000
64.972	40.488	31.695	0.000	0.362	0.361
65.037	60.738	31.695	0.000	0.000	0.542
65.102	60.738	31.695	0.000	0.000	1.083
65.167	73.115	31.868	0.361	0.000	0.000
65.232	60.738	31.868	0.542	0.000	0.000
65.298	60.738	31.695	1.084	0.000	0.000
65.363	81.555	31.784	0.721	0.000	0.000
65.428	48.081	31.784	0.538	0.000	0.000
65.493	48.081	32.028	0.000	0.000	0.000
65.558	75.929	31.828	0.000	0.000	0.000
65.624	33.739	31.828	0.000	0.000	0.000
65.689	33.739	31.828	0.000	0.000	0.000
65.754	73.397	31.948	0.352	0.356	0.000
65.819	68.333	31.948	0.527	0.000	0.000
65.884	68.333	31.695	0.000	0.000	0.000
65.950	63.270	31.517	0.000	0.000	0.000
66.015	67.489	31.517	0.000	0.000	0.000
66.080	67.489	31.748	0.000	0.000	0.000
66.145	45.550	31.606	0.000	0.000	0.000
66.210	45.550	31.606	0.000	0.000	0.000
66.276	63.270	31.428	0.000	0.000	0.000
66.341	68.333	31.517	1.433	0.354	0.000
66.406	68.333	31.517	1.619	0.000	0.000
66.471	64.676	31.117	2.163	0.000	0.000
66.536	98.718	31.117	0.713	0.000	0.000
66.602	98.718	30.908	1.069	0.000	0.000
66.667	80.992	30.762	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
66.732	68.333	30.762	0.000	0.000	0.000
66.797	68.333	30.317	0.000	0.000	0.000
66.862	59.051	30.139	0.000	0.000	0.000
66.928	75.929	30.139	0.717	0.000	0.000
66.993	75.929	30.108	0.538	0.000	0.000
67.058	50.613	29.561	0.000	0.000	0.000
67.123	73.115	29.561	0.366	0.722	0.000
67.188	73.115	29.428	0.549	0.000	0.000
67.254	50.613	29.472	0.000	0.000	0.000
67.319	58.207	29.472	0.000	0.000	0.000
67.384	58.207	29.548	0.000	0.000	0.000
67.449	87.182	29.161	0.000	0.000	0.000
67.514	43.019	29.161	1.411	0.000	0.000
67.580	43.019	28.939	2.117	0.000	0.000
67.645	56.238	28.908	2.100	0.000	0.000
67.710	78.460	28.908	0.359	0.000	0.000
67.775	78.460	28.717	0.539	0.000	0.000
67.840	37.957	28.583	1.078	0.000	0.000
67.906	37.957	28.583	0.000	0.359	0.000
67.971	63.270	28.588	0.000	0.000	0.000
68.036	70.302	28.317	0.000	0.000	0.000
68.101	70.302	28.317	0.355	0.000	0.000
68.166	88.589	28.228	0.533	0.000	0.000
68.232	58.207	28.228	0.000	0.000	0.000
68.297	58.207	28.308	0.356	0.000	0.000
68.362	78.460	28.094	0.000	0.000	0.000
68.427	67.489	28.094	0.000	0.000	0.000
68.492	67.489	28.050	0.000	0.000	0.358
68.558	37.957	28.228	0.000	0.000	0.000
68.623	83.525	28.228	0.000	0.000	0.000
68.688	83.525	27.872	1.428	0.000	0.000
68.753	55.675	27.788	1.073	0.000	0.000
68.818	109.693	27.788	0.000	0.000	0.000
68.884	109.693	28.050	0.000	0.355	0.000
68.949	83.525	27.739	0.000	0.000	0.000
69.014	91.121	27.739	0.000	0.000	0.000
69.079	91.121	27.650	0.363	0.000	0.000
69.144	73.397	27.988	0.000	0.000	0.000
69.210	84.369	27.988	0.000	0.000	0.000
69.275	84.369	27.961	0.000	0.369	0.000
69.340	65.801	28.094	0.000	0.553	0.000
69.405	65.801	28.094	0.000	1.107	0.000
69.470	65.801	28.388	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
69.536	47.800	28.450	0.000	0.000	0.000
69.601	47.800	28.450	0.000	0.000	0.000
69.666	50.613	28.672	0.000	0.000	0.000
69.731	78.742	29.028	0.000	0.000	0.000
69.796	78.742	29.028	0.000	0.000	0.000
69.862	65.801	29.072	1.077	0.000	0.000
69.927	50.613	29.072	1.079	0.000	0.000
69.992	50.613	29.117	0.000	0.000	0.000
70.057	56.238	29.548	0.357	0.351	0.359
70.122	48.081	29.548	0.536	0.527	0.000
70.188	48.081	29.472	0.000	1.053	0.000
70.253	75.929	29.606	0.710	0.000	0.000
70.318	63.270	29.606	1.065	0.000	0.000
70.383	63.270	29.650	2.130	0.000	0.000
70.448	73.115	29.988	0.000	0.356	0.718
70.514	86.057	29.988	0.000	0.533	0.540
70.579	86.057	29.917	0.000	0.000	1.079
70.644	73.397	30.139	0.000	0.355	0.000
70.709	70.865	30.139	0.000	0.532	0.000
70.774	70.865	30.588	0.000	1.065	0.000
70.840	53.425	30.628	0.356	0.356	0.000
70.905	78.460	30.628	0.000	0.000	0.000
70.970	78.460	30.939	0.000	0.000	0.000
71.035	43.019	31.473	0.000	0.000	0.000
71.100	70.865	31.473	0.000	0.000	0.000
71.166	70.865	31.428	0.000	0.000	0.000
71.231	73.115	31.428	0.723	0.000	0.000
71.296	73.115	31.428	0.539	0.000	0.000
71.361	68.333	31.917	0.000	0.000	0.000
71.426	75.929	31.739	0.360	0.000	0.000
71.492	75.929	31.739	0.541	0.000	0.000
71.557	73.397	31.917	0.000	0.000	0.000
71.622	61.863	31.917	1.083	0.364	0.000
71.687	61.863	32.188	1.081	0.546	0.000
71.752	63.270	32.095	2.163	0.000	0.000
71.818	70.302	32.095	0.366	0.000	0.000
71.883	70.302	32.228	0.548	0.000	0.000
71.948	80.992	32.629	1.097	0.000	0.000
72.013	60.738	32.629	0.701	0.361	0.000
72.078	60.738	32.895	1.052	0.000	0.000
72.144	53.425	33.029	1.047	0.000	0.000
72.209	86.057	33.029	0.709	0.358	0.000
72.274	86.057	33.384	1.063	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
72.339	73.397	33.162	2.127	0.000	0.000
72.404	47.800	33.162	0.359	0.000	0.000
72.470	47.800	33.589	0.538	0.000	0.000
72.535	70.865	34.273	0.000	0.000	0.000
72.600	68.333	34.273	0.719	0.000	0.000
72.665	68.333	34.184	1.079	0.000	0.000
72.730	83.525	34.069	1.076	0.000	0.000
72.796	61.863	34.069	0.358	0.000	0.358
72.861	61.863	34.584	0.536	0.000	0.536
72.926	68.333	34.495	1.073	0.000	1.073
72.991	68.333	34.495	0.714	0.000	0.000
73.056	53.144	34.362	0.531	0.000	0.000
73.122	80.992	34.584	1.062	0.000	0.000
73.187	80.992	34.584	0.000	0.719	0.000
73.252	61.863	34.984	0.000	0.000	0.000
73.317	78.460	34.984	0.000	0.000	0.000
73.382	78.460	34.749	0.356	0.000	0.000
73.448	53.144	34.629	0.533	0.000	0.000
73.513	65.801	34.629	0.000	0.000	0.000
73.578	65.801	34.851	0.725	0.000	0.000
73.643	75.929	34.673	1.087	0.000	0.000
73.708	88.589	34.673	1.099	0.000	0.000
73.774	88.589	34.309	0.368	0.000	0.000
73.839	73.397	34.407	0.000	0.000	0.000
73.904	73.115	34.407	0.000	0.000	0.000
73.969	73.115	34.029	0.364	0.364	0.000
74.034	68.333	33.695	0.546	0.546	0.000
74.100	48.081	33.695	0.000	0.000	0.000
74.165	48.081	33.562	0.352	0.000	0.000
74.230	92.809	33.562	0.000	0.000	0.000
74.295	73.397	33.562	0.000	0.000	0.000
74.360	73.397	32.468	0.000	0.000	0.000
74.426	53.425	31.339	0.000	0.000	0.000
74.491	60.738	31.339	0.000	0.000	0.000
74.556	60.738	26.405	0.705	0.000	0.000
74.621	78.460	24.627	1.058	0.000	0.000
74.686	78.460	24.627	2.116	0.000	0.000
74.752	78.460	24.272	0.664	1.369	0.000
74.817	81.555	23.907	0.996	0.996	0.000
74.882	81.555	23.907	0.922	0.922	0.000
74.947	73.397	11.781	-9999.990	-9999.990	-9999.990
75.012	60.738	11.781	0.000	0.000	0.000
75.078	60.738	-39.739	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
75.143	53.144	24.805	0.000	0.000	0.000
75.208	75.929	24.805	0.360	0.000	0.000
75.273	75.929	30.673	0.539	0.000	0.000
75.338	70.865	30.548	1.079	0.000	0.000
75.404	88.589	30.548	0.000	0.000	0.000
75.469	88.589	30.406	0.000	0.000	0.000
75.534	53.144	30.273	0.000	0.000	0.000
75.599	56.238	30.273	0.357	0.000	0.000
75.664	56.238	29.828	0.536	0.000	0.000
75.730	70.865	29.628	1.071	0.000	0.000
75.795	78.460	29.628	0.000	0.364	0.000
75.860	78.460	29.428	0.000	0.000	0.000
75.925	45.550	29.295	0.000	0.000	0.000
75.990	42.176	29.295	0.000	0.000	0.361
76.056	42.176	29.428	0.000	0.000	0.542
76.121	53.144	28.895	0.000	0.000	0.000
76.186	45.550	28.895	0.000	0.000	0.000
76.251	45.550	26.939	0.000	0.000	0.000
76.316	61.863	22.716	0.000	0.000	0.000
76.382	61.863	22.716	0.356	0.000	0.000
76.447	48.081	21.747	0.534	0.000	0.000
76.512	56.238	21.560	1.068	0.000	0.000
76.577	56.238	21.560	0.000	0.358	0.000
76.642	93.653	21.787	0.000	0.000	0.000
76.708	78.460	21.787	0.000	0.000	0.000
76.773	78.460	9.914	0.351	0.000	0.000
76.838	63.270	-68.188	0.000	0.000	0.000
76.903	87.182	-68.188	0.000	0.000	0.000
76.968	87.182	-118.156	1.075	0.000	0.000
77.034	75.929	-74.989	1.076	0.000	0.000
77.099	73.397	-74.989	1.085	0.000	0.000
77.164	73.397	2.313	0.359	0.000	0.000
77.229	73.397	31.606	0.000	0.000	0.000
77.294	92.809	31.606	0.000	0.000	0.000
77.360	92.809	32.669	0.714	0.000	0.355
77.425	98.718	31.695	1.071	0.000	0.000
77.490	78.460	31.695	0.000	0.000	0.000
77.555	78.460	24.538	0.000	0.000	0.000
77.620	86.057	2.664	0.000	0.000	0.000
77.686	75.929	2.664	0.000	0.000	0.000
77.751	75.929	-48.140	0.720	0.000	0.000
77.816	93.653	-86.902	1.080	0.000	0.000
77.881	58.207	-86.902	1.084	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
77.946	58.207	-111.839	0.363	1.075	0.000
78.012	50.613	-68.428	0.000	1.068	0.000
78.077	50.613	-68.428	0.000	1.058	0.000
78.142	106.316	7.558	0.361	0.000	0.361
78.207	63.270	33.340	0.000	0.000	0.000
78.272	63.270	33.340	0.000	0.000	0.000
78.338	73.115	33.429	0.724	0.000	0.000
78.403	70.865	33.429	0.548	0.000	0.000
78.468	70.865	33.784	0.000	0.000	0.000
78.533	68.333	33.669	0.706	0.000	0.000
78.598	73.115	33.669	1.059	0.000	0.000
78.664	73.115	34.184	2.118	0.000	0.000
78.729	80.992	34.629	0.000	0.351	0.000
78.794	75.929	34.629	0.000	0.000	0.000
78.859	75.929	34.309	0.000	0.000	0.000
78.924	84.369	34.584	0.357	0.715	0.000
78.990	88.589	34.584	0.000	1.073	0.000
79.055	88.589	34.984	0.000	1.070	0.000
79.120	88.589	34.949	0.000	0.000	0.000
79.185	48.081	34.949	0.000	0.000	0.000
79.250	48.081	35.073	0.000	0.000	0.000
79.316	78.742	35.562	0.353	0.000	0.000
79.381	73.397	35.562	0.000	0.000	0.000
79.446	73.397	35.740	0.000	0.000	0.000
79.511	75.929	35.749	0.714	0.000	0.000
79.576	75.929	35.749	1.071	0.000	0.000
79.642	75.929	36.496	1.066	0.000	0.000
79.707	92.809	36.807	0.000	0.000	0.000
79.772	92.809	36.807	0.000	0.000	0.000
79.837	98.718	37.340	0.000	0.000	0.000
79.902	111.381	37.874	0.361	0.000	0.356
79.968	111.381	37.874	0.000	0.000	0.534
80.033	106.316	38.389	0.000	0.000	1.069
80.098	135.023	38.389	1.077	0.364	0.000
80.163	135.023	38.807	1.078	0.546	0.000
80.228	106.316	39.430	1.092	1.092	0.000
80.294	101.251	39.430	0.732	0.000	0.367
80.359	101.251	40.230	0.550	0.000	0.550
80.424	123.765	40.763	0.000	0.000	0.000
80.489	91.121	40.763	0.000	0.718	0.000
80.554	91.121	41.208	0.000	1.077	0.000
80.620	103.783	41.990	0.000	2.155	0.000
80.685	101.251	41.990	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
80.750	101.251	42.230	0.000	0.000	0.000
80.815	86.057	42.408	0.000	0.000	0.000
80.880	95.623	42.408	0.352	0.710	0.000
80.946	95.623	41.270	0.527	1.065	0.000
81.011	86.057	30.806	0.000	1.075	0.000
81.076	78.460	30.806	0.360	0.000	0.000
81.141	78.460	35.349	0.540	0.000	0.000
81.206	91.121	45.031	0.000	0.000	0.000
81.272	84.369	45.031	0.349	0.000	0.000
81.337	84.369	45.386	0.523	0.000	0.000
81.402	83.525	46.071	0.000	0.000	0.000
81.467	83.525	46.071	0.354	0.000	0.000
81.532	60.738	46.320	0.000	0.000	0.000
81.598	65.801	46.764	0.000	0.000	0.000
81.663	65.801	46.764	0.359	0.000	0.000
81.728	87.182	47.253	0.538	0.000	0.000
81.793	68.333	47.253	1.076	0.000	0.000
81.858	68.333	47.787	0.000	0.000	0.000
81.924	78.460	47.911	0.000	0.000	0.000
81.989	86.057	47.911	0.000	0.000	0.000
82.054	86.057	48.453	0.358	0.000	0.000
82.119	67.489	49.076	0.538	0.000	0.000
82.184	70.865	49.076	1.075	0.000	0.000
82.250	70.865	49.076	0.000	0.000	0.000
82.315	48.081	49.511	0.000	0.000	0.000
82.380	68.333	49.511	0.000	0.000	0.000
82.445	68.333	50.187	0.721	0.000	0.000
82.510	73.115	50.276	1.082	0.000	0.000
82.576	60.738	50.276	1.077	0.000	0.000
82.641	60.738	50.631	1.075	0.000	0.000
82.706	58.207	51.387	1.612	0.000	0.000
82.771	73.115	51.387	0.000	0.000	0.000
82.836	73.115	51.832	0.000	0.000	0.000
82.902	83.525	52.592	0.000	0.000	0.000
82.967	47.800	52.592	0.000	0.000	0.000
83.032	47.800	53.699	0.000	0.000	0.000
83.097	65.801	54.454	0.000	0.000	0.000
83.162	65.801	54.454	0.000	0.000	0.000
83.228	73.397	55.432	1.406	0.349	0.000
83.293	89.996	56.499	1.053	0.524	0.000
83.358	89.996	56.499	1.059	0.000	0.000
83.423	48.081	57.255	0.000	0.000	0.000
83.488	50.613	57.255	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
83.554	50.613	58.433	0.000	0.000	0.000
83.619	75.929	59.522	0.721	0.361	0.000
83.684	89.996	59.522	1.082	0.541	0.000
83.749	89.996	59.922	0.000	0.000	0.000
83.814	91.121	60.633	0.000	0.690	0.000
83.880	65.801	60.633	0.000	0.517	0.000
83.945	65.801	61.300	0.000	0.000	0.000
84.010	63.270	61.211	0.708	0.000	0.000
84.075	98.437	61.211	0.529	0.000	0.000
84.140	98.437	61.344	0.000	0.000	0.000
84.206	111.381	62.500	1.067	0.000	0.000
84.271	93.653	62.500	1.068	0.000	0.000
84.336	93.653	62.873	1.069	0.000	0.000
84.401	108.849	55.788	0.716	0.000	0.000
84.466	78.742	55.788	0.533	0.000	0.000
84.532	78.742	61.389	1.066	0.000	0.000
84.597	83.525	62.633	0.000	0.362	0.000
84.662	83.525	62.633	0.000	0.542	0.000
84.727	83.525	61.233	0.000	1.085	0.000
84.792	75.929	62.011	0.712	0.000	0.000
84.858	75.929	62.011	1.069	0.000	0.000
84.923	89.996	62.313	0.000	0.000	0.000
84.988	80.992	62.011	0.364	0.364	0.000
85.053	80.992	62.011	0.000	0.000	0.000
85.118	75.929	61.744	-9999.990	-9999.990	-9999.990
85.184	96.186	61.744	0.000	0.000	0.000
85.249	96.186	61.913	0.703	0.000	0.000
85.314	78.742	61.122	0.527	0.000	0.000
85.379	70.865	61.122	0.000	0.000	0.000
85.444	70.865	60.855	0.000	0.000	0.000
85.510	75.929	60.913	0.000	0.000	0.000
85.575	86.057	60.913	0.000	0.000	0.000
85.640	86.057	60.277	0.354	0.000	0.000
85.705	98.437	59.433	0.000	0.000	0.000
85.770	73.397	59.433	0.000	0.000	0.000
85.836	73.397	59.273	0.705	0.348	0.000
85.901	96.186	58.633	1.057	0.522	0.000
85.966	73.397	58.633	2.114	0.000	0.000
86.031	73.397	58.410	0.352	0.000	0.000
86.096	64.676	58.313	0.000	0.000	0.000
86.162	58.207	58.313	0.000	0.000	0.000
86.227	58.207	57.432	0.716	0.357	0.000
86.292	78.460	56.721	0.538	0.535	0.000

ARCADIS Design & Consultancy for natural and built assets

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
86.357	78.460	56.721	0.000	1.070	0.000
86.422	78.460	56.588	0.352	0.000	0.000
86.488	64.676	55.699	0.527	0.000	0.000
86.553	64.676	55.699	0.000	0.000	0.000
86.618	63.270	54.472	0.355	0.000	0.000
86.683	63.270	51.698	0.000	0.000	0.000
86.748	63.270	51.698	0.000	0.000	0.000
86.814	78.460	40.808	0.362	0.000	0.000
86.879	89.996	40.808	0.543	0.000	0.000
86.944	89.996	-16.859	0.000	0.000	0.000
87.009	68.333	-35.160	0.000	0.000	0.000
87.074	63.270	-35.160	0.000	0.000	0.000
87.140	63.270	36.585	0.000	0.000	0.000
87.205	70.302	51.472	0.713	0.000	0.000
87.270	65.801	51.472	1.070	0.000	0.000
87.335	65.801	51.254	0.000	0.000	0.000
87.400	91.121	50.542	0.354	0.000	0.000
87.466	92.809	50.542	0.000	0.000	0.000
87.531	92.809	50.151	0.000	0.000	0.000
87.596	68.333	50.009	0.000	0.000	0.000
87.661	78.460	50.009	0.000	0.000	0.000
87.726	78.460	49.351	0.000	0.000	0.000
87.792	87.182	48.987	0.349	0.000	0.000
87.857	65.801	48.987	0.524	0.000	0.000
87.922	65.801	48.809	1.048	0.000	0.000
87.987	75.929	48.271	0.000	0.000	0.000
88.052	65.801	48.271	0.000	0.000	0.000
88.118	65.801	48.053	0.000	0.000	0.000
88.183	59.051	48.142	0.351	0.000	0.000
88.248	59.051	48.142	0.527	0.000	0.000
88.313	50.613	47.653	0.000	0.000	0.000
88.378	48.081	47.391	0.000	0.000	0.000
88.444	48.081	47.391	0.000	0.000	0.000
88.509	65.801	47.609	0.000	0.000	0.000
88.574	61.863	47.609	0.000	0.000	0.000
88.639	61.863	47.209	0.000	0.000	0.000
88.704	63.270	47.075	0.000	0.000	0.000
88.770	58.207	47.075	0.708	0.000	0.000
88.835	58.207	47.209	0.534	0.000	0.000
88.900	78.460	47.351	0.000	0.000	0.000
88.965	61.863	47.351	0.358	0.000	0.000
89.030	61.863	47.298	0.000	0.000	0.000
89.096	53.144	47.591	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
89.161	48.081	47.591	0.709	0.000	0.000
89.226	48.081	47.520	0.528	0.000	0.000
89.291	67.489	47.520	1.057	0.000	0.000
89.356	27.834	47.520	0.000	0.000	0.000
89.422	27.834	47.831	0.000	0.000	0.000
89.487	68.333	47.164	0.000	0.000	0.000
89.552	59.051	47.164	0.000	0.000	0.000
89.617	59.051	46.631	0.000	0.000	0.000
89.682	58.207	47.551	0.000	0.000	0.000
89.748	58.207	47.551	0.692	0.354	0.000
89.813	58.207	47.564	1.039	0.000	0.000
89.878	43.019	47.653	0.000	0.000	0.000
89.943	43.019	47.653	0.347	0.000	0.000
90.008	43.019	47.751	0.520	0.000	0.000
90.074	48.081	47.520	0.000	0.000	0.000
90.139	48.081	47.520	0.366	0.000	0.000
90.204	60.738	47.431	0.000	0.000	0.000
90.269	63.270	47.431	0.000	0.000	0.000
90.334	63.270	48.009	0.700	0.000	0.000
90.400	48.081	48.809	1.050	0.000	0.000
90.465	48.081	48.809	0.000	0.000	0.000
90.530	48.081	48.142	0.000	0.347	0.000
90.595	53.144	47.653	0.000	0.521	0.000
90.660	45.550	47.653	0.000	0.000	0.000
90.726	45.550	47.831	0.000	0.000	0.000
90.791	45.550	47.698	0.000	0.000	0.000
90.856	83.525	47.698	0.000	0.000	0.000
90.921	83.525	47.711	1.423	0.000	0.000
90.986	63.270	48.187	0.536	0.000	0.000
91.052	60.738	48.187	1.071	0.000	0.000
91.117	60.738	48.111	0.353	0.000	0.000
91.182	70.865	48.187	0.529	0.000	0.000
91.247	60.738	48.187	0.000	0.000	0.000
91.312	60.738	48.391	1.075	0.000	0.000
91.378	50.613	48.409	0.534	0.000	0.000
91.443	45.550	48.409	0.000	0.000	0.000
91.508	45.550	48.511	0.729	0.000	0.000
91.573	39.363	47.631	0.529	0.000	0.000
91.638	39.363	47.631	1.057	0.000	0.000
91.704	68.333	45.786	0.680	0.000	0.000
91.769	53.144	47.271	1.020	0.000	0.000
91.834	53.144	47.271	2.040	0.000	0.000
91.899	73.397	49.071	0.341	0.336	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
91.964	45.550	49.071	0.511	0.000	0.000
92.030	45.550	48.098	0.000	0.000	0.000
92.095	80.992	37.389	0.000	0.000	0.000
92.160	53.144	37.389	0.000	0.000	0.000
92.225	53.144	-8.934	0.000	0.000	0.000
92.290	73.397	-50.745	0.000	0.000	0.000
92.356	65.801	-50.745	0.000	0.000	0.000
92.421	65.801	-88.151	0.000	0.000	0.000
92.486	63.270	-52.141	0.683	0.332	0.000
92.551	45.550	-52.141	1.024	0.000	0.000
92.616	45.550	16.826	2.049	0.000	0.000
92.682	55.675	30.806	1.021	0.347	0.000
92.747	86.057	30.806	0.510	0.521	0.000
92.812	86.057	58.722	0.000	1.041	0.000
92.877	88.589	60.313	0.000	0.000	0.000
92.942	80.992	60.313	0.000	0.000	0.000
93.008	80.992	60.989	0.000	0.000	0.000
93.073	80.992	62.193	0.687	0.000	0.000
93.138	75.929	62.193	1.031	0.000	0.000
93.203	75.929	66.278	1.036	0.000	0.000
93.268	68.333	60.353	0.692	0.000	0.000
93.334	68.333	60.353	1.039	0.000	0.000
93.399	78.460	47.191	0.000	0.000	0.000
93.464	86.057	71.746	0.000	0.000	0.000
93.529	86.057	71.746	0.000	0.000	0.000
93.594	121.513	50.911	0.000	0.000	0.000
93.660	75.929	50.911	0.343	0.000	0.000
93.725	75.929	7.691	0.514	0.000	0.000
93.790	86.057	5.664	1.029	0.000	0.000
93.855	73.115	5.664	0.692	0.000	0.000
93.920	73.115	87.259	1.038	0.000	0.000
93.986	118.980	100.319	0.000	0.000	0.000
94.051	103.783	100.319	0.000	0.000	0.339
94.116	103.783	100.759	0.000	0.000	0.000
94.181	98.718	101.751	0.000	0.000	0.000
94.246	91.121	101.751	1.021	0.000	0.000
94.312	91.121	103.960	1.020	0.000	0.000
94.377	113.914	107.640	1.016	0.000	0.000
94.442	103.783	107.640	0.000	0.336	0.336
94.507	103.783	111.308	0.000	0.504	0.504
94.572	131.646	115.562	0.000	0.000	0.000
94.638	126.579	115.562	0.681	0.677	0.337
94.703	126.579	115.753	0.510	1.016	0.506

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
94.768	129.112	116.882	0.000	1.012	1.012
94.833	129.112	116.882	0.342	0.000	0.000
94.898	129.112	117.086	0.000	0.000	0.000
94.964	101.251	118.802	0.000	0.000	0.000
95.029	98.718	118.802	1.003	0.000	0.000
95.094	98.718	114.730	0.000	0.000	0.000
95.159	139.246	99.128	0.000	0.000	0.000
95.224	139.246	99.128	0.339	0.342	0.000
95.290	129.112	83.997	0.000	0.513	0.000
95.355	116.447	83.997	0.000	1.026	0.000
95.420	116.447	73.124	0.000	0.345	0.000
95.485	126.579	98.799	0.000	0.000	0.000
95.550	93.653	98.799	0.000	0.000	0.000
95.616	93.653	109.441	0.000	0.344	0.346
95.681	98.718	107.707	0.000	0.516	0.518
95.746	83.525	107.707	0.000	1.032	0.000
95.811	83.525	106.400	1.375	0.000	0.000
95.876	156.982	105.885	1.036	0.000	0.000
95.942	86.057	105.885	0.000	0.000	0.000
96.007	86.057	104.720	1.738	0.695	0.000
96.072	126.579	103.880	2.087	0.522	0.000
96.137	96.186	103.880	3.134	1.045	0.000
96.202	96.186	102.595	0.347	0.347	0.000
96.268	96.186	101.079	0.000	0.000	0.000
96.333	136.712	101.079	0.000	0.000	0.000
96.398	136.712	99.973	2.047	0.341	0.000
96.463	98.718	98.519	3.070	0.512	0.000
96.528	88.589	98.519	2.046	0.000	0.000
96.594	88.589	97.719	0.684	0.000	0.000
96.659	93.653	96.639	1.026	0.000	0.000
96.724	70.865	96.639	1.033	0.000	0.000
96.789	70.865	95.799	0.341	0.341	0.000
96.854	118.980	95.616	0.511	0.511	0.000
96.920	118.980	95.616	0.000	0.000	0.000
96.985	93.653	94.798	0.337	0.000	0.000
97.050	124.046	94.798	0.000	0.000	0.000
97.115	124.046	93.794	0.000	0.000	0.000
97.180	88.589	91.758	0.000	0.000	0.000
97.246	93.653	91.758	0.000	0.000	0.000
97.311	93.653	89.260	0.000	0.000	0.000
97.376	93.653	87.171	0.341	0.000	0.000
97.441	116.447	87.171	0.000	0.000	0.000
97.506	116.447	85.117	0.000	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
97.572	73.397	82.992	0.344	0.000	0.000
97.637	88.589	82.992	0.000	0.000	0.000
97.702	88.589	81.436	0.000	0.000	0.000
97.767	91.121	79.396	0.693	0.344	0.000
97.832	75.929	79.396	0.521	0.515	0.000
97.898	75.929	77.747	0.000	1.031	0.000
97.963	108.849	76.155	0.000	0.351	0.000
98.028	93.653	76.155	0.000	0.526	0.000
98.093	93.653	74.035	0.000	1.052	0.000
98.158	86.057	72.595	0.691	0.000	0.000
98.224	101.251	72.595	0.519	0.000	0.000
98.289	101.251	71.115	1.038	0.000	0.000
98.354	98.718	70.457	0.000	0.000	0.000
98.419	113.914	70.457	0.000	0.000	0.000
98.484	113.914	68.954	0.000	0.000	0.000
98.550	73.397	68.154	0.000	0.000	0.000
98.615	73.397	68.154	0.000	0.000	0.000
98.680	78.460	66.394	0.000	0.000	0.000
98.745	96.186	66.394	0.689	0.000	0.000
98.810	96.186	65.834	0.516	0.000	0.000
98.876	83.525	64.954	1.031	0.000	0.000
98.941	91.121	64.954	0.339	0.000	0.000
99.006	91.121	64.154	0.000	0.000	0.000
99.071	101.251	63.122	0.000	0.000	0.000
99.136	98.718	63.122	0.339	0.339	0.000
99.202	98.718	61.433	0.509	0.509	0.000
99.267	108.849	55.752	0.000	0.000	0.000
99.332	88.589	55.752	0.341	0.681	0.000
99.397	88.589	32.584	0.511	1.022	0.000
99.462	88.589	-55.346	1.022	2.043	0.000
99.528	75.929	-55.346	0.000	0.000	0.343
99.593	75.929	-57.106	0.000	0.000	0.514
99.658	141.779	-43.744	0.000	0.000	1.028
99.723	96.186	-43.744	1.043	0.342	0.000
99.788	96.186	16.759	1.564	0.000	0.000
99.854	73.397	42.910	2.090	0.000	0.000
99.919	113.914	42.910	0.702	0.349	0.000
99.984	113.914	-12.739	1.053	0.000	0.000
100.049	96.186	9.585	0.000	0.000	0.000
100.114	80.992	9.585	0.694	0.354	0.000
100.180	80.992	53.152	1.041	0.000	0.000
100.245	124.046	55.712	1.035	0.000	0.000
100.310	124.046	55.712	1.385	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
100.375	93.653	55.192	1.038	0.000	0.000
100.440	96.186	55.192	1.036	0.000	0.000
100.506	96.186	54.232	0.689	0.341	0.000
100.571	73.397	53.792	1.034	0.000	0.000
100.636	118.136	53.792	1.041	0.000	0.000
100.701	118.136	52.995	0.347	0.000	0.000
100.766	101.251	52.195	0.000	0.000	0.000
100.832	88.589	52.195	0.000	0.000	0.000
100.897	88.589	51.759	1.354	0.000	0.000
100.962	78.460	50.931	1.517	0.000	0.000
101.027	88.589	50.931	2.020	0.000	0.000
101.092	88.589	50.413	1.712	0.338	0.345
101.158	116.447	49.795	1.542	0.507	0.517
101.223	80.992	49.795	-9999.990	-9999.990	-9999.990
101.288	80.992	49.104	1.015	1.015	0.000
101.353	101.251	48.777	0.604	0.490	0.000
101.418	91.121	48.777	0.906	0.735	0.000
101.484	91.121	48.431	-9999.990	-9999.990	-9999.990
101.549	94.344	47.798	0.000	1.017	0.000
101.614	87.182	47.798	0.000	0.000	1.024
101.679	87.182	46.785	0.000	0.000	1.029
101.744	101.251	43.864	0.000	0.000	2.059
101.810	131.646	43.864	0.350	0.350	0.000
101.875	131.646	22.319	0.525	0.525	0.000
101.940	73.397	-68.588	1.050	1.050	0.000
102.005	73.397	-68.588	0.350	0.000	0.000
102.070	106.316	-84.505	0.524	0.000	0.000
102.136	103.553	-84.505	0.000	0.000	0.000
102.201	103.553	-2.823	0.346	0.000	0.343
102.266	92.206	28.966	0.519	0.000	0.515
102.331	103.199	28.966	0.000	0.000	1.030
102.396	103.199	45.431	0.352	0.000	0.000
102.462	83.719	45.708	0.529	0.000	0.000
102.527	86.780	45.708	0.000	0.000	0.000
102.592	86.780	45.316	0.343	0.343	0.000
102.657	91.511	44.590	0.515	0.515	0.000
102.722	90.398	44.590	0.000	0.000	0.000
102.788	90.398	19.339	0.341	0.000	0.344
102.853	97.355	45.222	0.511	0.000	0.000
102.918	99.442	45.222	1.023	0.000	0.000
102.983	99.442	45.031	1.017	0.000	0.000
103.048	75.929	44.874	1.015	0.000	0.000
103.114	79.546	44.874	2.030	0.000	0.000

			Spectral Gamma Ray (Dynamic)		
Depth (feet)	Natural Gamma (API Units)	Induction Conductivity (mS/m)	Potassium (cps)	Uranium (cps)	Thorium (cps)
103.179	79.546	44.613	0.000	0.680	0.000
103.244	95.407	-9999.990	0.000	1.020	0.000
103.309	104.869	-9999.990	0.000	2.040	0.000
103.374	104.869	-9999.990	0.916	0.308	0.000
103.440	83.719	-9999.990	0.912	0.462	0.000
103.505	99.442	-9999.990	0.000	0.923	0.000
103.570	99.442	-9999.990	0.713	0.051	0.023
103.635	85.667	-9999.990	0.627	0.077	0.034
103.700	85.667	-9999.990	-9999.990	-9999.990	-9999.990
103.766	74.120	-9999.990	-9999.990	-9999.990	-9999.990
103.831	83.719	-9999.990	-9999.990	-9999.990	-9999.990
103.896	83.719	-9999.990	-9999.990	-9999.990	-9999.990
103.961	70.503	-9999.990	-9999.990	-9999.990	-9999.990
104.026	79.546	-9999.990	-9999.990	-9999.990	-9999.990
104.092	79.546	-9999.990	-9999.990	-9999.990	-9999.990
104.157	105.147	-9999.990	-9999.990	-9999.990	-9999.990
104.222	91.511	-9999.990	-9999.990	-9999.990	-9999.990
104.287	91.511	-9999.990	-9999.990	-9999.990	-9999.990
104.352	74.120	-9999.990	-9999.990	-9999.990	-9999.990
104.418	89.563	-9999.990	-9999.990	-9999.990	-9999.990
104.483	89.563	-9999.990	-9999.990	-9999.990	-9999.990
104.548	106.678	-9999.990	-9999.990	-9999.990	-9999.990
104.613	93.459	-9999.990	-9999.990	-9999.990	-9999.990
104.678	93.459	-9999.990	-9999.990	-9999.990	-9999.990
104.744	84.971	-9999.990	-9999.990	-9999.990	-9999.990
104.809	75.929	-9999.990	-9999.990	-9999.990	-9999.990
104.874	75.929	-9999.990	-9999.990	-9999.990	-9999.990
104.939	78.742	-9999.990	-9999.990	-9999.990	-9999.990
105.004	90.928	-9999.990	-9999.990	-9999.990	-9999.990
105.070	90.928	-9999.990	-9999.990	-9999.990	-9999.990
105.135	103.199	-9999.990	-9999.990	-9999.990	-9999.990

Notes

-9999.99 - no data

API - American Petroleum Institute

cps - counts per second

mS/m - milliSiemens per meter

APPENDIX D4

Geophysical Data for Existing Wells Previously Logged by USGS

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
4.100	42.348	1.377	0.344	0.000
4.165	48.242	1.280	0.163	0.012
4.231	46.579	1.263	0.041	0.008
4.296	51.762	0.000	0.000	0.501
4.361	33.732	0.744	0.164	0.415
4.426	58.539	1.562	0.246	0.413
4.491	53.038	1.466	0.000	0.000
4.556	50.113	2.128	0.820	0.000
4.622	52.137	2.295	0.982	0.000
4.687	56.927	2.475	0.990	0.000
4.752	42.204	1.400	0.579	0.000
4.817	52.468	1.972	0.662	0.000
4.883	46.625	2.480	0.994	0.000
4.948	51.586	2.063	0.000	0.000
5.013	48.887	1.802	0.000	0.000
5.078	38.850	1.478	0.000	0.000
5.143	47.456	1.554	0.325	0.000
5.209	56.284	1.232	0.408	0.163
5.274	52.090	0.983	0.000	0.000
5.339	51.683	1.057	0.649	0.244
5.404	45.607	1.309	0.567	0.163
5.469	38.439	0.497	0.000	0.000
5.535	42.623	0.573	0.493	0.000
5.600	42.885	0.656	0.247	0.000
5.665	41.224	0.986	0.493	0.000
5.730	41.956	0.656	0.000	0.244
5.795	45.094	0.984	0.000	0.163
5.860	37.058	0.992	0.491	0.000
5.926	40.261	0.579	0.575	0.000
5.991	36.097	0.662	0.658	0.000
6.056	46.310	2.485	0.992	0.000
6.121	40.654	2.159	1.079	0.000
6.187	41.393	1.660	0.746	0.000
6.252	37.505	0.996	0.498	0.000
6.317	38.402	0.662	0.000	0.000
6.382	37.990	0.496	0.000	0.000
6.447	43.740	0.507	0.000	0.000
6.513	39.008	1.333	0.418	0.251
6.578	40.810	1.662	0.417	0.168
6.643	43.320	0.995	0.000	0.000
6.708	36.240	0.993	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
6.773	47.056	1.072	0.000	0.000
6.839	38.419	0.984	0.000	0.000
6.904	43.907	1.547	0.738	0.000
6.969	35.677	1.626	0.404	0.000
7.034	46.074	1.936	0.483	0.000
7.099	32.623	0.486	0.485	0.000
7.165	40.731	0.324	0.323	0.000
7.230	42.873	0.982	0.000	0.000
7.295	41.719	0.819	0.246	0.165
7.360	38.402	0.738	0.328	0.248
7.425	40.937	1.474	0.000	0.987
7.490	41.146	1.315	0.000	0.246
7.556	37.724	0.819	0.000	0.164
7.621	40.755	0.486	0.000	0.000
7.686	40.425	0.406	0.000	0.000
7.751	42.221	0.407	0.000	0.000
7.816	39.124	0.000	0.000	0.490
7.882	44.160	0.166	0.330	0.245
7.947	45.866	0.412	0.248	0.163
8.012	41.192	1.983	0.990	0.000
8.077	49.970	1.988	0.741	0.000
8.142	44.115	1.826	0.659	0.000
8.208	45.872	3.483	0.494	0.000
8.273	37.299	1.899	0.247	0.000
8.338	43.388	1.484	0.165	0.164
8.403	39.707	0.992	0.000	0.000
8.468	43.904	0.746	0.416	0.000
8.534	49.534	0.662	0.166	0.000
8.599	42.351	1.994	0.000	0.000
8.664	52.754	1.332	0.000	0.000
8.729	47.939	1.670	0.000	0.000
8.795	42.661	0.000	0.000	0.000
8.860	39.727	0.743	0.000	0.000
8.925	39.413	0.495	0.000	0.000
8.990	42.758	0.490	0.000	0.490
9.055	42.825	0.959	0.000	0.245
9.120	42.141	1.134	0.163	0.163
9.186	41.889	0.742	0.000	0.000
9.251	47.164	0.989	0.000	0.000
9.316	40.276	0.492	0.163	0.000
9.381	38.530	0.000	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
9.446	47.743	0.000	0.000	0.000
9.512	38.689	0.658	0.162	0.000
9.577	38.903	0.000	0.244	0.000
9.642	42.209	0.989	0.487	0.000
9.707	38.578	0.986	0.326	0.000
9.773	38.171	0.246	0.485	0.000
9.838	34.836	0.489	0.243	0.000
9.903	37.642	0.651	0.324	0.000
9.968	30.618	0.165	0.164	0.000
10.033	40.809	0.248	0.246	0.000
10.099	34.837	0.000	0.492	0.000
10.164	31.766	0.328	0.164	0.000
10.229	28.592	0.249	0.247	0.000
10.294	32.341	0.000	0.655	0.000
10.359	33.015	0.654	0.000	0.000
10.425	35.372	0.739	0.000	0.000
10.490	35.501	0.819	0.000	0.000
10.555	29.919	0.829	0.494	0.000
10.620	36.996	0.750	0.247	0.000
10.685	31.702	0.835	0.165	0.000
10.750	26.577	0.670	0.169	0.000
10.816	31.686	0.754	0.503	0.000
10.881	28.159	0.334	0.167	0.000
10.946	33.639	1.005	0.000	1.010
11.011	28.286	1.007	0.000	0.505
11.076	30.861	1.002	0.000	0.337
11.142	30.838	1.986	0.499	0.163
11.207	28.136	1.982	0.249	0.245
11.272	33.603	2.318	0.166	0.000
11.337	31.239	0.164	0.000	0.000
11.403	26.686	0.982	0.000	0.000
11.468	25.200	0.983	0.165	0.000
11.533	29.095	0.000	0.489	0.000
11.598	25.950	0.000	0.244	0.000
11.663	27.326	0.322	0.163	0.000
11.728	22.571	0.492	0.000	0.000
11.794	24.703	0.494	0.246	0.000
11.859	25.176	0.653	0.164	0.000
11.924	7.420	0.659	0.000	0.000
11.989	19.797	0.740	0.000	0.000
12.055	20.189	0.495	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
12.120	24.777	0.817	0.000	0.000
12.185	19.732	0.980	0.000	0.000
12.250	25.144	1.638	0.000	0.000
12.315	24.638	1.121	0.164	0.000
12.380	23.489	0.728	0.246	0.000
12.446	25.039	0.485	0.656	0.163
12.511	24.162	0.494	0.000	0.000
12.576	23.297	0.496	0.000	0.000
12.641	25.269	1.157	0.000	0.000
12.707	25.675	0.330	0.658	0.165
12.772	23.839	0.994	0.247	0.000
12.837	19.376	0.496	0.165	0.000
12.902	20.828	0.331	0.658	0.000
12.967	20.284	0.744	0.494	0.000
13.033	18.866	0.164	0.164	0.000
13.098	22.461	0.671	0.167	0.000
13.163	25.133	0.756	0.250	0.000
13.228	20.598	0.668	0.668	0.000
13.293	20.691	0.332	0.512	0.000
13.358	27.819	0.500	0.256	0.000
13.424	22.941	0.667	0.171	0.000
13.489	18.133	0.163	0.163	0.000
13.554	22.948	0.489	0.244	0.000
13.619	25.761	0.652	0.488	0.000
13.685	22.099	0.000	0.164	0.000
13.750	23.166	0.246	0.247	0.000
13.815	25.649	0.330	0.000	0.000
13.880	20.633	1.147	0.000	0.000
13.945	22.119	0.738	0.000	0.000
14.010	21.174	0.655	0.000	0.000
14.076	23.306	1.160	0.498	0.000
14.141	23.142	0.744	0.249	0.000
14.206	22.884	0.496	0.327	0.000
14.271	18.511	0.653	0.000	0.000
14.337	22.913	0.736	0.000	0.000
14.402	19.635	1.146	0.000	0.000
14.467	23.541	0.487	0.162	0.000
14.532	20.106	0.244	0.243	0.000
14.597	24.486	0.326	0.487	0.000
14.663	23.498	0.488	0.329	0.000
14.728	24.181	0.244	0.249	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
14.793	25.118	0.163	0.000	0.000
14.858	23.645	0.000	0.496	0.000
14.923	21.012	0.000	0.493	0.000
14.988	20.662	0.163	0.329	0.000
15.054	21.838	0.659	0.000	0.000
15.119	20.899	0.495	0.000	0.000
15.184	27.512	0.165	0.000	0.000
15.249	17.498	1.499	0.000	0.000
15.314	25.944	0.998	0.000	0.000
15.380	19.582	0.667	0.000	0.000
15.445	16.561	0.498	0.000	0.000
15.510	23.433	0.495	0.000	0.000
15.575	18.317	0.658	0.000	0.000
15.640	14.325	0.493	0.000	0.000
15.706	26.189	0.991	0.000	0.000
15.771	19.657	1.646	0.000	0.000
15.836	19.090	0.817	0.000	0.490
15.901	17.728	0.736	0.000	0.245
15.967	22.589	1.146	0.000	0.163
16.032	21.208	0.821	0.000	0.000
16.097	22.894	0.246	0.000	0.000
16.162	19.534	0.327	0.000	0.000
16.227	20.310	0.645	0.000	0.000
16.292	25.926	0.974	0.000	0.000
16.358	20.661	0.649	0.000	0.000
16.423	25.997	0.488	0.659	0.000
16.488	23.058	0.247	0.494	0.000
16.553	18.703	0.493	0.822	0.000
16.618	27.063	0.328	0.000	0.000
16.684	29.642	0.492	0.000	0.000
16.749	22.135	0.000	0.000	0.000
16.814	26.777	1.293	0.000	0.000
16.879	20.453	0.970	0.000	0.000
16.944	24.895	1.458	0.000	0.000
17.010	24.614	0.656	0.165	0.000
17.075	26.549	0.246	0.247	0.000
17.140	30.190	0.164	0.000	0.000
17.205	22.887	0.000	0.167	0.000
17.271	24.295	0.247	0.498	0.000
17.336	22.431	0.165	0.667	0.000
17.401	30.262	1.648	0.164	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
17.466	22.881	0.741	0.246	0.000
17.531	21.695	0.658	0.000	0.000
17.597	22.249	0.495	0.000	0.000
17.662	21.523	0.248	0.000	0.000
17.727	21.945	0.165	0.000	0.000
17.792	21.958	0.166	0.000	0.000
17.857	20.895	0.000	0.000	0.000
17.923	19.217	0.000	0.000	0.000
17.988	18.195	1.160	0.000	0.000
18.053	23.043	0.744	0.245	0.000
18.118	24.065	0.332	0.325	0.000
18.183	18.111	0.978	0.000	0.000
18.249	18.112	0.979	0.000	0.000
18.314	19.638	1.964	0.000	0.000
18.379	-999.000	-999.000	-999.000	-999.000
18.444	17.779	0.657	0.000	0.000
18.509	26.526	0.491	0.000	0.000
18.574	22.753	0.243	0.000	0.000
18.640	18.334	0.491	0.000	0.000
18.705	15.663	0.979	0.000	0.000
18.770	23.514	0.814	0.000	0.000
18.835	21.061	0.164	0.000	0.488
18.900	22.975	0.000	0.000	0.244
18.966	18.676	0.000	0.000	0.163
19.031	16.680	0.490	0.657	0.000
19.096	17.150	0.492	0.492	0.000
19.161	21.585	0.000	0.491	0.000
19.226	18.194	0.000	0.000	0.000
19.292	17.699	0.000	0.000	0.000
19.357	20.809	0.000	0.000	0.000
19.422	18.706	1.138	0.000	0.000
19.487	19.216	0.733	0.000	0.000
19.552	21.225	0.816	0.000	0.000
19.618	17.404	0.168	0.000	0.000
19.683	14.450	0.252	0.000	0.000
19.748	16.528	0.167	0.000	0.000
19.813	17.046	0.000	0.167	0.000
19.878	20.981	0.250	0.250	0.000
19.944	18.619	0.334	0.000	0.000
20.009	23.451	0.000	0.000	0.000
20.074	15.984	0.000	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
20.139	21.841	0.000	0.000	0.000
20.204	14.244	1.312	0.162	0.000
20.270	19.144	1.228	0.244	0.000
20.335	21.546	0.979	0.487	0.000
20.400	13.300	0.820	0.489	0.166
20.465	18.295	0.244	0.244	0.249
20.531	19.248	0.327	0.163	0.000
20.596	20.690	0.991	0.000	0.166
20.661	17.645	0.990	0.000	0.248
20.726	14.265	0.662	0.000	0.497
20.791	13.202	0.651	0.164	0.000
20.857	14.753	0.737	0.246	0.000
20.922	15.741	0.819	0.492	0.000
20.987	17.104	1.137	0.000	0.000
21.052	12.857	0.734	0.000	0.000
21.117	22.332	0.324	0.000	0.000
21.183	13.891	0.503	0.169	0.000
21.248	20.987	0.506	0.253	0.000
21.313	15.740	0.000	0.000	0.000
21.378	17.196	0.000	0.000	0.000
21.443	20.556	0.000	0.000	0.000
21.508	16.092	0.000	0.000	0.000
21.574	14.764	0.820	0.490	0.000
21.639	15.328	0.739	0.245	0.000
21.704	10.386	0.659	0.163	0.000
21.769	15.890	0.166	0.000	0.000
21.834	13.900	0.000	0.000	0.000
21.900	13.883	0.000	0.167	0.000
21.965	15.573	0.000	0.000	0.000
22.030	16.372	0.247	0.000	0.000
22.095	13.168	0.165	0.000	0.000
22.160	14.829	0.166	0.000	0.000
22.226	17.001	0.249	0.000	0.000
22.291	16.446	0.000	0.000	0.000
22.356	14.487	0.000	0.000	0.000
22.421	18.386	0.000	0.000	0.000
22.486	21.147	0.164	0.000	0.000
22.552	17.230	0.000	0.000	0.000
22.617	10.779	0.000	0.000	0.000
22.682	15.249	0.000	0.000	0.000
22.747	12.773	0.819	0.000	0.000

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		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
22.813	18.067	0.492	0.000	0.000
22.878	9.850	0.822	0.000	0.000
22.943	12.275	0.163	0.000	0.167
23.008	13.835	0.000	0.000	0.250
23.073	18.808	0.000	0.000	0.500
23.139	17.207	0.163	0.000	0.000
23.204	12.854	0.493	0.000	0.000
23.269	12.863	0.166	0.000	0.000
23.334	15.672	0.163	0.000	0.000
23.399	16.589	0.488	0.000	0.000
23.464	18.213	0.162	0.000	0.000
23.530	15.746	0.329	0.164	0.000
23.595	19.106	0.247	0.000	0.000
23.660	15.259	0.495	0.000	0.000
23.725	14.255	1.150	0.000	0.000
23.790	16.256	0.740	0.000	0.000
23.856	20.799	0.492	0.000	0.000
23.921	15.754	0.000	0.166	0.000
23.986	16.904	0.496	0.249	0.000
24.051	18.291	0.493	0.498	0.000
24.116	15.844	0.658	0.000	0.000
24.182	14.482	0.743	0.000	0.000
24.247	17.960	0.826	0.000	0.000
24.312	19.542	0.167	0.000	0.000
24.377	21.000	0.249	0.000	0.000
24.443	11.989	0.166	0.000	0.000
24.508	15.095	0.167	0.000	0.000
24.573	21.021	0.500	0.000	0.000
24.638	18.368	0.495	0.164	0.000
24.703	15.621	0.817	0.000	0.000
24.768	14.646	0.735	0.247	0.000
24.834	16.167	1.144	0.165	0.000
24.899	14.216	0.327	0.000	0.164
24.964	14.241	0.736	0.000	0.246
25.029	13.350	0.819	0.000	0.000
25.094	21.125	0.000	0.329	0.000
25.160	22.133	0.000	0.247	0.000
25.225	17.206	0.162	0.000	0.000
25.290	19.152	0.821	0.000	0.493
25.355	11.266	0.739	0.000	0.246
25.420	17.609	0.164	0.000	0.164

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
25.486	18.111	0.331	0.166	0.000
25.551	17.636	0.497	0.249	0.000
25.616	17.292	1.158	0.497	0.000
25.681	16.367	0.661	0.000	0.000
25.747	10.829	0.489	0.000	0.000
25.812	20.738	0.488	0.000	0.000
25.877	13.748	0.163	0.000	0.000
25.942	14.168	0.245	0.000	0.000
26.007	18.039	0.975	0.000	0.000
26.073	8.258	0.000	0.165	0.000
26.138	16.754	0.000	0.247	0.000
26.203	16.726	0.163	0.000	0.000
26.268	12.836	1.152	0.000	0.000
26.333	13.428	0.991	0.000	0.000
26.398	16.900	0.993	0.000	0.000
26.464	18.320	0.832	0.000	0.000
26.529	14.465	0.509	0.000	0.000
26.594	18.890	1.018	0.166	0.000
26.659	14.681	0.165	0.163	0.000
26.725	13.834	0.495	0.245	0.000
26.790	19.317	0.659	0.166	0.000
26.855	10.899	0.000	0.164	0.164
26.920	12.888	0.000	0.246	0.247
26.985	14.711	0.000	0.492	0.000
27.050	17.576	0.652	0.162	0.000
27.116	14.712	0.245	0.000	0.000
27.181	20.064	0.163	0.000	0.000
27.246	19.048	0.321	0.160	0.000
27.311	18.009	0.726	0.240	0.000
27.376	24.721	0.806	0.479	0.000
27.442	16.618	0.000	0.000	0.000
27.507	15.137	0.728	0.000	0.000
27.572	17.162	0.486	0.000	0.000
27.637	21.636	0.658	0.000	0.000
27.702	18.095	0.248	0.000	0.000
27.768	20.100	0.165	0.000	0.000
27.833	18.544	0.000	0.487	0.000
27.898	25.784	0.245	0.244	0.000
27.963	21.900	0.164	0.162	0.000
28.028	18.987	0.000	0.162	0.000
28.094	20.497	0.000	0.243	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
28.159	15.865	0.000	0.000	0.000
28.224	14.367	0.000	0.000	0.000
28.289	21.472	0.000	0.000	0.000
28.355	25.076	0.164	0.000	0.000
28.420	26.635	0.988	0.497	0.000
28.485	21.078	0.986	0.248	0.000
28.550	19.151	0.987	0.166	0.000
28.615	16.716	0.979	0.000	0.489
28.681	20.728	0.980	0.000	0.245
28.746	21.896	0.658	0.000	0.163
28.811	13.876	0.000	0.000	0.000
28.876	15.397	0.000	0.250	0.000
28.941	12.000	0.168	0.166	0.000
29.006	16.478	0.999	0.000	0.000
29.072	19.494	0.500	0.000	0.000
29.137	14.877	0.333	0.000	0.000
29.202	17.164	0.996	0.162	0.000
29.267	13.093	0.498	0.485	0.000
29.333	17.016	0.332	0.648	0.000
29.398	18.534	0.651	0.000	0.000
29.463	15.588	0.489	0.000	0.000
29.528	19.668	0.654	0.000	0.000
29.593	17.101	0.812	0.000	0.000
29.659	13.190	0.730	0.000	0.000
29.724	14.705	1.464	0.000	0.000
29.789	14.871	0.163	0.000	0.000
29.854	19.800	0.245	0.000	0.000
29.919	11.244	0.490	0.000	0.000
29.984	16.253	0.000	0.000	0.000
30.050	19.905	0.244	0.000	0.000
30.115	20.668	0.163	0.000	0.000
30.180	16.968	0.000	0.000	0.000
30.245	18.270	0.248	0.000	0.000
30.310	18.264	0.165	0.000	0.000
30.376	15.156	0.326	0.000	0.000
30.441	21.022	0.732	0.000	0.000
30.506	20.085	0.649	0.000	0.000
30.571	17.532	0.490	0.163	0.000
30.636	17.120	0.490	0.245	0.000
30.702	22.533	0.164	0.000	0.000
30.767	25.350	1.809	0.000	0.000

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		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
30.832	19.196	1.232	0.000	0.000
30.897	17.905	0.494	0.000	0.000
30.963	21.875	0.330	0.164	0.000
31.028	25.414	0.498	0.246	0.000
31.093	24.292	0.334	0.000	0.000
31.158	24.865	0.326	0.000	0.000
31.223	19.367	0.247	0.247	0.000
31.289	19.612	0.495	0.165	0.000
31.354	25.149	0.654	0.163	0.000
31.419	25.247	0.986	0.244	0.000
31.484	22.959	0.817	0.488	0.000
31.549	24.509	0.325	0.000	0.000
31.614	25.945	0.243	0.000	0.000
31.680	27.289	0.649	0.000	0.000
31.745	32.820	0.498	0.489	0.000
31.810	23.511	0.730	0.245	0.000
31.875	22.973	0.809	0.163	0.000
31.940	30.225	1.301	0.163	0.000
32.006	27.699	0.733	0.241	0.000
32.071	29.296	0.651	0.161	0.000
32.136	31.921	0.497	0.162	0.000
32.201	23.560	0.493	0.000	0.000
32.266	36.337	0.493	0.000	0.000
32.332	27.355	0.974	0.000	0.000
32.397	29.186	1.220	0.000	0.000
32.462	30.231	0.979	0.000	0.000
32.527	27.294	0.000	0.000	0.000
32.593	31.096	0.000	0.000	0.000
32.658	25.469	0.000	0.000	0.000
32.723	32.534	0.653	0.000	0.000
32.788	28.856	1.218	0.000	0.000
32.853	29.103	1.143	0.000	0.000
32.918	28.727	1.150	0.000	0.497
32.984	35.780	1.720	0.246	0.249
33.049	29.571	0.987	0.164	0.166
33.114	30.790	0.822	0.166	0.000
33.179	34.774	0.491	0.249	0.000
33.244	37.590	0.654	0.167	0.000
33.310	29.626	0.332	0.164	0.000
33.375	35.167	0.498	0.000	0.000
33.440	43.717	0.503	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
33.505	41.058	0.495	0.000	0.000
33.570	30.898	0.743	0.000	0.000
33.636	41.501	0.985	0.000	0.000
33.701	34.891	0.500	0.500	0.000
33.766	41.597	0.250	0.250	0.000
33.831	35.013	0.487	0.167	0.160
33.896	33.463	1.296	0.486	0.000
33.962	39.127	0.975	0.243	0.000
34.027	29.724	0.814	0.162	0.000
34.092	33.130	1.136	0.647	0.485
34.157	34.091	0.973	0.486	0.243
34.223	39.155	1.462	0.648	0.162
34.288	33.270	0.163	0.000	0.000
34.353	34.313	0.490	0.000	0.000
34.418	31.378	0.327	0.163	0.000
34.483	38.540	0.812	0.652	0.000
34.548	35.649	0.484	0.245	0.243
34.614	30.119	0.325	0.163	0.324
34.679	34.261	1.466	0.163	0.165
34.744	30.171	1.221	0.000	0.247
34.809	35.628	1.784	0.000	0.000
34.875	20.486	0.489	1.141	0.000
34.940	26.362	0.245	0.733	0.000
35.005	34.967	0.328	0.489	0.000
35.070	29.747	0.977	0.163	0.000
35.135	31.215	0.976	0.000	0.000
35.201	29.456	0.483	0.000	0.000
35.266	33.187	0.987	0.167	0.000
35.331	40.617	1.243	0.251	0.000
35.396	32.892	1.497	0.666	0.000
35.461	37.121	0.661	0.166	0.000
35.527	27.758	0.743	0.000	0.000
35.592	27.782	0.166	0.000	0.000
35.657	32.099	0.656	0.326	0.000
35.722	32.971	0.981	0.489	0.000
35.787	38.142	1.141	1.141	0.000
35.852	22.787	1.296	0.167	0.000
35.918	36.065	1.214	0.492	0.000
35.983	27.385	1.101	0.161	0.000
36.048	28.909	0.000	0.000	0.000
36.113	25.520	0.000	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
36.178	25.582	0.158	0.158	0.000
36.244	29.098	0.317	0.316	0.000
36.309	28.582	0.947	0.474	0.000
36.374	26.921	1.103	0.470	0.000
36.439	32.090	1.253	0.158	0.000
36.505	30.613	1.409	0.237	0.000
36.570	31.296	0.940	0.158	0.000
36.635	22.736	1.272	0.314	0.000
36.700	21.372	0.953	0.000	0.000
36.765	27.862	1.265	0.000	0.000
36.831	27.519	0.474	0.474	0.000
36.896	26.152	0.237	0.237	0.000
36.961	30.955	0.158	0.158	0.000
37.026	27.547	0.945	0.476	0.000
37.091	23.695	0.708	0.474	0.000
37.156	35.309	0.940	0.469	0.000
37.222	27.891	1.103	0.471	0.000
37.287	29.237	0.946	0.236	0.000
37.352	26.555	0.473	0.157	0.000
37.417	28.455	1.269	0.000	0.000
37.482	28.008	1.193	0.000	0.000
37.548	22.458	1.276	0.159	0.000
37.613	27.307	0.478	0.478	0.000
37.678	25.840	0.476	0.239	0.000
37.743	24.919	0.639	0.319	0.000
37.808	27.607	0.317	0.477	0.000
37.874	30.662	0.479	0.238	0.000
37.939	24.754	0.161	0.159	0.000
38.004	29.632	0.963	0.160	0.000
38.069	30.343	0.959	0.239	0.000
38.135	29.925	1.279	0.000	0.000
38.200	24.009	1.284	0.485	0.000
38.265	27.038	1.671	0.242	0.000
38.330	30.754	0.799	0.162	0.000
38.395	23.048	0.157	0.000	0.000
38.461	24.553	0.239	0.239	0.000
38.526	19.887	0.475	0.317	0.000
38.591	22.610	0.784	0.000	0.000
38.656	22.256	0.235	0.000	0.000
38.721	19.961	0.156	0.000	0.000
38.786	30.971	0.953	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
38.852	22.895	0.716	0.000	0.000
38.917	26.116	0.951	0.000	0.000
38.982	28.250	0.948	0.314	0.000
39.047	27.421	0.684	0.000	0.000
39.112	24.991	0.813	0.234	0.000
39.178	22.826	0.225	0.471	0.000
39.243	25.085	0.956	0.950	0.000
39.308	21.315	0.715	0.713	0.000
39.373	24.622	1.110	0.318	0.159
39.438	22.835	0.238	0.238	0.000
39.504	21.909	0.000	0.000	0.000
39.569	30.065	0.954	0.159	0.000
39.634	17.647	0.716	0.000	0.000
39.699	20.934	1.431	0.000	0.000
39.764	26.177	0.000	0.000	0.000
39.830	24.890	0.479	0.000	0.000
39.895	25.396	0.718	0.000	0.000
39.960	17.805	0.796	0.000	0.000
40.025	25.875	1.209	0.000	0.000
40.090	25.045	0.968	0.000	0.000
40.156	22.654	0.804	0.000	0.000
40.221	22.813	0.238	0.485	0.000
40.286	18.344	0.476	0.242	0.000
40.351	22.591	0.632	0.321	0.000
40.416	20.994	0.467	0.000	0.000
40.482	25.071	0.473	0.000	0.000
40.547	24.261	0.000	0.317	0.158
40.612	19.444	0.000	0.000	0.000
40.677	20.056	0.000	0.000	0.000
40.743	21.026	0.795	0.160	0.000
40.808	18.073	0.237	0.000	0.000
40.873	22.817	0.238	0.000	0.000
40.938	21.865	0.639	0.000	0.161
41.003	25.333	0.720	0.000	0.241
41.069	21.412	0.951	0.000	0.000
41.134	23.993	0.946	0.000	0.000
41.199	18.866	0.945	0.000	0.000
41.264	17.619	0.950	0.237	0.000
41.329	25.408	0.792	0.316	0.000
41.395	29.487	0.238	0.238	0.476
41.460	27.046	0.474	0.000	0.238

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
41.525	24.790	0.476	0.951	0.159
41.590	21.945	0.476	0.950	0.000
41.655	24.562	0.238	1.422	0.000
41.720	24.164	0.637	0.159	0.000
41.786	28.646	0.478	0.239	0.000
41.851	26.811	0.239	0.000	0.000
41.916	20.504	0.321	0.162	0.000
41.981	25.654	0.242	0.242	0.000
42.046	25.607	0.485	0.485	0.000
42.112	24.777	0.642	0.161	0.000
42.177	30.925	1.934	0.000	0.000
42.242	27.403	2.411	0.000	0.000
42.307	22.652	0.804	0.322	0.000
42.373	27.522	0.964	0.000	0.000
42.438	25.045	0.720	0.000	0.000
42.503	35.722	0.801	0.322	0.000
42.568	23.059	2.158	0.240	0.000
42.633	28.768	1.675	0.000	0.000
42.699	31.764	0.638	0.158	0.000
42.764	29.483	0.000	0.000	0.000
42.829	26.405	0.000	0.000	0.000
42.894	30.264	0.476	0.158	0.000
42.959	28.318	0.945	0.237	0.471
43.024	29.195	0.235	0.000	0.235
43.090	27.030	0.315	0.159	0.157
43.155	24.354	0.714	0.239	0.000
43.220	30.455	1.190	0.238	0.000
43.285	22.435	0.477	0.476	0.000
43.350	29.534	0.000	0.239	0.000
43.416	19.610	0.000	0.000	0.000
43.481	30.045	0.637	0.321	0.159
43.546	24.334	1.188	0.242	0.000
43.611	25.905	0.473	0.485	0.000
43.676	21.415	0.792	0.159	0.159
43.742	23.510	0.949	0.238	0.000
43.807	26.520	1.424	0.711	0.000
43.872	24.318	0.315	0.157	0.000
43.937	20.204	0.000	0.000	0.000
44.003	24.740	0.477	0.000	0.000
44.068	19.067	0.477	0.000	0.000
44.133	23.544	0.000	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
44.198	23.214	0.000	0.000	0.000
44.263	17.697	0.000	0.000	0.000
44.328	21.140	0.000	0.000	0.000
44.394	20.175	0.000	0.000	0.000
44.459	19.736	0.639	0.161	0.000
44.524	23.444	0.477	0.000	0.000
44.589	25.139	0.241	0.000	0.000
44.654	17.477	0.803	0.162	0.319
44.720	23.762	0.970	0.000	0.479
44.785	22.377	0.485	0.000	0.000
44.850	25.594	0.957	0.000	0.000
44.915	22.370	0.714	0.000	0.000
44.980	26.100	0.950	0.000	0.000
45.046	23.639	1.264	0.159	0.317
45.111	18.059	0.716	0.000	0.000
45.176	19.977	0.955	0.473	0.000
45.241	22.012	0.794	0.316	0.000
45.306	17.112	0.952	0.476	0.000
45.372	19.575	0.480	0.238	0.000
45.437	22.551	1.121	0.159	0.000
45.502	18.691	0.717	0.000	0.000
45.567	18.405	0.708	0.000	0.000
45.633	22.180	0.316	0.000	0.000
45.698	18.538	0.473	0.000	0.000
45.763	13.887	0.237	0.000	0.000
45.828	14.705	0.635	0.000	0.000
45.893	17.031	0.478	0.000	0.000
45.958	15.711	0.715	0.000	0.000
46.024	21.945	0.475	0.000	0.000
46.089	18.043	0.000	0.000	0.000
46.154	15.805	0.000	0.236	0.000
46.219	13.877	0.161	0.477	0.000
46.285	19.116	0.000	0.238	0.000
46.350	18.556	0.000	0.476	0.000
46.415	11.042	0.000	0.000	0.000
46.480	14.520	1.438	0.000	0.000
46.545	11.704	1.450	0.000	0.000
46.611	11.073	1.130	0.000	0.000
46.676	12.072	0.246	0.000	0.000
46.741	9.252	0.491	0.000	0.000
46.806	7.840	0.000	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
46.871	12.165	0.000	0.000	0.000
46.937	11.056	0.238	0.000	0.000
47.002	11.461	0.159	0.323	0.000
47.067	8.644	0.000	0.484	0.000
47.132	14.244	0.235	0.000	0.000
47.197	15.277	0.313	0.163	0.000
47.262	17.382	0.000	0.245	0.000
47.328	14.494	0.000	0.000	0.000
47.393	12.432	0.503	0.000	0.000
47.458	16.999	1.671	0.000	0.000
47.523	14.601	0.967	0.000	0.000
47.588	10.373	0.474	0.000	0.000
47.654	9.103	0.253	0.000	0.000
47.719	11.751	0.741	0.000	0.000
47.784	10.645	0.517	0.000	0.000
47.849	10.234	0.541	0.000	0.000
47.915	10.662	0.586	0.000	0.000
47.980	11.860	0.057	0.011	0.000

Notes

1 - Total Gamma Ray based on spectral gamma readings.

cps - counts per second

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
4.100	27.972	0.373	0.373	0.000
4.165	30.518	0.813	0.426	0.007
4.231	27.470	0.545	0.287	0.004
4.296	34.280	0.191	0.191	0.000
4.361	26.363	0.485	0.000	0.000
4.426	36.147	0.323	0.161	0.000
4.491	37.354	0.485	0.000	0.000
4.556	32.329	0.732	0.000	0.000
4.622	25.939	0.814	0.163	0.000
4.687	35.768	0.485	0.485	0.000
4.752	28.562	0.485	0.243	0.000
4.817	25.942	0.323	0.162	0.000
4.883	31.209	0.000	0.000	0.000
4.948	29.792	0.237	0.474	0.000
5.013	28.843	0.316	0.639	0.000
5.078	29.506	0.966	0.484	0.000
5.143	24.673	0.725	0.968	0.000
5.209	29.539	0.483	0.484	0.000
5.274	32.295	0.958	0.483	0.000
5.339	31.742	0.960	0.481	0.000
5.404	34.946	1.121	0.161	0.158
5.469	28.754	0.242	0.000	0.000
5.535	21.124	0.000	0.000	0.000
5.600	33.541	0.324	0.000	0.000
5.665	28.224	0.952	0.000	0.000
5.730	30.029	0.476	0.000	0.000
5.795	32.154	0.638	0.000	0.000
5.860	29.067	0.243	0.000	0.000
5.926	32.815	0.242	0.000	0.000
5.991	34.843	0.799	0.000	0.000
6.056	27.589	0.479	0.000	0.000
6.121	33.357	0.953	0.000	0.000
6.187	26.484	1.126	0.163	0.000
6.252	24.278	0.730	0.244	0.000
6.317	28.415	0.971	0.000	0.000
6.382	36.002	0.651	0.163	0.000
6.447	25.317	0.737	0.244	0.000
6.513	26.083	0.496	0.000	0.000
6.578	31.667	0.162	0.162	0.000
6.643	34.186	0.487	0.243	0.000
6.708	32.777	0.490	0.487	0.000
6.773	33.638	0.488	0.164	0.000
6.839	30.619	0.242	0.245	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
6.904	31.157	0.973	0.000	0.000
6.969	28.449	0.813	0.163	0.000
7.034	27.604	0.241	0.000	0.000
7.099	30.754	0.721	0.000	0.000
7.165	28.900	1.136	0.000	0.000
7.230	26.630	1.462	0.000	0.000
7.295	26.231	1.225	0.000	0.000
7.360	35.136	1.121	0.321	0.000
7.425	27.783	0.238	0.000	0.000
7.490	23.614	0.241	0.000	0.000
7.556	26.450	0.322	0.000	0.000
7.621	12.768	0.242	0.000	0.000
7.686	28.752	0.722	0.237	0.000
7.751	30.518	0.480	0.158	0.160
7.816	22.300	0.724	0.000	0.000
7.882	28.379	0.726	0.000	0.000
7.947	27.249	0.639	0.160	0.000
8.012	34.954	0.718	0.239	0.000
8.077	32.076	0.000	0.000	0.000
8.142	34.862	0.319	0.000	0.160
8.208	34.807	0.000	0.959	0.240
8.273	40.358	0.000	0.480	0.480
8.338	37.448	0.969	0.320	0.320
8.403	31.721	1.217	0.000	0.243
8.468	33.861	1.217	0.000	0.000
8.534	31.635	0.646	0.161	0.000
8.599	29.551	0.486	0.241	0.000
8.664	28.725	0.000	0.720	0.000
8.729	29.877	0.648	0.159	0.000
8.795	35.438	0.249	0.000	0.000
8.860	32.005	0.498	0.000	0.000
8.925	39.376	0.328	0.162	0.000
8.990	30.346	0.974	0.000	0.000
9.055	31.440	1.225	0.000	0.000
9.120	36.791	0.647	0.326	0.000
9.186	26.010	0.483	0.241	0.000
9.251	26.161	0.965	0.726	0.000
9.316	29.113	0.160	0.323	0.000
9.381	41.714	0.240	0.242	0.000
9.446	30.158	0.000	0.484	0.000
9.512	33.019	0.652	0.000	0.000
9.577	33.010	0.738	0.000	0.000
9.642	30.626	1.224	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
9.707	30.820	0.803	0.160	0.000
9.773	32.733	0.242	0.000	0.000
9.838	32.399	0.726	0.000	0.000
9.903	30.380	0.646	0.000	0.000
9.968	36.615	2.151	0.474	0.474
10.033	29.740	1.671	0.477	0.237
10.099	38.011	1.114	0.318	0.318
10.164	26.837	0.481	0.477	0.477
10.229	34.861	0.000	0.239	0.239
10.294	35.392	0.488	0.320	0.159
10.359	28.979	0.968	0.000	0.000
10.425	31.904	0.239	0.000	0.000
10.490	31.127	1.274	0.161	0.000
10.555	29.905	0.714	0.000	0.000
10.620	31.050	0.955	0.000	0.000
10.685	26.362	0.317	0.160	0.000
10.750	25.713	0.479	0.239	0.000
10.816	26.464	0.239	0.479	0.000
10.881	20.840	0.485	0.000	0.000
10.946	26.619	0.724	0.478	0.000
11.011	23.615	0.239	0.239	0.000
11.076	28.290	0.487	0.323	0.000
11.142	21.679	0.739	0.245	0.000
11.207	22.010	0.246	0.490	0.000
11.272	23.674	0.325	0.000	0.161
11.337	28.462	0.724	0.000	0.241
11.403	24.893	0.487	0.000	0.483
11.468	30.991	0.815	0.160	0.000
11.533	23.285	0.000	0.240	0.000
11.598	21.134	0.240	0.481	0.240
11.663	24.099	0.642	0.000	0.160
11.728	26.675	0.245	0.000	0.000
11.794	23.168	0.000	0.238	0.000
11.859	22.719	0.321	0.481	0.161
11.924	25.174	0.242	0.483	0.242
11.989	23.088	0.000	0.000	0.000
12.055	29.443	0.320	0.000	0.000
12.120	20.022	0.243	0.000	0.000
12.185	21.194	0.486	0.000	0.000
12.250	22.113	0.325	0.159	0.000
12.315	22.909	1.190	1.187	0.000
12.380	25.823	0.474	0.951	0.000
12.446	21.703	0.316	0.638	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
12.511	24.009	0.000	0.243	0.000
12.576	28.244	0.000	0.485	0.000
12.641	21.046	0.317	0.159	0.159
12.707	21.121	0.476	0.000	0.238
12.772	20.575	0.480	0.000	0.000
12.837	11.865	0.636	0.000	0.000
12.902	17.518	0.710	0.000	0.000
12.967	29.387	0.475	0.000	0.000
13.033	21.434	0.641	0.000	0.000
13.098	20.341	0.723	0.000	0.000
13.163	17.809	0.723	0.000	0.000
13.228	18.916	0.648	0.000	0.000
13.293	26.044	0.489	0.000	0.000
13.358	24.290	0.979	0.000	0.000
13.424	15.048	0.323	0.326	0.000
13.489	21.578	0.000	0.246	0.000
13.554	24.425	0.000	0.735	0.000
13.619	23.216	0.162	0.162	0.000
13.685	19.620	0.977	0.000	0.000
13.750	20.246	0.488	0.000	0.000
13.815	25.859	0.641	0.163	0.000
13.880	22.893	0.474	0.000	0.000
13.945	27.014	1.185	0.000	0.000
14.010	18.200	0.320	0.000	0.163
14.076	23.991	0.719	0.000	0.245
14.141	16.036	0.238	0.241	0.490
14.206	25.506	0.159	0.161	0.000
14.271	21.621	0.000	0.000	0.000
14.337	19.647	0.000	0.477	0.000
14.402	21.162	0.321	0.639	0.000
14.467	26.827	0.482	0.483	0.000
14.532	26.515	1.205	0.482	0.000
14.597	21.076	0.320	0.000	0.000
14.663	20.888	0.000	0.000	0.000
14.728	26.699	0.477	0.239	0.000
14.793	22.639	0.963	0.159	0.000
14.858	27.508	1.204	0.000	0.000
14.923	16.255	1.205	0.000	0.000
14.988	25.876	0.480	0.000	0.000
15.054	23.123	0.723	0.000	0.000
15.119	22.566	0.724	0.000	0.000
15.184	20.511	0.644	0.000	0.000
15.249	26.222	0.958	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
15.314	28.966	1.446	0.000	0.000
15.380	23.699	0.640	0.000	0.000
15.445	25.185	0.725	0.000	0.000
15.510	30.947	0.727	0.000	0.000
15.575	25.464	0.656	0.331	0.166
15.640	26.599	1.221	0.250	0.250
15.706	24.009	0.729	0.243	0.000
15.771	23.776	0.812	0.324	0.000
15.836	27.851	0.977	0.000	0.000
15.901	26.197	0.244	0.000	0.241
15.967	27.758	0.806	0.162	0.321
16.032	24.268	0.721	0.000	0.240
16.097	26.159	0.000	0.000	0.480
16.162	19.618	0.161	0.000	0.000
16.227	20.015	0.242	0.000	0.000
16.292	29.253	0.000	0.238	0.000
16.358	28.074	0.000	0.159	0.000
16.423	20.857	0.000	0.000	0.000
16.488	20.987	0.000	0.238	0.000
16.553	25.237	0.000	0.159	0.000
16.618	23.995	0.000	0.000	0.000
16.684	21.029	0.000	0.239	0.000
16.749	23.604	0.158	0.159	0.000
16.814	22.459	0.000	0.000	0.000
16.879	23.894	0.000	0.000	0.000
16.944	24.482	0.000	0.482	0.000
17.010	17.729	0.000	0.723	0.000
17.075	19.606	0.000	0.961	0.000
17.140	22.276	0.000	0.000	0.000
17.205	26.599	0.955	0.000	0.000
17.271	20.008	0.716	0.000	0.000
17.336	20.919	0.803	0.484	0.000
17.401	20.601	0.968	0.488	0.000
17.466	18.266	1.215	1.213	0.000
17.531	29.306	0.482	0.316	0.000
17.597	27.426	0.483	0.000	0.000
17.662	21.265	0.965	0.000	0.000
17.727	24.260	0.484	0.160	0.000
17.792	27.829	0.717	0.000	0.000
17.857	27.524	0.479	0.000	0.000
17.923	23.888	0.804	0.000	0.000
17.988	24.745	0.482	0.000	0.000
18.053	20.745	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
18.118	17.891	0.484	0.000	0.000
18.183	17.507	0.243	0.000	0.000
18.249	11.195	0.000	0.000	0.000
18.314	18.990	0.000	0.000	0.000
18.379	18.138	0.958	0.000	0.000
18.444	16.752	0.479	0.000	0.000
18.509	25.940	0.481	0.324	0.000
18.574	13.399	0.000	0.000	0.000
18.640	22.231	0.242	0.000	0.000
18.705	21.756	0.645	0.158	0.000
18.770	6.269	0.482	0.236	0.000
18.835	22.206	0.000	0.473	0.000
18.900	24.808	0.000	0.000	0.158
18.966	19.340	0.482	0.000	0.000
19.031	22.235	0.718	0.000	0.000
19.096	17.639	0.637	0.000	0.000
19.161	21.349	0.475	0.000	0.000
19.226	20.101	0.478	0.000	0.000
19.292	21.666	0.801	0.163	0.000
19.357	24.179	0.955	0.244	0.000
19.422	18.757	0.726	0.489	0.000
19.487	18.481	0.158	0.158	0.000
19.552	28.913	1.420	0.711	0.000
19.618	22.486	0.710	0.237	0.000
19.683	19.035	0.789	0.158	0.000
19.748	20.300	0.000	0.000	0.000
19.813	18.299	0.000	0.000	0.000
19.878	20.100	0.480	0.000	0.000
19.944	18.218	0.481	0.000	0.000
20.009	12.101	0.485	0.000	0.000
20.074	15.119	0.489	0.000	0.000
20.139	15.532	0.487	0.479	0.000
20.204	20.463	0.974	0.240	0.000
20.270	19.088	0.162	0.160	0.000
20.335	17.044	0.243	0.000	0.000
20.400	13.546	0.486	0.000	0.000
20.465	17.398	0.161	0.000	0.000
20.531	17.520	0.242	0.000	0.000
20.596	15.983	0.244	0.000	0.000
20.661	18.550	0.162	0.159	0.000
20.726	16.181	0.473	0.000	0.000
20.791	15.224	0.237	0.000	0.000
20.857	14.893	0.158	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
20.922	11.558	0.000	0.000	0.000
20.987	10.978	0.240	0.000	0.000
21.052	15.718	0.160	0.000	0.160
21.117	12.842	0.473	0.000	0.239
21.183	14.665	0.473	0.000	0.000
21.248	15.265	0.636	0.000	0.000
21.313	16.338	0.481	0.000	0.000
21.378	15.299	0.000	0.000	0.000
21.443	12.817	0.159	0.000	0.000
21.508	13.296	0.712	0.000	0.000
21.574	13.449	0.477	0.000	0.000
21.639	15.880	0.474	0.159	0.000
21.704	11.468	0.235	0.000	0.000
21.769	17.465	0.470	0.000	0.000
21.834	10.437	0.000	0.000	0.000
21.900	11.456	0.000	0.000	0.000
21.965	22.869	0.236	0.000	0.000
22.030	14.877	0.477	0.161	0.000
22.095	13.979	0.000	0.241	0.000
22.160	16.615	0.233	0.000	0.000
22.226	14.960	0.317	0.000	0.000
22.291	15.812	0.000	0.000	0.000
22.356	10.193	0.000	0.000	0.000
22.421	22.442	0.318	0.000	0.000
22.486	13.561	0.478	0.000	0.000
22.552	14.822	0.716	0.000	0.000
22.617	11.118	0.484	0.161	0.000
22.682	9.738	0.242	0.000	0.000
22.747	11.610	0.485	0.000	0.000
22.813	10.095	0.160	0.000	0.000
22.878	15.360	0.240	0.000	0.000
22.943	12.944	0.480	0.000	0.000
23.008	12.932	0.000	0.000	0.000
23.073	14.206	0.000	0.000	0.000
23.139	15.378	0.000	0.000	0.000
23.204	10.542	0.000	0.000	0.000
23.269	9.143	0.000	0.000	0.000
23.334	12.288	0.000	0.000	0.000
23.399	15.288	0.000	0.000	0.000
23.464	15.327	0.478	0.478	0.000
23.530	10.563	0.239	0.239	0.000
23.595	10.984	0.477	0.159	0.000
23.660	14.737	0.714	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
23.725	14.299	0.714	0.000	0.000
23.790	14.210	0.159	0.000	0.000
23.856	7.119	0.000	0.000	0.476
23.921	12.928	0.000	0.000	0.238
23.986	12.454	0.318	0.000	0.159
24.051	13.229	0.237	0.000	0.000
24.116	10.854	0.474	0.000	0.000
24.182	10.958	0.323	0.000	0.000
24.247	12.985	0.484	0.000	0.000
24.312	12.013	0.722	0.000	0.000
24.377	15.654	0.635	0.000	0.000
24.443	18.622	0.476	0.000	0.000
24.508	10.155	0.000	0.000	0.000
24.573	12.117	0.486	0.163	0.000
24.638	13.468	0.245	0.245	0.000
24.703	12.173	0.490	0.490	0.000
24.768	11.182	0.487	0.000	0.000
24.834	9.213	0.727	0.000	0.000
24.899	12.068	0.242	0.000	0.000
24.964	16.988	0.485	0.000	0.000
25.029	8.745	1.217	0.000	0.000
25.094	15.364	0.971	0.000	0.000
25.160	15.080	0.806	0.000	0.000
25.225	13.363	0.477	0.000	0.000
25.290	10.536	0.239	0.000	0.000
25.355	14.844	0.159	0.000	0.000
25.420	12.394	0.000	0.000	0.000
25.486	15.835	0.000	0.000	0.000
25.551	14.888	0.321	0.160	0.000
25.616	12.843	0.000	0.000	0.000
25.681	14.133	0.000	0.000	0.000
25.747	11.925	0.161	0.159	0.000
25.812	13.508	0.242	0.000	0.000
25.877	12.425	0.000	0.000	0.000
25.942	10.370	0.000	0.000	0.000
26.007	18.052	0.000	0.000	0.000
26.073	10.526	0.000	0.000	0.000
26.138	9.137	0.000	0.000	0.000
26.203	13.759	0.000	0.000	0.000
26.268	11.394	0.000	0.000	0.000
26.333	17.111	0.159	0.000	0.000
26.398	14.228	0.000	0.474	0.000
26.464	13.292	0.000	0.237	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
26.529	13.915	0.958	0.158	0.000
26.594	17.326	1.439	0.000	0.000
26.659	17.641	1.436	0.000	0.000
26.725	10.959	0.481	0.161	0.000
26.790	19.757	0.722	0.241	0.000
26.855	16.073	0.483	0.000	0.000
26.920	17.004	0.800	0.162	0.000
26.985	14.831	0.718	0.000	0.000
27.050	16.350	0.720	0.000	0.000
27.116	14.043	0.161	0.000	0.160
27.181	20.777	0.000	0.000	0.240
27.246	16.330	0.000	0.000	0.000
27.311	11.580	0.161	0.161	0.000
27.376	14.416	0.481	0.000	0.000
27.442	13.312	0.241	0.000	0.000
27.507	13.271	0.318	0.000	0.000
27.572	12.380	0.000	0.474	0.000
27.637	13.462	0.477	0.237	0.000
27.702	15.349	0.475	0.314	0.000
27.768	12.776	0.713	0.234	0.000
27.833	10.905	0.710	0.000	0.000
27.898	18.165	0.478	0.000	0.160
27.963	15.254	0.714	0.000	0.000
28.028	13.296	0.237	0.000	0.000
28.094	16.335	0.478	0.000	0.000
28.159	18.210	0.000	0.000	0.000
28.224	13.275	0.000	0.000	0.000
28.289	15.503	0.316	0.315	0.000
28.355	10.477	0.238	0.238	0.000
28.420	13.453	0.000	0.000	0.241
28.485	14.302	0.315	0.000	0.160
28.550	16.878	0.472	0.000	0.000
28.615	12.314	0.476	0.236	0.000
28.681	13.322	0.639	0.318	0.000
28.746	18.174	0.958	0.241	0.000
28.811	14.899	1.435	0.000	0.000
28.876	15.269	0.794	0.000	0.000
28.941	16.743	0.719	0.000	0.000
29.006	18.676	0.721	0.238	0.000
29.072	13.421	0.159	0.159	0.161
29.137	10.183	0.000	0.000	0.000
29.202	18.555	0.000	0.000	0.000
29.267	17.438	0.482	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
29.333	16.244	0.238	0.000	0.000
29.398	20.355	0.000	0.000	0.000
29.463	15.618	0.000	0.000	0.000
29.528	16.519	0.486	0.000	0.000
29.593	13.841	0.243	0.000	0.000
29.659	20.423	0.321	0.000	0.000
29.724	12.873	0.238	0.000	0.000
29.789	12.875	0.477	0.000	0.000
29.854	10.377	0.000	0.000	0.000
29.919	23.519	0.000	0.000	0.000
29.984	18.241	0.000	0.000	0.240
30.050	16.106	0.000	0.000	0.160
30.115	15.614	0.000	0.000	0.000
30.180	28.055	0.000	0.000	0.236
30.245	15.763	0.159	0.000	0.157
30.310	19.541	0.714	0.000	0.000
30.376	15.124	0.237	0.000	0.000
30.441	21.754	0.474	0.000	0.000
30.506	23.872	0.000	0.000	0.000
30.571	15.177	0.236	0.000	0.000
30.636	17.502	0.634	0.160	0.000
30.702	17.722	0.480	0.240	0.000
30.767	22.048	0.960	0.480	0.239
30.832	13.281	0.316	0.000	0.160
30.897	16.964	0.475	0.467	0.000
30.963	19.914	0.949	0.234	0.000
31.028	19.191	0.480	0.156	0.000
31.093	22.063	0.481	0.000	0.000
31.158	17.561	0.000	0.000	0.000
31.223	27.666	0.638	0.000	0.000
31.289	16.871	0.722	0.000	0.000
31.354	19.304	0.724	0.000	0.000
31.419	20.284	0.321	0.000	0.000
31.484	22.305	0.000	0.000	0.000
31.549	25.619	0.242	0.000	0.000
31.614	22.983	0.480	0.159	0.000
31.680	27.796	0.722	0.000	0.000
31.745	13.529	0.242	0.000	0.000
31.810	20.374	0.320	0.155	0.155
31.875	25.805	0.238	0.233	0.233
31.940	23.866	0.000	0.465	0.465
32.006	19.937	0.000	0.000	0.318
32.071	29.096	0.953	0.000	0.477

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
32.136	25.641	0.477	0.000	0.476
32.201	25.525	0.789	0.000	0.000
32.266	24.779	1.190	0.478	0.000
32.332	23.168	0.946	0.239	0.000
32.397	28.105	0.955	0.159	0.158
32.462	30.370	0.479	0.000	0.000
32.527	26.253	0.480	0.000	0.000
32.593	27.742	0.319	0.159	0.000
32.658	18.456	0.475	0.000	0.000
32.723	22.158	0.474	0.000	0.000
32.788	19.857	0.637	0.162	0.000
32.853	18.686	0.957	0.242	0.000
32.918	19.464	0.952	0.000	0.000
32.984	26.915	0.946	0.157	0.158
33.049	25.103	0.951	0.236	0.237
33.114	22.797	0.713	0.000	0.475
33.179	19.780	0.793	0.161	0.000
33.244	20.404	0.241	0.241	0.000
33.310	27.359	0.000	0.000	0.000
33.375	27.944	0.483	0.000	0.000
33.440	22.558	0.242	0.000	0.000
33.505	26.494	0.236	0.236	0.000
33.570	25.378	0.318	0.158	0.000
33.636	23.781	0.241	0.000	0.000
33.701	28.704	0.000	0.000	0.000
33.766	28.258	0.640	0.000	0.000
33.831	30.137	0.717	0.000	0.000
33.896	15.298	0.239	0.000	0.000
33.962	30.915	0.642	0.000	0.000
34.027	26.008	0.242	0.000	0.000
34.092	26.017	0.242	0.000	0.000
34.157	20.058	0.317	0.311	0.000
34.223	24.028	0.233	0.466	0.000
34.288	26.280	0.939	0.932	0.000
34.353	28.956	1.108	0.000	0.000
34.418	23.910	0.240	0.000	0.000
34.483	23.921	0.480	0.000	0.000
34.548	28.160	0.156	0.157	0.000
34.614	30.717	0.000	0.000	0.000
34.679	22.987	0.238	0.000	0.000
34.744	33.420	0.956	0.314	0.000
34.809	28.986	0.469	0.233	0.000
34.875	28.386	0.235	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
34.940	32.321	0.312	0.000	0.000
35.005	12.771	0.234	0.000	0.000
35.070	30.078	0.467	0.000	0.000
35.135	23.845	0.480	0.158	0.000
35.201	24.395	0.479	0.000	0.000
35.266	24.318	0.478	0.238	0.000
35.331	31.083	0.632	0.159	0.000
35.396	28.393	0.947	0.000	0.000
35.461	23.341	0.713	0.000	0.000
35.527	25.112	0.631	0.158	0.000
35.592	27.140	0.711	0.237	0.000
35.657	23.845	1.665	0.473	0.000
35.722	27.698	0.636	0.474	0.000
35.787	25.278	0.713	0.473	0.000
35.852	27.475	0.709	0.470	0.000
35.918	29.397	0.482	0.162	0.000
35.983	29.710	0.243	0.731	0.000
36.048	29.596	0.000	0.244	0.000
36.113	24.036	0.469	0.163	0.443
36.178	19.011	0.490	0.000	0.000
36.244	23.715	0.745	0.000	0.000
36.309	18.301	0.475	0.164	0.000
36.374	24.694	0.471	0.476	0.000
36.439	21.215	1.178	0.238	0.000
36.505	20.290	0.472	0.159	0.000
36.570	18.856	0.237	0.000	0.000
36.635	24.427	0.000	0.000	0.000
36.700	26.743	1.088	0.000	0.000
36.765	22.068	1.162	0.000	0.000
36.831	23.795	1.608	0.000	0.000
36.896	19.654	0.767	0.463	0.000
36.961	22.246	1.389	0.466	0.000
37.026	27.488	0.694	0.931	0.000
37.091	26.971	0.771	0.308	0.000
37.156	24.237	0.231	0.000	0.000
37.222	22.061	0.691	0.000	0.000
37.287	25.593	0.461	0.000	0.000
37.352	22.709	0.692	0.000	0.000
37.417	22.919	0.229	0.000	0.000
37.482	27.185	0.611	0.155	0.000
37.548	19.330	0.230	0.000	0.000
37.613	27.128	0.690	0.229	0.000
37.678	28.251	0.305	0.153	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
37.743	23.086	0.000	0.000	0.000
37.808	26.165	0.231	0.000	0.000
37.874	27.816	0.619	0.154	0.000
37.939	25.323	0.465	0.691	0.000
38.004	30.273	0.931	0.230	0.000
38.069	28.338	0.937	0.153	0.000
38.135	32.707	0.468	0.000	0.000
38.200	31.716	0.700	0.000	0.000
38.265	28.924	0.312	0.000	0.000
38.330	33.212	0.236	0.000	0.000
38.395	35.544	0.703	0.000	0.000
38.461	28.766	0.467	0.315	0.312
38.526	30.001	0.701	0.937	0.236
38.591	35.270	0.939	1.411	0.472
38.656	27.135	0.769	0.464	0.154
38.721	27.841	0.684	0.230	0.231
38.786	33.958	0.227	0.228	0.462
38.852	34.798	0.460	0.309	0.000
38.917	28.285	0.229	0.236	0.000
38.982	30.210	0.915	0.000	0.000
39.047	29.478	1.002	0.155	0.000
39.112	26.036	0.384	0.232	0.000
39.178	33.623	0.465	0.921	0.000
39.243	32.428	0.155	0.539	0.156
39.308	30.149	0.539	0.538	0.000
39.373	29.216	0.927	0.465	0.000
39.438	32.553	0.459	0.227	0.000
39.504	28.388	0.610	0.152	0.000
39.569	27.317	0.000	0.000	0.000
39.634	30.301	0.776	0.156	0.000
39.699	28.230	0.930	0.234	0.000
39.764	27.388	0.000	0.000	0.000
39.830	22.571	0.468	0.228	0.000
39.895	33.084	0.469	0.152	0.154
39.960	25.112	0.470	0.000	0.000
40.025	31.982	0.623	0.000	0.000
40.090	21.727	0.386	0.000	0.000
40.156	31.610	0.000	0.466	0.000
40.221	26.647	0.388	0.388	0.000
40.286	22.763	0.542	0.388	0.000
40.351	22.187	0.000	0.000	0.000
40.416	30.174	0.624	0.235	0.000
40.482	27.931	0.936	0.156	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
40.547	24.724	0.933	0.000	0.000
40.612	27.122	0.707	0.392	0.000
40.677	31.745	0.866	0.393	0.000
40.743	29.364	0.468	0.000	0.000
40.808	29.788	0.460	0.000	0.000
40.873	30.321	0.615	0.000	0.000
40.938	32.855	1.386	0.000	0.000
41.003	28.476	0.619	0.230	0.000
41.069	24.363	0.851	0.154	0.000
41.134	19.715	0.466	0.000	0.000
41.199	26.164	0.933	0.000	0.000
41.264	18.460	0.776	0.000	0.000
41.329	26.249	0.465	0.000	0.000
41.395	25.435	0.384	0.157	0.000
41.460	22.883	0.385	0.235	0.000
41.525	22.269	0.928	0.000	0.000
41.590	27.487	0.850	0.229	0.000
41.655	25.004	0.928	0.152	0.000
41.720	26.960	0.470	0.000	0.000
41.786	29.627	1.007	0.000	0.000
41.851	26.880	1.393	0.000	0.000
41.916	30.562	1.857	0.000	0.000
41.981	27.765	1.302	0.000	0.000
42.046	27.586	1.298	0.000	0.000
42.112	28.457	0.460	0.000	0.000
42.177	23.818	0.388	0.313	0.157
42.242	25.270	0.309	0.235	0.000
42.307	33.061	0.461	0.931	0.000
42.373	27.786	0.773	0.386	0.000
42.438	25.768	0.698	0.154	0.000
42.503	27.020	0.470	0.000	0.000
42.568	30.890	0.553	0.469	0.000
42.633	27.105	0.392	0.313	0.000
42.699	32.237	0.471	0.462	0.000
42.764	27.496	0.709	0.231	0.000
42.829	27.842	1.023	0.154	0.000
42.894	28.636	2.818	0.000	0.000
42.959	35.168	1.016	0.000	0.000
43.024	29.776	0.856	0.000	0.154
43.090	29.825	0.000	0.000	0.000
43.155	31.022	0.456	0.000	0.000
43.220	29.823	0.304	0.000	0.000
43.285	30.432	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
43.350	32.367	0.314	0.000	0.155
43.416	30.864	0.690	0.152	0.233
43.481	27.855	1.379	0.000	0.000
43.546	30.472	0.920	0.000	0.158
43.611	31.495	0.766	0.000	0.000
43.676	25.711	0.000	0.000	0.000
43.742	29.121	0.614	0.455	0.000
43.807	26.653	0.765	0.303	0.000
43.872	28.594	0.458	0.000	0.000
43.937	30.100	0.229	0.317	0.000
44.003	22.082	0.305	0.392	0.000
44.068	17.947	0.000	0.479	0.000
44.133	27.493	0.460	0.156	0.000
44.198	29.064	0.307	0.234	0.000
44.263	25.565	0.455	0.455	0.000
44.328	21.298	0.619	0.389	0.000
44.394	20.175	0.457	0.152	0.000
44.459	16.473	0.460	0.460	0.000
44.524	23.932	0.552	0.230	0.000
44.589	25.730	0.396	0.153	0.000
44.654	21.303	0.000	0.000	0.000
44.720	23.572	0.000	0.000	0.161
44.785	25.314	0.157	0.157	0.242
44.850	26.102	0.000	0.467	0.483
44.915	17.617	0.232	0.233	0.000
44.980	14.169	0.154	0.156	0.000
45.046	21.396	0.000	0.000	0.000
45.111	18.228	0.158	0.235	0.000
45.176	16.531	0.237	0.157	0.000
45.241	18.928	0.474	0.453	0.000
45.306	18.147	0.938	0.226	0.000
45.372	18.860	1.031	0.458	0.000
45.437	20.434	0.976	0.000	0.000
45.502	18.813	0.232	0.000	0.000
45.567	13.726	0.154	0.000	0.000
45.633	12.847	0.000	0.000	0.000
45.698	15.898	0.161	0.000	0.000
45.763	14.187	0.000	0.152	0.000
45.828	12.581	0.000	0.000	0.000
45.893	15.240	0.000	0.320	0.000
45.958	18.949	0.000	0.480	0.000
46.024	10.232	0.000	0.479	0.000
46.089	13.064	0.162	0.163	0.000

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
46.154	12.834	0.243	0.244	0.000
46.219	13.076	0.457	0.488	0.000
46.285	16.356	0.681	0.000	0.000
46.350	16.036	0.454	0.000	0.000
46.415	15.195	0.000	0.000	0.000
46.480	16.023	0.164	0.000	0.000
46.545	13.191	0.246	0.151	0.000
46.611	14.708	0.492	0.000	0.000
46.676	13.894	0.231	0.162	0.000
46.741	10.932	0.154	0.243	0.000
46.806	16.105	0.459	0.487	0.000
46.871	14.574	0.556	0.321	0.000
46.937	15.280	0.558	0.000	0.000
47.002	15.852	0.000	0.000	0.000
47.067	13.980	0.676	0.000	0.000
47.132	16.636	0.514	0.000	0.000
47.197	14.633	0.982	0.000	0.000
47.262	12.132	0.464	0.000	0.000
47.328	13.547	0.309	0.000	0.000
47.393	16.885	0.460	0.000	0.000
47.458	22.086	0.459	0.000	0.000
47.523	15.046	0.458	0.000	0.000
47.588	13.080	0.452	0.000	0.000
47.654	15.191	0.371	0.000	0.000
47.719	10.797	0.151	0.000	0.000
47.784	12.984	0.457	0.000	0.000
47.849	9.949	0.229	0.000	0.000
47.915	16.857	0.152	0.000	0.000
47.980	10.138	0.460	0.000	0.000

Notes

1 - Total Gamma Ray based on spectral gamma readings.

cps - counts per second

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
4.035	29.443	1.184	0.239	0.473
4.100	31.517	1.417	0.000	0.351
4.165	28.729	1.156	0.087	0.367
4.230	37.430	1.260	0.058	0.011
4.296	33.800	0.360	0.504	0.000
4.361	36.077	0.361	0.492	0.000
4.426	25.505	0.358	1.125	0.000
4.491	34.895	0.846	0.713	0.000
4.556	31.195	0.602	0.959	0.000
4.622	32.127	0.640	0.164	0.165
4.687	44.704	0.982	0.000	1.217
4.752	30.985	0.732	0.000	0.979
4.817	38.286	1.308	0.167	0.648
4.883	31.711	0.500	0.742	0.000
4.948	36.351	0.748	0.746	0.000
5.013	41.428	0.328	0.499	0.334
5.078	30.109	0.000	0.253	0.256
5.143	36.993	0.000	0.000	0.512
5.209	34.719	0.000	0.167	0.000
5.274	29.963	0.000	0.250	0.000
5.339	36.417	0.249	0.500	0.000
5.404	37.818	0.988	0.167	0.000
5.469	38.323	1.730	0.251	0.000
5.535	36.911	1.239	0.249	0.000
5.600	44.193	1.156	0.166	0.000
5.665	33.405	1.223	0.488	0.000
5.730	32.737	1.218	0.487	0.000
5.795	39.847	1.333	0.000	0.337
5.860	40.121	1.226	0.325	0.252
5.926	43.622	1.449	0.000	0.000
5.991	31.596	1.384	0.163	0.000
6.056	38.428	1.304	0.245	0.000
6.121	39.653	0.490	0.490	0.000
6.186	34.947	0.000	0.333	0.166
6.252	42.202	0.000	0.661	0.000
6.317	29.945	0.000	0.486	0.000
6.382	34.290	0.333	0.410	0.000
6.447	36.999	0.250	0.412	0.000
6.512	40.381	0.500	0.500	0.000
6.578	31.518	0.912	0.167	0.000
6.643	36.391	0.917	0.411	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
6.708	35.390	1.509	0.000	0.000
6.773	38.774	0.819	0.000	0.408
6.839	43.214	1.314	0.164	0.163
6.904	42.218	1.481	0.000	0.000
6.969	40.193	0.914	0.000	0.000
7.034	44.581	0.825	0.320	0.000
7.099	39.791	0.000	0.000	0.000
7.165	32.103	0.168	0.336	0.168
7.230	38.644	0.415	0.504	0.252
7.295	37.235	0.975	0.504	0.504
7.360	42.651	0.656	0.000	0.000
7.425	41.351	0.578	0.164	0.000
7.490	44.721	0.997	0.000	0.000
7.556	40.371	0.493	0.579	0.000
7.621	36.024	0.498	0.412	0.000
7.686	40.919	0.000	0.000	0.000
7.751	35.908	0.420	0.339	0.170
7.816	32.273	0.167	0.508	0.000
7.882	35.098	0.000	0.000	0.000
7.947	34.844	0.165	0.250	0.000
8.012	33.028	0.000	0.330	0.164
8.077	33.960	0.000	0.000	0.493
8.142	27.000	0.497	0.248	0.246
8.208	36.942	0.666	0.330	0.164
8.273	35.702	0.992	0.000	0.000
8.338	34.610	1.072	0.495	0.000
8.403	23.811	0.909	0.249	0.000
8.468	31.149	0.498	0.498	0.000
8.534	28.385	0.574	0.169	0.000
8.599	29.631	0.404	0.000	0.000
8.664	30.837	0.978	0.495	0.000
8.729	25.009	0.986	0.247	0.000
8.794	23.164	1.069	0.165	0.000
8.860	25.626	0.496	0.000	0.000
8.925	20.228	0.246	0.000	0.000
8.990	24.390	0.326	0.000	0.000
9.055	27.065	0.490	0.000	0.000
9.120	29.167	0.410	0.330	0.000
9.186	29.574	0.740	0.495	0.164
9.251	24.629	0.497	0.497	0.000
9.316	30.518	0.162	0.000	0.243

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
9.381	22.948	0.244	0.163	0.325
9.446	30.721	0.000	0.000	0.000
9.512	21.812	0.413	0.165	0.000
9.577	26.801	0.165	0.411	0.000
9.642	22.631	0.000	0.985	0.000
9.707	33.346	0.587	0.245	0.170
9.773	27.090	0.417	0.163	0.000
9.838	22.539	0.500	0.000	0.000
9.903	29.148	0.337	0.000	0.000
9.968	29.329	0.168	0.000	0.000
10.033	25.820	0.499	1.498	0.000
10.099	22.425	0.500	0.749	0.000
10.164	25.428	0.668	0.499	0.000
10.229	31.351	0.000	0.000	0.000
10.294	23.047	0.412	0.000	0.000
10.359	32.714	0.414	0.163	0.000
10.425	31.389	0.000	0.000	0.000
10.490	17.967	0.248	0.000	0.000
10.555	30.579	0.332	0.000	0.000
10.620	24.592	0.493	0.000	0.000
10.685	24.095	0.656	0.000	0.000
10.750	22.726	0.328	0.000	0.000
10.816	28.522	0.000	0.491	0.000
10.881	23.635	0.495	0.245	0.000
10.946	26.615	0.658	0.164	0.000
11.011	32.036	0.492	0.000	0.000
11.076	26.184	0.246	0.000	0.000
11.142	23.610	0.489	0.000	0.000
11.207	24.327	0.980	0.000	0.000
11.272	27.310	0.904	0.000	0.000
11.337	22.333	0.656	0.000	0.000
11.403	27.925	0.491	0.000	0.000
11.468	33.532	1.234	0.000	0.000
11.533	26.783	0.989	0.000	0.000
11.598	33.073	1.483	0.000	0.000
11.663	26.636	0.244	0.167	0.000
11.728	23.929	0.162	0.250	0.000
11.794	28.037	0.500	0.000	0.000
11.859	24.836	0.830	0.582	0.168
11.924	30.456	0.332	0.581	0.252
11.989	31.083	0.000	0.504	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
12.054	29.541	1.088	0.000	0.000
12.120	25.987	0.920	0.000	0.000
12.185	22.856	0.497	0.000	0.000
12.250	30.507	1.087	0.000	0.000
12.315	32.651	0.916	0.000	0.000
12.380	25.936	0.495	0.503	0.000
12.446	26.875	0.330	0.417	0.000
12.511	27.786	0.495	0.415	0.000
12.576	24.253	0.495	0.000	0.000
12.641	29.560	0.165	0.000	0.410
12.706	24.693	0.000	0.000	0.412
12.772	24.396	0.000	0.496	0.000
12.837	29.343	0.166	0.411	0.000
12.902	28.963	0.577	0.410	0.000
12.967	26.529	0.498	0.000	0.000
13.032	23.994	0.660	0.336	0.000
13.098	25.983	0.328	0.251	0.000
13.163	25.643	1.481	0.000	0.000
13.228	27.964	0.904	0.244	0.244
13.293	21.085	0.739	0.163	0.163
13.359	26.614	0.491	0.000	0.000
13.424	25.603	0.576	0.000	0.331
13.489	26.145	0.412	0.162	0.497
13.554	25.544	0.984	0.000	0.496
13.619	26.089	1.479	0.000	0.000
13.685	25.116	1.072	0.000	0.000
13.750	24.333	0.503	0.000	0.000
13.815	29.442	0.167	0.163	0.000
13.880	29.315	0.579	0.244	0.000
13.945	23.533	0.000	0.981	0.000
14.010	25.612	0.167	0.580	0.247
14.076	31.895	0.251	0.665	0.165
14.141	29.009	0.502	0.502	0.000
14.206	26.808	0.336	0.000	0.000
14.271	19.484	0.504	0.000	0.000
14.337	29.239	1.008	0.000	0.000
14.402	23.674	0.837	0.167	0.000
14.467	25.443	0.752	0.000	0.000
14.532	23.009	0.497	0.497	0.000
14.597	25.005	0.665	0.411	0.000
14.663	25.988	0.332	0.410	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
14.728	21.871	0.502	0.000	0.000
14.793	22.079	0.751	0.167	0.000
14.858	24.148	0.918	0.251	0.000
14.923	22.871	0.993	0.501	0.000
14.988	26.374	0.413	0.247	0.000
15.054	16.364	0.164	0.165	0.000
15.119	22.377	0.499	0.000	0.000
15.184	29.097	0.413	0.163	0.165
15.249	26.394	0.492	0.245	0.247
15.314	27.556	0.000	0.000	0.495
15.380	21.834	0.164	0.166	0.000
15.445	28.169	0.247	0.000	0.165
15.510	24.362	0.488	0.000	0.000
15.575	21.077	1.398	0.168	0.000
15.640	15.621	1.242	0.252	0.000
15.706	26.374	1.006	0.000	0.000
15.771	22.710	0.489	0.000	0.000
15.836	26.309	0.650	0.163	0.000
15.901	25.511	0.980	0.000	0.000
15.966	23.208	0.246	0.330	0.000
16.032	22.102	0.328	0.249	0.000
16.097	26.505	0.487	0.498	0.000
16.162	28.260	0.822	0.165	0.000
16.227	26.201	0.325	0.247	0.000
16.292	20.316	0.000	0.496	0.000
16.358	23.895	0.414	0.583	0.000
16.423	22.987	0.415	0.165	0.000
16.488	24.075	0.502	0.000	0.000
16.553	32.791	0.745	0.414	0.000
16.618	27.908	0.997	0.414	0.000
16.684	30.457	0.498	0.000	0.000
16.749	26.017	0.167	0.000	0.000
16.814	27.829	0.250	0.000	0.000
16.879	28.406	0.501	0.000	0.000
16.944	19.553	0.416	0.000	0.167
17.010	35.032	0.415	0.168	0.000
17.075	24.522	0.000	0.985	0.000
17.140	28.984	0.497	0.493	0.243
17.205	27.287	0.746	0.328	0.162
17.270	27.356	0.992	0.000	0.000
17.336	27.599	1.157	0.583	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
17.401	24.570	1.651	0.667	0.000
17.466	29.250	1.001	1.001	0.000
17.531	36.591	0.330	0.166	0.000
17.596	30.355	0.658	0.000	0.000
17.662	37.937	1.480	0.000	0.000
17.727	15.322	0.409	0.163	0.000
17.792	29.071	0.574	0.245	0.000
17.857	33.323	0.980	0.000	0.000
17.922	27.921	0.245	0.740	0.000
17.988	32.604	0.163	0.907	0.000
18.053	25.705	0.000	0.494	0.000
18.118	28.365	0.000	0.000	0.000
18.183	40.064	0.162	0.162	0.000
18.249	21.248	0.000	0.000	0.000
18.314	28.516	0.247	0.327	0.000
18.379	25.182	0.328	0.000	0.000
18.444	32.404	0.000	0.000	0.000
18.509	32.157	0.577	0.165	0.165
18.574	29.253	0.412	0.248	0.248
18.640	35.217	0.992	0.496	0.496
18.705	35.834	1.409	0.000	0.000
18.770	33.590	1.660	0.165	0.000
18.835	38.632	2.000	0.000	0.503
18.900	38.369	0.168	0.330	0.252
18.966	27.478	0.418	0.167	0.168
19.031	24.065	0.504	0.000	0.000
19.096	29.588	0.498	0.000	0.000
19.161	36.338	0.581	0.000	0.000
19.226	30.174	0.501	0.000	0.000
19.292	30.053	1.487	0.000	0.000
19.357	27.617	1.241	0.000	0.000
19.422	13.350	0.495	0.000	0.000
19.487	34.966	0.499	0.000	0.164
19.552	31.763	0.250	0.165	0.246
19.618	37.250	0.000	0.000	0.492
19.683	30.417	0.577	0.412	0.000
19.748	28.293	0.659	0.573	0.000
19.813	30.507	0.496	0.000	0.000
19.878	34.550	0.164	0.000	0.000
19.944	35.298	0.164	0.000	0.000
20.009	24.008	0.000	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
20.074	36.255	0.330	0.328	0.000
20.139	36.965	0.659	0.164	0.164
20.204	28.044	0.489	0.000	0.000
20.270	29.183	0.901	0.411	0.000
20.335	32.105	0.899	0.163	0.000
20.400	31.563	1.474	0.497	0.000
20.465	28.439	0.497	0.497	0.000
20.530	24.472	0.823	0.166	0.000
20.596	33.545	0.987	0.000	0.000
20.661	24.348	0.246	0.247	0.000
20.726	25.544	0.658	0.492	0.000
20.791	25.047	0.741	0.000	0.000
20.856	27.804	0.000	0.000	0.000
20.922	24.024	0.000	0.167	0.000
20.987	26.423	0.995	0.498	0.000
21.052	23.900	1.240	0.249	0.000
21.117	23.454	1.319	0.166	0.000
21.182	27.463	0.738	0.000	0.504
21.248	27.720	0.983	0.000	0.252
21.313	26.917	0.333	0.168	0.168
21.378	24.955	0.000	0.252	0.000
21.443	23.901	0.251	0.000	0.000
21.508	28.669	0.663	0.167	0.000
21.574	25.942	0.250	0.000	0.000
21.639	27.146	0.989	0.245	0.000
21.704	22.345	0.819	0.163	0.000
21.769	26.643	0.493	0.000	0.000
21.834	24.661	0.986	0.000	0.000
21.900	24.759	0.330	0.000	0.164
21.965	28.604	0.000	0.496	0.246
22.030	22.560	0.488	0.492	0.000
22.095	22.164	0.653	0.328	0.164
22.160	21.779	0.491	0.000	0.247
22.226	21.283	0.245	0.249	0.493
22.291	20.577	0.492	0.495	0.000
22.356	19.110	0.980	0.246	0.000
22.421	22.580	0.733	0.493	0.000
22.486	21.593	0.650	0.162	0.000
22.552	24.000	0.242	0.242	0.494
22.617	20.057	0.000	0.000	0.247
22.682	27.831	0.326	0.163	0.165

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
22.747	20.522	0.489	0.244	0.000
22.813	19.079	0.490	0.000	0.000
22.878	29.011	0.494	0.000	0.000
22.943	21.831	0.250	0.000	0.000
23.008	26.756	0.000	0.000	0.000
23.073	24.818	0.320	0.000	0.000
23.139	16.213	0.000	0.000	0.000
23.204	29.401	0.496	0.000	0.000
23.269	23.134	0.331	0.000	0.000
23.334	22.396	0.000	0.000	0.000
23.399	21.814	0.000	0.000	0.248
23.464	25.399	0.665	0.000	0.165
23.530	26.178	0.756	0.000	0.000
23.595	18.973	0.502	0.000	0.000
23.660	22.409	0.667	0.164	0.000
23.725	22.940	0.000	0.246	0.000
23.790	25.621	0.000	0.000	0.000
23.856	22.950	0.322	0.000	0.000
23.921	24.137	0.486	0.000	0.000
23.986	29.584	0.243	0.243	0.000
24.051	18.347	0.493	0.325	0.164
24.116	16.744	0.000	0.245	0.000
24.182	19.165	0.000	0.000	0.000
24.247	13.778	0.000	0.000	0.000
24.312	17.848	0.000	0.492	0.000
24.377	17.664	0.000	0.246	0.000
24.442	20.709	0.325	0.164	0.000
24.508	24.859	0.240	0.000	0.000
24.573	21.631	0.000	0.247	0.000
24.638	20.963	0.163	0.165	0.000
24.703	20.086	0.967	0.000	0.000
24.768	19.382	0.484	0.000	0.000
24.834	18.388	1.144	0.000	0.000
24.899	14.240	0.487	0.000	0.000
24.964	17.084	0.487	0.000	0.000
25.029	19.130	0.984	0.000	0.000
25.094	19.216	0.985	0.000	0.000
25.160	21.182	1.477	0.247	0.247
25.225	18.246	0.165	0.329	0.164
25.290	17.268	0.739	0.247	0.000
25.355	17.284	0.246	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
25.420	23.278	0.164	0.164	0.000
25.486	14.465	0.000	0.000	0.000
25.551	17.101	0.000	0.249	0.000
25.616	16.517	0.168	0.166	0.000
25.681	17.843	0.000	0.000	0.000
25.747	16.336	0.000	0.000	0.000
25.812	17.070	0.000	0.167	0.000
25.877	21.093	0.000	0.000	0.000
25.942	16.404	0.250	0.000	0.000
26.007	16.769	0.331	0.000	0.000
26.073	18.729	0.000	0.000	0.000
26.138	11.809	0.000	0.000	0.000
26.203	23.628	0.000	0.000	0.000
26.268	15.754	0.000	0.000	0.000
26.333	17.882	0.000	0.000	0.000
26.398	21.210	0.000	0.000	0.000
26.464	18.999	0.990	0.000	0.000
26.529	16.628	0.739	0.000	0.000
26.594	16.231	0.655	0.000	0.000
26.659	12.318	0.000	0.000	0.000
26.725	17.135	0.244	0.000	0.000
26.790	17.679	0.326	0.000	0.000
26.855	20.144	0.000	0.000	0.000
26.920	13.756	0.000	0.246	0.000
26.985	17.538	0.162	0.164	0.000
27.050	14.706	0.000	0.000	0.000
27.116	13.236	0.000	0.000	0.000
27.181	11.322	0.000	0.000	0.000
27.246	12.621	0.000	0.000	0.000
27.311	11.207	0.000	0.000	0.000
27.377	11.326	0.163	0.000	0.000
27.442	18.828	0.740	0.000	0.000
27.507	15.274	0.737	0.000	0.000
27.572	19.114	0.165	0.163	0.000
27.637	19.037	0.000	0.000	0.000
27.702	15.454	0.249	0.000	0.249
27.768	22.730	0.331	0.166	0.166
27.833	14.397	0.248	0.000	0.000
27.898	15.420	0.496	0.000	0.000
27.963	13.387	0.000	0.000	0.000
28.028	16.234	0.495	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
28.094	16.915	0.248	0.249	0.000
28.159	18.109	0.333	0.494	0.168
28.224	19.268	0.000	0.240	0.000
28.289	12.248	0.000	0.000	0.000
28.354	18.452	0.483	0.000	0.000
28.420	17.583	0.000	0.000	0.000
28.485	9.807	0.246	0.000	0.000
28.550	18.611	0.326	0.163	0.000
28.615	19.098	0.243	0.487	0.000
28.681	14.191	0.486	0.489	0.000
28.746	15.703	0.000	0.326	0.000
28.811	19.684	0.000	0.000	0.490
28.876	17.537	0.243	0.000	0.245
28.941	13.739	0.162	0.000	0.163
29.006	17.695	0.496	0.000	0.000
29.072	17.477	0.248	0.000	0.000
29.137	21.803	0.165	0.000	0.163
29.202	14.827	0.486	0.000	0.000
29.267	16.242	0.489	0.000	0.000
29.333	15.391	0.649	0.163	0.000
29.398	15.709	0.740	0.244	0.000
29.463	17.283	0.741	0.000	0.000
29.528	18.688	0.490	0.000	0.164
29.593	19.995	0.244	0.488	0.000
29.659	13.731	0.000	0.244	0.000
29.724	14.279	0.163	0.163	0.161
29.789	16.793	0.742	0.497	0.242
29.854	18.041	0.249	0.249	0.484
29.919	17.710	0.166	0.166	0.000
29.984	10.391	0.981	0.000	0.000
30.050	14.015	0.490	0.000	0.000
30.115	18.294	0.327	0.000	0.000
30.180	16.335	0.000	0.000	0.000
30.245	13.436	0.000	0.000	0.000
30.310	10.963	0.334	0.162	0.000
30.376	20.259	0.000	0.244	0.000
30.441	18.349	0.000	0.249	0.000
30.506	16.816	0.000	0.330	0.000
30.571	12.741	0.000	0.000	0.000
30.636	12.109	0.000	0.000	0.000
30.702	10.305	0.000	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
30.767	19.221	0.000	0.000	0.000
30.832	15.876	0.249	0.000	0.000
30.897	14.634	0.493	0.164	0.000
30.962	16.675	0.244	0.000	0.000
31.028	18.101	0.487	0.000	0.000
31.093	16.734	0.327	0.000	0.000
31.158	14.210	0.980	0.000	0.000
31.223	18.047	0.487	0.000	0.243
31.288	17.599	0.487	0.000	0.324
31.354	12.267	0.243	0.000	0.243
31.419	14.676	0.486	0.491	0.486
31.484	15.097	0.162	0.327	0.162
31.549	18.623	0.976	0.000	0.731
31.615	12.279	0.488	0.000	0.730
31.680	17.145	0.481	0.000	0.163
31.745	15.113	0.000	0.000	0.000
31.810	18.098	0.000	0.000	0.000
31.875	17.112	0.328	0.000	0.163
31.940	18.166	0.732	0.000	0.000
32.006	18.419	0.242	0.000	0.000
32.071	12.783	0.162	0.000	0.165
32.136	18.673	0.495	0.000	0.248
32.201	16.784	0.493	0.000	0.495
32.266	12.816	0.657	0.000	0.000
32.332	19.975	0.000	0.500	0.000
32.397	17.509	0.504	0.250	0.000
32.462	16.732	0.497	0.332	0.000
32.527	17.788	0.000	0.247	0.000
32.592	11.892	0.000	0.000	0.000
32.658	18.521	0.000	0.000	0.000
32.723	15.484	0.000	0.000	0.000
32.788	16.137	0.000	0.000	0.000
32.853	14.572	0.161	0.161	0.000
32.918	15.085	0.242	0.242	0.000
32.984	16.580	0.000	0.245	0.000
33.049	10.254	0.324	0.163	0.165
33.114	18.244	0.243	0.000	0.248
33.179	15.635	0.485	0.000	0.000
33.244	16.875	0.324	0.000	0.000
33.310	13.653	0.244	0.000	0.000
33.375	17.217	0.000	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
33.440	16.727	0.324	0.165	0.000
33.505	16.530	0.242	0.490	0.000
33.570	16.474	0.000	0.245	0.000
33.636	16.933	0.163	0.163	0.000
33.701	19.034	0.000	0.000	0.000
33.766	14.589	0.000	0.000	0.000
33.831	17.082	0.000	0.000	0.000
33.896	13.243	0.486	0.000	0.000
33.962	16.036	0.491	0.000	0.000
34.027	13.102	0.488	0.000	0.000
34.092	12.102	0.000	0.000	0.000
34.157	15.901	0.000	0.000	0.000
34.222	19.431	0.163	0.000	0.483
34.288	17.493	0.737	0.000	0.239
34.353	10.308	0.736	0.000	0.000
34.418	12.726	0.327	0.000	0.000
34.483	14.350	0.000	0.000	0.000
34.548	6.872	0.000	0.000	0.000
34.614	8.963	0.166	0.000	0.000
34.679	12.948	0.000	0.000	0.000
34.744	11.846	0.000	0.000	0.000
34.809	8.884	0.331	0.000	0.000
34.875	7.388	0.000	0.000	0.000
34.940	9.607	0.000	0.000	0.000
35.005	12.384	0.163	0.160	0.000
35.070	9.267	0.000	0.240	0.000
35.135	11.588	0.242	0.000	0.000
35.201	8.676	0.322	0.000	0.000
35.266	9.349	0.492	0.000	0.000
35.331	9.375	0.246	0.000	0.000
35.396	11.700	0.328	0.321	0.000
35.461	7.238	0.000	0.240	0.489
35.526	15.062	0.000	0.000	0.245
35.592	11.692	0.162	0.162	0.163
35.657	11.673	0.489	0.000	0.000
35.722	7.333	0.244	0.000	0.000
35.787	11.825	0.489	0.000	0.000
35.853	7.251	0.243	0.000	0.000
35.918	12.640	0.728	0.000	0.000
35.983	9.293	0.488	0.000	0.000
36.048	14.746	0.244	0.493	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
36.113	10.748	0.487	0.246	0.000
36.178	11.110	0.160	0.164	0.000
36.244	14.082	0.000	0.000	0.000
36.309	8.299	0.246	0.000	0.000
36.374	9.261	0.164	0.000	0.000
36.439	11.635	0.483	0.000	0.000
36.505	9.337	0.242	0.000	0.000
36.570	11.798	0.161	0.000	0.000
36.635	11.797	0.000	0.000	0.000
36.700	7.253	0.000	0.000	0.000
36.765	9.295	0.328	0.000	0.000
36.830	10.929	0.492	0.000	0.000
36.896	9.363	0.739	0.000	0.000
36.961	5.445	0.488	0.164	0.000
37.026	6.770	0.236	0.245	0.000
37.091	10.889	0.000	0.491	0.000
37.156	9.908	0.317	0.000	0.000
37.222	7.924	0.726	0.000	0.000
37.287	7.130	0.957	0.000	0.000
37.352	8.623	0.489	0.000	0.000
37.417	8.656	0.237	0.000	0.000
37.482	6.777	0.000	0.000	0.000
37.548	11.667	0.000	0.000	0.000
37.613	4.985	0.000	0.000	0.000
37.678	9.274	0.246	0.000	0.000
37.743	7.223	0.324	0.163	0.000
37.808	7.223	0.000	0.244	0.000
37.874	8.858	0.000	0.488	0.000
37.939	8.323	0.000	0.000	0.000
38.004	5.841	0.488	0.000	0.000
38.069	8.715	0.244	0.000	0.000
38.134	7.275	0.163	0.000	0.000
38.200	8.720	0.000	0.000	0.000
38.265	6.804	0.000	0.000	0.000
38.330	7.809	0.489	0.000	0.000
38.395	10.275	0.000	0.000	0.000
38.460	7.737	0.000	0.000	0.000
38.526	4.882	0.162	0.000	0.000
38.591	8.267	0.243	0.487	0.000
38.656	4.397	0.245	0.243	0.000
38.721	8.364	0.316	0.162	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
38.786	11.274	0.228	0.000	0.000
38.852	9.396	0.456	0.000	0.000
38.917	9.309	0.165	0.000	0.000
38.982	7.845	0.247	0.000	0.000
39.047	8.844	0.984	0.000	0.000
39.112	10.755	0.327	0.000	0.000
39.178	5.445	0.000	0.000	0.000
39.243	7.428	0.000	0.000	0.000
39.308	6.868	0.162	0.000	0.000
39.373	8.811	0.734	0.000	0.000
39.438	6.337	0.245	0.000	0.000
39.504	5.582	0.164	0.000	0.000
39.569	5.200	0.000	0.000	0.000
39.634	8.314	0.000	0.000	0.000
39.699	11.187	0.000	0.000	0.000
39.764	5.808	0.000	0.000	0.000
39.830	6.277	0.000	0.000	0.000
39.895	10.567	0.158	0.158	0.158
39.960	6.660	0.000	0.000	0.236
40.025	9.470	0.000	0.000	0.473
40.090	11.768	0.158	0.000	0.000
40.156	11.781	0.237	0.000	0.000
40.221	7.154	0.475	0.240	0.000
40.286	7.122	0.313	0.160	0.000
40.351	9.863	0.470	0.000	0.000
40.416	8.410	0.000	0.000	0.000
40.482	10.454	0.000	0.000	0.000
40.547	7.613	0.000	0.000	0.000
40.612	4.725	0.000	0.000	0.000
40.677	6.068	0.000	0.000	0.000
40.743	6.084	0.475	0.000	0.000
40.808	10.325	0.237	0.000	0.000
40.873	10.972	0.480	0.161	0.000
40.938	6.606	0.472	0.000	0.000
41.003	7.206	0.474	0.000	0.000
41.068	10.305	0.316	0.153	0.000
41.134	6.945	0.000	0.230	0.000
41.199	8.983	0.000	0.000	0.000
41.264	6.483	0.000	0.000	0.000
41.329	4.325	0.000	0.000	0.000
41.395	9.428	0.239	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
41.460	10.071	0.801	0.000	0.000
41.525	7.614	0.962	0.000	0.000
41.590	7.292	0.978	0.000	0.000
41.655	13.457	0.157	0.000	0.000
41.720	7.176	0.236	0.000	0.000
41.786	8.078	0.471	0.000	0.000
41.851	6.619	0.317	0.159	0.000
41.916	7.602	0.239	0.239	0.000
41.981	7.568	0.000	0.000	0.000
42.046	9.129	0.000	0.000	0.000
42.112	5.727	0.000	0.000	0.000
42.177	6.648	0.239	0.000	0.000
42.242	6.116	0.159	0.160	0.000
42.307	8.054	0.000	0.240	0.000
42.372	9.487	0.000	0.480	0.000
42.438	6.654	0.000	0.000	0.000
42.503	11.366	0.475	0.000	0.000
42.568	7.550	0.237	0.000	0.000
42.633	11.420	0.318	0.000	0.000
42.698	6.596	0.467	0.000	0.000
42.764	5.201	0.234	0.000	0.000
42.829	8.606	0.156	0.000	0.000
42.894	5.222	0.000	0.000	0.000
42.959	7.990	0.234	0.000	0.000
43.025	5.647	0.318	0.318	0.000
43.090	7.178	0.717	0.240	0.000
43.155	9.627	0.960	0.000	0.000
43.220	8.097	0.317	0.000	0.000
43.285	10.403	0.000	0.000	0.000
43.350	7.637	0.239	0.000	0.000
43.416	7.685	0.160	0.000	0.000
43.481	6.238	0.000	0.000	0.000
43.546	10.094	0.000	0.482	0.000
43.611	5.787	0.000	0.322	0.000
43.676	6.667	0.000	0.000	0.000
43.742	8.649	0.000	0.000	0.000
43.807	7.698	0.000	0.000	0.000
43.872	7.748	0.000	0.000	0.000
43.937	7.685	0.000	0.000	0.000
44.002	5.664	0.000	0.000	0.000
44.068	10.753	0.941	0.155	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
44.133	8.089	0.471	0.000	0.000
44.198	6.710	0.314	0.000	0.000
44.263	6.683	0.158	0.000	0.000
44.328	8.064	0.237	0.238	0.000
44.394	7.629	0.000	0.159	0.000
44.459	8.103	0.318	0.000	0.000
44.524	7.141	0.238	0.000	0.000
44.589	11.874	0.476	0.000	0.000
44.654	7.182	0.157	0.000	0.000
44.720	10.413	0.236	0.000	0.000
44.785	8.020	0.472	0.000	0.000
44.850	8.029	0.633	0.000	0.000
44.915	4.775	0.714	0.000	0.000
44.980	7.621	0.316	0.000	0.000
45.046	5.737	0.157	0.000	0.000
45.111	7.090	0.236	0.000	0.000
45.176	7.581	0.000	0.000	0.000
45.241	5.708	0.159	0.000	0.000
45.306	6.611	0.238	0.000	0.000
45.372	6.653	0.477	0.000	0.000
45.437	9.089	0.320	0.000	0.000
45.502	10.504	0.480	0.000	0.000
45.567	6.218	0.484	0.000	0.000
45.632	11.966	0.000	0.163	0.163
45.698	7.780	0.000	0.244	0.244
45.763	5.832	0.162	0.000	0.000
45.828	7.702	0.000	0.000	0.000
45.893	6.668	0.000	0.000	0.000
45.958	9.680	0.000	0.000	0.000
46.024	7.274	0.323	0.000	0.000
46.089	12.552	0.241	0.000	0.000
46.154	6.210	0.000	0.000	0.000
46.219	5.230	0.476	0.000	0.000
46.285	3.787	0.238	0.000	0.000
46.350	8.068	0.315	0.000	0.000
46.415	8.177	0.475	0.000	0.000
46.480	8.734	0.238	0.000	0.000
46.545	6.739	0.158	0.000	0.000
46.611	6.142	0.477	0.000	0.000
46.676	8.043	0.715	0.000	0.000
46.741	7.183	1.116	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
46.806	7.669	0.477	0.000	0.000
46.871	5.701	0.238	0.000	0.000
46.936	7.057	0.159	0.000	0.000
47.002	4.278	0.159	0.162	0.000
47.067	9.587	0.000	0.242	0.000
47.132	10.037	0.000	0.485	0.000
47.197	11.450	0.635	0.160	0.000
47.263	7.193	0.477	0.240	0.000
47.328	9.030	0.794	0.000	0.000
47.393	9.008	0.162	0.000	0.000
47.458	5.695	0.242	0.000	0.000
47.523	13.448	0.485	0.000	0.000
47.588	5.762	0.472	0.000	0.000
47.654	6.656	0.472	0.000	0.000
47.719	7.640	0.474	0.000	0.000
47.784	7.243	0.162	0.162	0.000
47.849	11.611	0.243	0.000	0.000
47.915	6.275	0.486	0.000	0.000
47.980	9.169	0.159	0.000	0.000
48.045	6.771	0.239	0.000	0.000
48.110	8.205	0.000	0.000	0.000
48.175	8.696	0.000	0.000	0.000
48.240	7.204	0.239	0.000	0.000
48.306	9.214	0.483	0.000	0.000
48.371	11.551	0.158	0.000	0.000
48.436	8.052	0.238	0.000	0.000
48.501	9.439	0.000	0.000	0.000
48.566	8.639	0.000	0.000	0.000
48.632	11.543	0.238	0.238	0.000
48.697	7.718	0.159	0.159	0.000
48.762	4.778	0.000	0.000	0.000
48.827	6.679	0.239	0.000	0.000
48.892	8.590	0.316	0.000	0.000
48.958	6.678	0.790	0.160	0.000
49.023	8.125	0.475	0.000	0.000
49.088	8.635	0.637	0.000	0.000
49.153	8.106	0.159	0.000	0.000
49.218	9.933	0.238	0.000	0.000
49.284	6.642	0.476	0.000	0.000
49.349	1.902	0.000	0.000	0.000
49.414	10.092	0.239	0.239	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
49.479	8.111	0.159	0.159	0.000
49.544	7.048	0.000	0.000	0.000
49.610	6.187	0.000	0.000	0.000
49.675	9.086	0.000	0.000	0.000
49.740	10.041	0.160	0.000	0.000
49.805	6.198	0.240	0.000	0.000
49.870	7.680	0.479	0.000	0.000
49.936	10.955	0.160	0.000	0.000
50.001	8.602	0.239	0.000	0.000
50.066	7.703	0.322	0.000	0.000
50.131	8.271	0.000	0.000	0.000
50.196	9.184	0.000	0.000	0.000
50.262	8.128	0.000	0.000	0.000
50.327	7.676	0.489	0.000	0.000
50.392	6.305	0.734	0.000	0.000
50.457	7.371	0.985	0.000	0.000
50.522	8.262	0.478	0.000	0.000
50.588	6.656	0.473	0.000	0.000
50.653	10.035	0.638	0.000	0.000
50.718	10.366	0.156	0.000	0.000
50.783	12.222	0.234	0.000	0.000
50.848	3.339	0.000	0.000	0.000
50.914	7.236	0.159	0.000	0.000
50.979	6.227	0.238	0.000	0.000
51.044	8.062	0.476	0.000	0.000
51.109	8.523	0.472	0.000	0.000
51.174	10.096	0.476	0.000	0.000
51.240	11.001	0.317	0.000	0.000
51.305	8.562	0.157	0.000	0.000
51.370	9.921	0.235	0.000	0.000
51.435	7.152	0.000	0.000	0.000
51.500	9.081	0.000	0.000	0.000
51.566	10.064	0.000	0.000	0.000
51.631	6.234	0.000	0.000	0.000
51.696	6.231	0.000	0.000	0.000
51.761	9.064	0.000	0.000	0.000
51.826	5.226	0.000	0.000	0.000
51.892	9.025	0.000	0.000	0.000
51.957	5.777	0.000	0.000	0.000
52.022	7.234	0.000	0.000	0.000
52.087	7.181	0.162	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
52.153	5.703	0.480	0.000	0.000
52.218	7.751	0.645	0.000	0.000
52.283	9.753	0.164	0.000	0.000
52.348	6.320	0.241	0.000	0.000
52.413	8.681	0.322	0.000	0.000
52.478	9.173	0.160	0.161	0.000
52.544	7.712	0.240	0.242	0.000
52.609	6.749	0.160	0.000	0.000
52.674	7.737	0.000	0.161	0.000
52.739	8.245	0.000	0.000	0.000
52.805	14.317	0.000	0.000	0.000
52.870	9.382	0.320	0.000	0.000
52.935	7.155	0.243	0.000	0.000
53.000	10.127	0.486	0.000	0.000
53.065	4.853	0.000	0.000	0.000
53.130	5.768	0.000	0.000	0.000
53.196	7.096	0.000	0.000	0.000
53.261	9.514	0.161	0.000	0.000
53.326	10.573	0.480	0.000	0.000
53.391	4.798	0.643	0.000	0.000
53.456	8.099	0.474	0.160	0.000
53.522	6.701	0.237	0.240	0.000
53.587	5.243	0.158	0.000	0.000
53.652	8.595	0.471	0.000	0.000
53.717	9.058	0.236	0.000	0.000
53.783	12.023	0.317	0.000	0.000
53.848	2.877	0.000	0.000	0.000
53.913	9.483	0.235	0.000	0.000
53.978	10.876	0.473	0.000	0.000
54.043	8.629	0.952	0.000	0.000
54.109	9.084	0.949	0.000	0.000
54.174	8.648	0.633	0.000	0.000
54.239	7.233	0.802	0.000	0.000
54.304	8.202	0.482	0.000	0.000
54.369	5.806	0.646	0.000	0.000
54.435	8.186	0.161	0.000	0.000
54.500	5.807	0.242	0.000	0.000
54.565	2.930	0.000	0.000	0.000
54.630	8.277	0.649	0.000	0.000
54.695	8.666	0.243	0.000	0.000
54.760	6.257	0.162	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
54.826	8.270	0.484	0.000	0.000
54.891	6.353	0.242	0.000	0.000
54.956	7.252	0.161	0.000	0.000
55.021	6.615	0.000	0.000	0.000
55.086	6.646	0.000	0.000	0.000
55.152	10.033	0.314	0.000	0.000
55.217	9.056	0.473	0.000	0.000
55.282	7.221	0.236	0.000	0.000
55.347	6.760	0.158	0.000	0.000
55.413	9.026	0.000	0.000	0.000
55.478	5.678	0.233	0.000	0.000
55.543	3.362	0.155	0.000	0.000
55.608	7.232	0.000	0.000	0.000
55.673	4.350	0.000	0.000	0.000
55.739	4.279	0.000	0.000	0.000
55.804	7.567	0.161	0.474	0.000
55.869	4.302	0.242	0.237	0.000
55.934	8.188	0.484	0.158	0.000
55.999	6.747	0.483	0.000	0.000
56.064	7.152	0.240	0.000	0.000
56.130	6.193	0.000	0.000	0.000
56.195	8.132	0.000	0.000	0.000
56.260	8.152	0.000	0.000	0.000
56.325	8.123	0.000	0.000	0.000
56.390	6.777	0.000	0.000	0.000
56.456	3.839	0.000	0.000	0.000
56.521	1.905	0.000	0.000	0.000
56.586	6.717	0.000	0.000	0.000
56.651	5.343	0.000	0.000	0.000
56.716	8.753	0.000	0.000	0.000
56.782	7.277	0.000	0.000	0.000
56.847	3.875	0.000	0.000	0.000
56.912	6.796	0.162	0.162	0.000
56.977	7.806	0.324	0.000	0.000
57.042	7.760	0.486	0.000	0.000
57.108	6.293	0.483	0.000	0.000
57.173	5.793	0.000	0.317	0.000
57.238	5.703	0.000	0.476	0.000
57.303	6.624	0.000	0.476	0.000
57.368	4.260	0.160	0.000	0.000
57.434	9.171	0.000	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
57.499	6.787	0.160	0.000	0.000
57.564	4.813	0.000	0.000	0.000
57.629	7.591	0.000	0.000	0.000
57.694	12.446	0.159	0.000	0.000
57.760	9.139	0.159	0.162	0.000
57.825	8.612	0.239	0.000	0.000
57.890	8.597	0.478	0.000	0.000
57.955	8.624	0.000	0.322	0.000
58.021	8.609	0.000	0.483	0.000
58.086	7.163	0.000	0.484	0.000
58.151	13.396	0.000	0.474	0.000
58.216	5.301	0.000	0.237	0.000
58.281	6.289	0.000	0.158	0.000
58.347	4.247	0.000	0.000	0.000
58.412	8.983	0.000	0.000	0.236
58.477	9.585	0.000	0.000	0.157
58.542	5.774	0.323	0.000	0.000
58.607	8.147	0.484	0.000	0.000
58.672	9.073	0.481	0.000	0.000
58.738	6.284	0.000	0.161	0.000
58.803	11.630	0.000	0.000	0.000
58.868	9.722	0.161	0.000	0.000
58.933	11.698	0.163	0.164	0.000
58.998	8.335	0.489	0.246	0.000
59.064	7.785	0.652	0.000	0.000
59.129	6.743	0.321	0.000	0.000
59.194	5.811	0.242	0.000	0.000
59.259	6.376	0.325	0.000	0.000
59.324	6.361	0.810	0.000	0.000
59.390	11.054	0.721	0.000	0.000
59.455	7.053	0.319	0.000	0.000
59.520	9.539	0.000	0.000	0.000
59.585	9.202	0.238	0.000	0.000
59.651	6.772	0.159	0.000	0.000
59.716	3.829	0.158	0.000	0.000
59.781	6.686	0.238	0.000	0.000
59.846	9.050	0.634	0.000	0.000
59.911	10.535	0.000	0.000	0.000
59.976	6.688	0.236	0.000	0.000
60.042	10.915	0.471	0.000	0.000
60.107	9.672	0.637	0.163	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
60.172	8.111	0.478	0.000	0.000
60.237	7.616	0.636	0.000	0.000
60.302	8.091	0.473	0.000	0.000
60.368	7.758	0.718	0.000	0.000
60.433	5.767	0.478	0.000	0.000
60.498	5.235	0.000	0.000	0.000
60.563	9.058	0.000	0.000	0.000
60.628	6.730	0.000	0.000	0.000
60.694	10.017	0.161	0.000	0.000
60.759	7.184	0.242	0.000	0.000
60.824	7.767	0.000	0.000	0.000
60.889	9.245	0.481	0.000	0.000
60.954	7.229	0.241	0.000	0.000
61.020	12.012	0.160	0.000	0.000
61.085	9.249	0.811	0.164	0.000
61.150	9.808	0.732	0.247	0.000
61.215	9.810	0.161	0.493	0.000
61.280	8.172	0.162	0.804	0.000
61.346	3.867	0.243	0.486	0.000
61.411	7.354	0.000	0.653	0.000
61.476	7.335	0.651	0.000	0.000
61.541	9.206	0.244	0.000	0.000
61.606	2.877	0.162	0.000	0.000
61.672	9.563	0.160	0.159	0.000
61.737	7.591	0.000	0.239	0.000
61.802	11.915	0.000	0.478	0.000
61.867	9.195	0.000	0.000	0.000
61.932	10.181	0.000	0.000	0.000
61.998	6.211	0.000	0.000	0.000
62.063	8.989	0.161	0.000	0.000
62.128	7.190	0.242	0.000	0.000
62.193	7.265	0.000	0.000	0.000
62.258	8.208	0.000	0.000	0.000
62.324	9.076	0.000	0.000	0.000
62.389	8.087	0.000	0.000	0.000
62.454	7.169	0.159	0.478	0.000
62.519	6.726	0.000	0.239	0.000
62.584	7.218	0.000	0.159	0.000
62.650	9.128	0.000	0.000	0.000
62.715	9.602	0.000	0.000	0.000
62.780	7.137	0.000	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
62.845	9.511	0.943	0.161	0.000
62.910	7.660	0.471	0.242	0.000
62.976	6.786	0.475	0.000	0.000
63.041	8.165	0.000	0.323	0.000
63.106	6.220	0.000	0.242	0.000
63.171	6.748	0.000	0.484	0.000
63.236	6.825	0.000	0.000	0.000
63.302	5.349	0.000	0.000	0.000
63.367	7.290	0.000	0.000	0.000
63.432	5.394	0.164	0.000	0.000
63.497	8.812	0.490	0.000	0.000
63.563	5.350	0.162	0.000	0.000
63.628	8.248	0.000	0.000	0.000
63.693	5.356	0.000	0.000	0.000
63.758	3.419	0.000	0.000	0.000
63.823	9.582	0.000	0.161	0.000
63.889	8.058	0.000	0.000	0.000
63.954	12.813	0.156	0.000	0.000
64.019	11.167	0.491	0.000	0.000
64.084	10.697	0.970	0.000	0.000
64.149	9.639	1.124	0.000	0.000
64.214	9.091	0.000	0.000	0.000
64.280	8.619	0.000	0.000	0.000
64.345	5.218	0.000	0.000	0.000
64.410	7.679	0.164	0.000	0.000
64.475	4.826	0.246	0.000	0.000
64.540	7.695	0.651	0.000	0.000
64.606	6.168	0.469	0.000	0.000
64.671	3.842	0.235	0.000	0.000
64.736	6.322	0.315	0.000	0.000
64.801	8.808	0.000	0.166	0.000
64.867	6.289	0.000	0.000	0.000
64.932	9.061	0.157	0.000	0.000
64.997	10.536	0.472	0.000	0.000
65.062	8.250	0.236	0.000	0.000
65.127	6.312	0.157	0.000	0.000
65.192	5.294	0.000	0.000	0.000
65.258	4.851	0.000	0.000	0.000
65.323	5.362	0.000	0.000	0.000
65.388	6.321	0.810	0.000	0.000
65.453	10.181	0.489	0.000	0.239

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
65.519	8.343	0.821	0.000	0.159
65.584	12.761	0.166	0.000	0.000
65.649	6.818	0.249	0.000	0.000
65.714	6.801	0.000	0.000	0.000
65.779	9.268	0.165	0.000	0.000
65.844	5.928	0.000	0.000	0.000
65.910	5.917	0.000	0.160	0.000
65.975	7.757	0.801	0.000	0.000
66.040	6.248	0.717	0.000	0.000
66.105	4.815	0.802	0.000	0.000
66.170	10.618	0.000	0.000	0.000
66.236	6.784	0.000	0.000	0.000
66.301	3.943	0.000	0.000	0.000
66.366	6.322	0.000	0.000	0.000
66.431	3.864	0.237	0.000	0.000
66.496	7.191	0.158	0.000	0.000
66.562	7.252	0.000	0.167	0.000
66.627	4.860	0.000	0.000	0.000
66.692	9.573	0.154	0.000	0.000
66.757	7.686	0.473	0.000	0.000
66.823	8.120	0.236	0.000	0.000
66.888	5.333	0.158	0.000	0.000
66.953	6.403	0.000	0.000	0.000
67.018	4.777	0.000	0.000	0.000
67.083	4.358	0.000	0.000	0.000
67.148	10.985	0.165	0.000	0.000
67.214	6.802	0.235	0.000	0.000
67.279	6.710	0.312	0.000	0.000
67.344	4.341	0.000	0.000	0.000
67.409	4.227	0.000	0.000	0.000
67.474	8.442	0.159	0.000	0.000
67.540	8.374	0.000	0.000	0.000
67.605	6.779	0.000	0.000	0.000
67.670	7.949	0.000	0.160	0.000
67.735	5.780	0.487	0.102	0.000
67.800	5.930	0.244	0.152	0.000
67.866	3.252	0.162	0.305	0.000
67.931	7.581	0.114	0.008	0.003
67.996	7.838	0.034	0.012	0.005

Notes
1 - Total Gamma Ray based on spectral gamma readings.
cps - counts per second

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		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
4.100	28.927	1.205	0.000	0.000
4.165	26.253	0.796	0.419	0.045
4.231	24.239	0.852	0.288	0.062
4.296	28.594	1.447	0.000	0.000
4.361	28.460	0.723	0.305	0.000
4.426	30.093	0.787	0.000	0.000
4.491	34.701	0.459	0.000	0.000
4.556	31.854	0.553	0.312	0.000
4.622	30.806	0.394	0.234	0.000
4.687	34.927	1.418	0.000	0.477
4.752	32.868	0.477	0.315	0.395
4.817	27.038	0.318	0.637	0.394
4.883	28.947	0.491	0.475	0.000
4.948	29.338	0.558	0.000	0.155
5.013	28.602	0.396	0.000	0.232
5.078	34.491	0.964	0.000	0.464
5.143	30.632	0.568	0.000	0.000
5.209	32.077	0.644	0.000	0.000
5.274	36.357	1.459	0.491	0.000
5.339	34.670	0.899	0.563	0.000
5.404	39.957	1.397	0.640	0.000
5.469	29.574	0.000	0.473	0.000
5.535	29.288	0.321	0.245	0.000
5.600	37.926	0.482	0.163	0.000
5.665	36.804	1.453	0.000	0.000
5.730	31.876	1.515	0.159	0.000
5.795	34.091	1.592	0.000	0.000
5.860	33.565	1.412	1.000	0.000
5.926	38.166	0.320	0.820	0.000
5.991	32.093	0.480	0.813	0.000
6.056	39.235	0.976	0.480	0.000
6.121	35.475	1.211	0.314	0.000
6.187	36.196	0.965	0.635	0.000
6.252	40.192	0.486	0.954	0.000
6.317	35.223	0.559	0.402	0.000
6.382	34.730	0.727	0.401	0.000
6.447	32.218	1.932	0.478	0.485
6.513	37.135	1.041	0.244	0.242
6.578	27.712	0.881	0.162	0.162
6.643	33.131	0.974	0.000	0.000
6.708	25.073	1.531	0.320	0.000
6.773	38.210	1.449	0.480	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
6.839	33.109	0.477	0.477	0.000
6.904	25.763	0.318	0.247	0.000
6.969	27.992	0.641	0.164	0.000
7.034	23.686	0.000	0.000	0.000
7.099	21.902	0.651	0.000	0.000
7.165	19.286	1.143	0.000	0.166
7.230	24.069	0.489	0.000	0.000
7.295	21.930	0.161	0.000	0.160
7.360	20.944	0.166	0.000	0.239
7.425	20.719	0.000	0.000	0.000
7.490	23.588	0.734	0.158	0.000
7.556	21.003	0.571	0.237	0.000
7.621	24.404	0.000	0.473	0.000
7.686	20.898	0.000	0.000	0.252
7.751	30.780	0.000	0.000	0.168
7.816	24.080	0.485	0.000	0.000
7.882	20.220	1.370	0.321	0.000
7.947	23.816	1.613	0.482	0.000
8.012	26.747	1.456	0.964	0.000
8.077	25.532	0.717	0.159	0.000
8.142	17.284	0.870	0.401	0.000
8.208	26.635	1.456	0.477	0.000
8.273	24.609	1.277	0.400	0.000
8.338	21.548	1.507	0.399	0.000
8.403	23.333	0.936	0.000	0.000
8.468	22.035	0.246	0.000	0.000
8.534	25.976	0.164	0.000	0.000
8.599	35.956	0.000	0.000	0.000
8.664	16.412	0.562	0.000	0.000
8.729	28.312	0.641	0.000	0.000
8.795	29.475	0.478	0.000	0.000
8.860	24.466	0.872	0.000	0.158
8.925	25.706	1.031	0.000	0.000
8.990	23.580	0.475	0.000	0.000
9.055	22.235	0.562	0.000	0.000
9.120	19.846	0.399	0.000	0.000
9.186	23.555	0.473	0.000	0.000
9.251	23.239	0.161	0.000	0.000
9.316	23.780	0.242	0.000	0.000
9.381	21.528	0.490	0.000	0.000
9.446	16.096	0.567	0.000	0.000
9.512	15.340	0.404	0.167	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
9.577	17.116	0.496	0.000	0.000
9.642	19.876	0.570	0.000	0.000
9.707	20.945	0.814	0.000	0.000
9.773	20.123	0.967	0.000	0.000
9.838	21.058	0.812	0.248	0.000
9.903	18.885	0.806	0.165	0.000
9.968	19.338	0.000	0.000	0.000
10.033	17.339	0.315	0.161	0.000
10.099	16.987	0.324	0.242	0.000
10.164	18.336	0.482	0.000	0.000
10.229	18.347	0.555	0.000	0.000
10.294	22.292	0.798	0.000	0.000
10.359	20.202	0.964	0.000	0.000
10.425	20.215	0.809	0.000	0.158
10.490	18.707	0.568	0.000	0.000
10.555	19.376	0.481	0.000	0.000
10.620	18.398	0.000	0.243	0.000
10.685	21.683	0.163	0.162	0.000
10.750	17.841	0.000	0.000	0.000
10.816	13.398	0.160	0.000	0.000
10.881	13.464	0.400	0.000	0.000
10.946	14.874	0.484	0.000	0.000
11.011	19.648	0.558	0.000	0.157
11.076	17.765	0.800	0.000	0.236
11.142	17.297	1.435	0.000	0.000
11.207	16.224	0.964	0.239	0.000
11.272	14.871	0.806	0.160	0.000
11.337	18.528	1.460	0.000	0.000
11.403	15.073	0.403	0.157	0.000
11.468	15.880	0.563	0.235	0.000
11.533	16.268	0.000	0.958	0.000
11.598	21.382	0.642	0.244	0.000
11.663	16.656	0.650	0.163	0.000
11.728	20.096	0.491	0.000	0.000
11.794	15.602	0.494	0.000	0.000
11.859	18.562	0.329	0.000	0.000
11.924	14.119	0.493	0.000	0.000
11.989	19.683	1.221	0.000	0.160
12.055	18.107	1.379	0.000	0.240
12.120	19.875	1.438	0.000	0.479
12.185	19.795	0.313	0.000	0.000
12.250	18.609	0.233	0.000	0.163

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
12.315	15.271	0.000	0.000	0.000
12.380	17.487	0.405	0.000	0.000
12.446	17.962	0.403	0.000	0.000
12.511	13.981	0.966	0.000	0.000
12.576	12.923	0.804	0.000	0.000
12.641	19.816	0.965	0.000	0.000
12.707	16.374	0.962	0.000	0.000
12.772	20.128	0.242	0.000	0.000
12.837	19.646	0.323	0.000	0.000
12.902	18.210	0.493	0.000	0.000
12.967	20.128	0.404	0.000	0.000
13.033	17.250	0.164	0.000	0.000
13.098	16.241	0.484	0.000	0.000
13.163	13.047	0.968	0.161	0.242
13.228	18.400	0.969	0.000	0.162
13.293	19.859	0.487	0.000	0.000
13.358	17.249	0.804	0.000	0.000
13.424	18.297	0.565	0.000	0.000
13.489	19.208	0.478	0.000	0.000
13.554	18.710	0.399	0.000	0.000
13.619	18.796	0.398	0.000	0.000
13.685	14.918	0.000	0.000	0.000
13.750	19.823	0.565	0.000	0.000
13.815	18.721	0.405	0.000	0.000
13.880	15.531	0.483	0.000	0.000
13.945	19.721	0.327	0.000	0.000
14.010	19.271	0.411	0.000	0.000
14.076	18.427	0.000	0.000	0.000
14.141	15.950	0.404	0.246	0.000
14.206	18.073	0.330	0.164	0.000
14.271	17.575	0.000	0.000	0.000
14.337	18.149	0.162	0.000	0.000
14.402	17.278	0.000	0.000	0.000
14.467	19.955	0.497	0.000	0.000
14.532	17.706	0.490	0.000	0.000
14.597	18.304	0.489	0.000	0.000
14.663	20.737	0.000	0.000	0.000
14.728	17.039	0.407	0.000	0.000
14.793	23.797	0.327	0.000	0.000
14.858	18.796	0.496	0.000	0.000
14.923	21.540	0.649	0.000	0.000
14.988	17.388	0.330	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
15.054	19.838	0.000	0.000	0.000
15.119	24.012	0.476	0.000	0.000
15.184	17.748	0.473	0.000	0.000
15.249	19.832	0.000	0.493	0.000
15.314	16.294	0.317	0.247	0.000
15.380	22.556	0.399	0.164	0.000
15.445	25.816	0.958	0.000	0.000
15.510	20.253	0.400	0.000	0.000
15.575	18.713	0.324	0.000	0.000
15.640	25.321	0.972	0.000	0.000
15.706	22.856	1.040	0.000	0.000
15.771	22.624	0.647	0.000	0.000
15.836	24.592	0.000	0.000	0.000
15.901	22.290	1.049	0.158	0.000
15.967	28.396	0.724	0.237	0.000
16.032	33.765	0.966	0.000	0.000
16.097	26.776	0.814	0.000	0.000
16.162	30.112	0.569	0.000	0.000
16.227	33.046	0.990	0.000	0.000
16.292	26.670	0.816	0.000	0.161
16.358	25.076	0.811	0.000	0.241
16.423	20.829	0.968	0.000	0.000
16.488	19.450	0.405	0.162	0.162
16.553	28.599	0.330	0.244	0.244
16.618	22.691	0.498	0.487	0.487
16.684	24.696	0.404	0.156	0.000
16.749	22.101	0.727	0.233	0.000
16.814	23.948	0.957	0.000	0.000
16.879	19.734	1.533	0.321	0.000
16.944	25.522	1.770	0.642	0.000
17.010	29.435	1.443	0.488	0.000
17.075	25.671	0.244	0.244	0.158
17.140	25.490	0.325	0.163	0.399
17.205	29.701	0.485	0.000	0.475
17.271	25.890	1.040	0.000	0.000
17.336	24.135	1.121	0.000	0.000
17.401	27.075	1.447	0.486	0.000
17.466	22.943	0.555	0.243	0.154
17.531	26.173	0.630	0.162	0.232
17.597	18.838	0.964	0.000	0.491
17.662	24.644	0.488	0.161	0.647
17.727	28.824	0.486	0.000	0.563

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
17.792	30.229	0.484	0.484	0.476
17.857	23.177	0.806	0.401	0.000
17.923	25.508	0.564	0.399	0.000
17.988	22.562	0.485	0.961	0.000
18.053	23.989	1.044	0.401	0.000
18.118	24.152	0.960	0.563	0.000
18.183	23.552	0.951	0.476	0.000
18.249	24.173	1.053	0.000	0.000
18.314	24.013	1.130	0.000	0.000
18.379	18.975	1.464	0.491	0.000
18.444	29.769	1.138	0.245	0.000
18.509	27.013	1.052	0.164	0.000
18.574	23.941	0.962	0.000	0.000
18.640	24.366	0.889	0.000	0.000
18.705	28.759	1.126	0.000	0.000
18.770	27.068	1.437	0.000	0.000
18.835	19.287	0.318	0.000	0.000
18.900	25.086	0.741	0.000	0.000
18.966	24.803	0.996	0.000	0.000
19.031	25.203	0.654	0.156	0.000
19.096	26.659	0.332	0.160	0.000
19.161	23.325	0.000	0.000	0.000
19.226	23.874	0.317	0.486	0.000
19.292	21.901	0.475	0.488	0.000
19.357	22.936	0.469	0.000	0.000
19.422	27.265	1.033	0.000	0.000
19.487	23.370	1.110	0.000	0.000
19.552	23.630	0.484	0.000	0.000
19.618	26.950	0.802	0.158	0.000
19.683	21.624	0.561	0.000	0.000
19.748	23.899	0.474	0.000	0.000
19.813	30.666	0.400	0.000	0.000
19.878	29.755	0.161	0.000	0.000
19.944	23.693	0.489	0.000	0.000
20.009	25.595	0.642	0.000	0.000
20.074	24.349	0.557	0.162	0.000
20.139	22.239	1.434	0.000	0.000
20.204	23.483	1.049	0.000	0.000
20.270	30.796	0.965	0.000	0.000
20.335	32.575	1.437	0.479	0.000
20.400	29.248	0.879	0.240	0.000
20.465	27.712	0.644	0.160	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
20.531	23.745	0.489	0.000	0.000
20.596	18.882	0.969	0.000	0.000
20.661	27.923	0.807	0.000	0.000
20.726	23.989	0.484	0.000	0.000
20.791	22.967	0.407	0.000	0.000
20.857	34.723	0.737	0.000	0.000
20.922	26.614	0.987	0.000	0.000
20.987	22.445	0.816	0.000	0.162
21.052	24.867	0.572	0.000	0.243
21.117	29.862	0.487	0.000	0.487
21.183	23.909	0.812	0.632	0.000
21.248	22.227	0.803	0.470	0.000
21.313	35.883	1.914	0.471	0.486
21.378	30.019	1.444	0.157	0.400
21.443	22.995	1.126	0.000	0.162
21.508	24.837	1.454	0.491	0.000
21.574	26.610	0.720	0.405	0.315
21.639	25.255	0.720	0.164	0.234
21.704	21.798	0.480	0.000	0.467
21.769	28.484	0.881	0.321	0.000
21.834	21.781	0.644	0.481	0.000
21.900	20.276	0.485	0.479	0.000
21.965	24.764	0.712	0.000	0.242
22.030	25.491	0.631	0.000	0.162
22.095	26.623	0.469	0.483	0.000
22.160	23.510	0.477	0.241	0.000
22.226	26.819	0.640	0.161	0.000
22.291	24.651	1.935	0.000	0.000
22.356	18.693	1.362	0.158	0.000
22.421	18.125	1.196	0.236	0.000
22.486	20.562	1.428	0.000	0.000
22.552	20.744	0.241	0.000	0.000
22.617	25.131	0.161	0.000	0.000
22.682	17.776	0.969	0.000	0.000
22.747	21.920	1.040	0.000	0.156
22.813	16.946	0.486	0.000	0.000
22.878	18.006	0.000	0.000	0.491
22.943	24.181	0.161	0.161	0.245
23.008	16.477	0.000	0.242	0.164
23.073	16.289	0.000	0.000	0.000
23.139	19.121	0.162	0.000	0.000
23.204	21.413	0.163	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
23.269	23.151	0.983	0.000	0.000
23.334	15.099	0.651	0.000	0.000
23.399	19.881	0.567	0.000	0.000
23.464	19.406	0.000	0.000	0.000
23.530	22.345	0.470	0.245	0.000
23.595	19.519	0.474	0.164	0.000
23.660	17.731	0.480	0.000	0.000
23.725	29.997	0.483	0.242	0.000
23.790	18.881	0.644	0.161	0.000
23.856	19.413	0.493	0.000	0.000
23.921	16.722	0.717	0.000	0.000
23.986	16.122	0.634	0.000	0.000
24.051	16.654	0.468	0.484	0.000
24.116	23.634	0.317	0.242	0.000
24.182	18.846	0.000	0.161	0.000
24.247	16.658	0.483	0.000	0.000
24.312	21.817	0.555	0.000	0.156
24.377	23.558	0.398	0.000	0.000
24.443	20.720	0.000	0.000	0.000
24.508	18.781	0.715	0.157	0.000
24.573	18.164	0.793	0.235	0.000
24.638	19.213	0.959	0.000	0.000
24.703	22.745	0.402	0.000	0.000
24.768	18.512	0.719	0.000	0.000
24.834	18.114	0.955	0.000	0.000
24.899	17.459	0.560	0.562	0.000
24.964	17.816	0.558	0.399	0.000
25.029	22.948	0.957	0.474	0.000
25.094	21.168	1.125	0.000	0.000
25.160	19.936	1.045	0.000	0.000
25.225	19.579	0.000	0.000	0.000
25.290	16.072	0.319	0.000	0.000
25.355	25.500	0.236	0.000	0.000
25.420	21.265	0.499	0.000	0.000
25.486	23.475	0.410	0.000	0.000
25.551	17.001	0.571	0.000	0.000
25.616	18.377	0.489	0.000	0.000
25.681	21.528	0.744	0.000	0.000
25.747	16.978	0.661	0.000	0.000
25.812	18.180	0.000	0.000	0.000
25.877	23.754	0.401	0.000	0.000
25.942	20.247	0.399	0.000	0.000

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		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
26.007	22.119	0.960	0.000	0.000
26.073	24.501	0.397	0.000	0.000
26.138	20.532	0.394	0.000	0.000
26.203	17.676	0.487	0.000	0.000
26.268	22.819	0.244	0.159	0.000
26.333	16.757	0.162	0.238	0.000
26.398	19.767	0.972	0.477	0.000
26.464	23.202	1.522	0.000	0.000
26.529	22.004	1.598	0.000	0.000
26.594	18.980	0.480	0.000	0.000
26.659	16.645	0.555	0.000	0.000
26.725	23.064	0.400	0.000	0.000
26.790	24.710	0.480	0.000	0.000
26.855	24.424	0.398	0.000	0.000
26.920	21.694	0.395	0.000	0.000
26.985	21.625	0.974	0.000	0.000
27.050	31.399	0.889	0.000	0.000
27.116	18.822	0.888	0.000	0.000
27.181	12.886	0.000	0.000	0.000
27.246	22.681	0.471	0.000	0.000
27.311	18.530	0.469	0.000	0.000
27.376	18.337	0.000	0.973	0.000
27.442	17.471	0.407	0.487	0.000
27.507	18.606	0.406	0.324	0.000
27.572	15.560	0.000	0.000	0.000
27.637	21.806	0.635	0.158	0.000
27.702	29.905	0.713	0.238	0.164
27.768	23.499	0.495	0.495	0.000
27.833	26.398	0.732	0.248	0.000
27.898	26.307	0.569	0.329	0.000
27.963	18.192	0.000	0.000	0.000
28.028	21.992	0.808	0.000	0.000
28.094	19.701	0.567	0.000	0.000
28.159	19.584	0.475	0.000	0.000
28.224	15.754	0.716	0.000	0.239
28.289	21.356	0.478	0.000	0.159
28.355	28.658	0.000	0.000	0.000
28.420	22.456	0.155	0.000	0.000
28.485	28.884	0.394	0.000	0.000
28.550	25.499	0.487	0.000	0.487
28.615	27.757	1.912	0.159	0.244
28.681	25.979	2.311	0.238	0.162

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
28.746	19.994	0.934	0.000	0.000
28.811	26.346	0.487	0.156	0.000
28.876	36.148	0.484	0.159	0.000
28.941	22.932	0.000	0.000	0.000
29.006	24.604	0.560	0.000	0.000
29.072	26.872	0.562	0.000	0.000
29.137	31.607	0.957	0.000	0.000
29.202	25.431	1.186	0.154	0.000
29.267	28.708	1.338	0.231	0.000
29.333	28.218	1.444	0.000	0.000
29.398	33.182	1.047	0.000	0.000
29.463	28.705	0.486	0.000	0.000
29.528	35.587	1.439	0.480	0.000
29.593	30.193	1.356	0.240	0.000
29.659	30.992	0.963	0.322	0.000
29.724	32.120	0.484	0.000	0.000
29.789	25.234	0.314	0.000	0.000
29.854	25.911	0.804	0.000	0.000
29.919	33.174	0.943	0.000	0.000
29.984	29.749	0.875	0.720	0.000
30.050	28.934	1.765	0.804	0.000
30.115	31.245	0.498	0.479	0.000
30.180	29.597	0.809	0.000	0.000
30.245	31.197	1.292	0.000	0.000
30.310	14.584	0.000	0.000	0.000
30.376	31.467	0.558	0.000	0.400
30.441	30.232	0.400	0.000	0.162
30.506	25.308	0.958	0.000	0.000
30.571	31.834	0.944	0.242	0.000
30.636	38.756	1.017	0.161	0.000
30.702	34.248	1.413	0.000	0.000
30.767	29.032	1.034	0.000	0.158
30.832	33.688	1.112	0.159	0.237
30.897	29.475	1.453	0.487	0.000
30.963	36.795	1.051	0.243	0.000
31.028	30.668	0.487	0.162	0.000
31.093	35.720	0.000	0.000	0.000
31.158	28.740	0.476	0.159	0.000
31.223	35.900	0.874	0.398	0.000
31.289	27.349	0.960	0.000	0.000
31.354	29.228	1.113	0.000	0.000
31.419	26.270	0.957	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
31.484	37.433	1.420	0.000	0.000
31.549	37.372	0.796	0.160	0.000
31.614	32.208	0.957	0.240	0.000
31.680	26.410	0.000	0.000	0.000
31.745	27.998	0.722	0.000	0.000
31.810	30.005	0.794	0.313	0.000
31.875	33.849	0.956	0.470	0.000
31.940	30.831	0.962	0.475	0.000
32.006	29.679	0.653	0.000	0.161
32.071	31.745	1.485	0.990	0.241
32.136	29.261	0.743	0.495	0.000
32.201	31.407	1.142	0.330	0.000
32.266	26.805	0.480	0.496	0.000
32.332	24.732	0.000	0.248	0.000
32.397	26.087	0.155	0.165	0.000
32.462	25.677	1.226	0.497	0.000
32.527	31.795	1.207	0.248	0.000
32.593	24.101	0.971	0.320	0.000
32.658	28.331	1.677	0.482	0.000
32.723	27.973	1.208	0.241	0.000
32.788	28.320	1.437	0.482	0.000
32.853	28.834	0.947	0.000	0.000
32.918	25.438	1.182	0.243	0.000
32.984	26.282	0.481	0.321	0.000
33.049	30.748	0.000	0.238	0.000
33.114	24.356	0.240	0.000	0.000
33.179	24.889	0.628	0.000	0.000
33.244	24.790	0.721	0.000	0.000
33.310	30.163	0.954	0.000	0.000
33.375	21.338	0.643	0.000	0.000
33.440	32.775	1.195	0.000	0.000
33.505	19.704	0.955	0.000	0.000
33.570	19.767	1.267	0.000	0.000
33.636	23.479	0.701	0.000	0.000
33.701	18.361	0.928	0.000	0.000
33.766	26.743	0.000	0.000	0.000
33.831	19.931	0.000	0.000	0.000
33.896	18.718	0.241	0.000	0.000
33.962	20.088	0.475	0.157	0.000
34.027	19.724	0.725	0.236	0.000
34.092	21.933	0.957	0.472	0.000
34.157	18.681	0.808	0.159	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
34.223	22.301	1.215	0.000	0.000
34.288	23.096	1.216	0.248	0.000
34.353	20.997	0.645	0.330	0.000
34.418	27.987	0.239	0.000	0.000
34.483	22.614	0.000	0.000	0.000
34.548	22.915	0.000	0.000	0.000
34.614	14.645	0.000	0.000	0.000
34.679	20.489	0.000	0.000	0.000
34.744	15.260	0.000	0.000	0.318
34.809	21.922	0.000	0.000	0.000
34.875	19.080	0.243	0.000	0.000
34.940	20.935	0.478	0.000	0.000
35.005	19.564	0.718	0.000	0.000
35.070	21.223	0.240	0.000	0.000
35.135	23.345	0.782	0.154	0.000
35.201	22.115	0.941	0.231	0.000
35.266	16.032	0.239	0.462	0.000
35.331	20.623	0.641	0.159	0.159
35.396	13.398	0.239	0.238	0.238
35.461	13.810	0.000	0.476	0.476
35.527	25.357	0.633	0.158	0.000
35.592	15.298	0.950	0.000	0.000
35.657	17.745	1.197	0.000	0.000
35.722	18.159	0.481	0.000	0.000
35.787	21.488	0.482	0.000	0.482
35.852	21.647	0.241	0.000	0.241
35.918	16.227	0.161	0.000	0.161
35.983	22.314	0.478	0.000	0.000
36.048	17.534	0.239	0.239	0.000
36.113	24.507	0.802	0.159	0.000
36.178	15.534	0.728	0.000	0.000
36.244	25.250	0.485	0.243	0.000
36.309	18.217	0.639	0.162	0.161
36.374	16.339	0.976	0.000	0.000
36.439	16.917	0.730	0.000	0.000
36.505	19.613	0.487	0.000	0.000
36.570	24.191	0.000	0.000	0.000
36.635	18.456	0.000	0.000	0.000
36.700	22.742	0.484	0.000	0.000
36.765	23.464	0.000	0.000	0.000
36.831	21.724	0.000	0.000	0.000
36.896	26.338	0.163	0.155	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
36.961	21.780	0.000	0.232	0.000
37.026	25.295	0.000	0.000	0.000
37.091	27.258	0.159	0.464	0.000
37.156	20.247	0.312	0.000	0.000
37.222	25.472	0.472	0.000	0.000
37.287	30.576	0.159	0.000	0.000
37.352	24.312	0.623	0.000	0.000
37.417	25.186	0.701	0.000	0.000
37.482	25.666	0.313	0.156	0.000
37.548	25.673	0.466	0.000	0.000
37.613	27.848	0.699	0.000	0.000
37.678	22.869	0.935	0.000	0.000
37.743	27.523	0.152	0.304	0.000
37.808	27.155	0.227	0.688	0.000
37.874	22.468	0.455	0.609	0.000
37.939	26.063	0.469	0.000	0.000
38.004	24.773	0.471	0.000	0.000
38.069	28.817	0.154	0.000	0.000
38.135	27.410	0.621	0.155	0.000
38.200	32.061	0.466	0.232	0.000
38.265	24.212	0.623	0.309	0.000
38.330	31.105	0.309	0.000	0.462
38.395	28.734	0.695	0.000	0.231
38.461	24.709	0.155	0.000	0.154
38.526	28.980	0.312	0.312	0.000
38.591	34.566	0.701	0.467	0.000
38.656	26.071	0.624	0.468	0.000
38.721	30.732	0.160	0.467	0.000
38.786	23.515	0.475	0.233	0.000
38.852	24.844	0.475	0.156	0.000
38.917	36.019	1.096	0.000	0.000
38.982	27.330	0.709	0.000	0.000
39.047	31.767	0.789	0.000	0.000
39.112	25.143	0.473	0.000	0.472
39.178	25.231	0.703	0.000	0.236
39.243	27.569	0.779	0.000	0.157
39.308	25.550	1.092	0.461	0.000
39.373	19.005	0.939	0.231	0.000
39.438	24.567	1.576	0.309	0.000
39.504	23.028	0.000	0.160	0.000
39.569	16.306	0.238	0.479	0.000
39.634	17.808	0.159	0.159	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
39.699	17.565	1.699	0.155	0.000
39.764	20.922	1.165	0.230	0.230
39.830	12.261	0.461	0.309	0.153
39.895	12.654	0.000	0.000	0.156
39.960	14.420	0.000	0.000	0.234
40.025	24.138	0.152	0.000	0.000
40.090	18.904	0.318	0.000	0.000
40.156	23.705	0.709	0.000	0.000
40.221	17.858	1.263	0.000	0.000
40.286	23.527	0.000	0.000	0.000
40.351	19.797	0.000	0.000	0.000
40.416	18.614	0.153	0.000	0.000
40.482	15.301	1.079	0.000	0.000
40.547	13.701	0.931	0.000	0.000
40.612	16.152	0.461	0.000	0.000
40.677	17.034	0.161	0.000	0.000
40.743	18.020	0.464	0.000	0.000
40.808	13.739	0.309	0.000	0.000
40.873	17.265	0.486	0.000	0.160
40.938	14.849	0.240	0.000	0.240
41.003	20.421	0.480	0.000	0.480
41.069	14.682	1.259	0.000	0.000
41.134	11.332	0.711	0.000	0.000
41.199	15.722	0.795	0.000	0.000
41.264	13.300	0.481	0.000	0.000
41.329	15.637	0.955	0.000	0.000
41.395	17.043	0.630	0.000	0.000
41.460	14.169	0.000	0.000	0.000
41.525	10.698	0.000	0.000	0.000
41.590	15.418	0.153	0.000	0.000
41.655	18.731	0.163	0.163	0.000
41.720	12.406	0.000	0.000	0.000
41.786	16.522	0.000	0.157	0.000
41.851	14.592	0.000	0.000	0.000
41.916	19.317	0.232	0.000	0.000
41.981	17.270	0.155	0.000	0.000
42.046	21.647	1.086	0.000	0.000
42.112	16.169	0.938	0.000	0.000
42.177	21.803	0.619	0.000	0.000
42.242	16.425	0.621	0.000	0.000
42.307	11.594	0.699	0.000	0.000
42.373	18.183	0.938	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
42.438	19.012	0.477	0.000	0.000
42.503	16.125	0.710	0.000	0.000
42.568	17.188	0.629	0.000	0.000
42.633	17.716	0.486	0.000	0.000
42.699	18.064	0.729	0.000	0.000
42.764	15.161	0.489	0.000	0.000
42.829	16.078	0.161	0.000	0.000
42.894	14.634	0.241	0.000	0.000
42.959	16.620	0.000	0.000	0.000
43.024	16.968	0.160	0.000	0.000
43.090	16.620	0.240	0.000	0.000
43.155	16.866	0.157	0.000	0.000
43.220	12.994	0.000	0.000	0.000
43.285	18.982	0.000	0.233	0.000
43.350	15.687	0.000	0.155	0.000
43.416	12.590	0.821	0.326	0.000
43.481	16.053	1.224	0.244	0.000
43.546	19.668	0.645	0.487	0.000
43.611	15.964	0.781	0.157	0.000
43.676	13.983	0.700	0.235	0.000
43.742	13.094	0.780	0.470	0.000
43.807	18.451	0.465	0.000	0.000
43.872	22.233	0.232	0.000	0.000
43.937	13.322	0.310	0.000	0.000
44.003	18.686	0.162	0.472	0.000
44.068	17.014	0.000	0.236	0.000
44.133	16.420	0.000	0.157	0.000
44.198	21.290	0.000	0.000	0.000
44.263	17.157	0.000	0.000	0.000
44.328	16.937	0.155	0.000	0.000
44.394	26.193	0.161	0.000	0.157
44.459	32.003	0.475	0.000	0.000
44.524	23.315	0.794	0.155	0.000
44.589	25.885	0.485	0.162	0.000
44.654	23.171	0.718	0.243	0.000
44.720	31.984	0.951	0.000	0.000
44.785	26.277	0.320	0.000	0.466
44.850	26.888	0.479	0.000	0.233
44.915	20.645	0.478	0.000	0.155
44.980	20.324	0.947	0.465	0.000
45.046	31.438	1.426	0.468	0.000
45.111	15.179	0.951	0.312	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
45.176	19.683	0.165	0.000	0.000
45.241	19.436	0.247	0.000	0.000
45.306	16.499	0.494	0.000	0.000
45.372	13.561	0.162	0.000	0.000
45.437	22.526	0.478	0.235	0.000
45.502	18.125	0.157	0.157	0.000
45.567	21.028	1.107	0.000	0.000
45.633	15.653	0.707	0.000	0.000
45.698	18.600	0.629	0.000	0.000
45.763	14.375	0.951	0.160	0.000
45.828	17.113	1.180	0.240	0.000
45.893	13.506	1.417	0.000	0.000
45.958	15.876	0.000	0.159	0.000
46.024	14.670	0.000	0.000	0.000
46.089	16.472	0.158	0.000	0.000
46.154	20.226	0.905	0.000	0.000
46.219	12.192	0.395	0.000	0.000
46.285	18.288	0.313	0.000	0.000
46.350	19.923	0.159	0.000	0.000
46.415	16.646	0.234	0.000	0.000
46.480	19.675	0.156	0.000	0.000
46.545	20.753	1.080	0.160	0.000
46.611	15.674	0.701	0.000	0.000
46.676	21.876	0.944	0.000	0.000
46.741	14.135	0.322	0.000	0.000
46.806	14.197	0.474	0.232	0.000
46.871	19.495	0.155	0.311	0.000
46.937	16.801	0.470	0.000	0.158
47.002	21.426	0.705	0.000	0.000
47.067	16.913	0.783	0.000	0.000
47.132	13.224	0.481	0.000	0.000
47.197	17.853	0.481	0.000	0.000
47.262	16.532	0.478	0.000	0.000
47.328	13.246	0.000	0.000	0.000
47.393	21.928	0.707	0.000	0.000
47.458	19.972	0.471	0.000	0.000
47.523	18.976	0.621	0.000	0.150
47.588	14.907	0.700	0.000	0.225
47.654	15.336	0.314	0.000	0.450
47.719	16.856	0.000	0.000	0.140
47.784	19.541	0.000	0.000	0.210
47.849	17.010	0.156	0.000	0.000

		Spectral Gamma Ray (Dynamic)		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
47.915	22.061	0.085	0.030	0.004
47.980	25.834	0.128	0.045	0.006

Notes

1 - Total Gamma Ray based on spectral gamma readings.

cps - counts per second

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
4.100	32.291	1.668	0.880	0.000
4.165	37.924	0.972	0.972	0.000
4.231	37.659	0.363	0.078	0.312
4.296	42.970	0.000	0.000	0.000
4.361	47.033	0.278	0.278	0.278
4.426	39.059	1.332	0.185	0.185
4.491	38.470	1.607	0.000	0.377
4.556	46.818	2.126	0.000	0.189
4.622	41.488	0.598	0.968	0.126
4.687	32.655	0.484	0.246	0.000
4.752	36.793	0.242	0.243	0.000
4.817	17.940	1.283	0.162	0.000
4.883	39.361	1.683	0.485	0.000
4.948	42.343	1.213	0.243	0.000
5.013	30.898	0.804	0.641	0.000
5.078	36.420	0.716	0.476	0.000
5.143	45.985	0.951	1.189	0.000
5.209	42.257	1.278	0.157	0.000
5.274	44.795	0.723	0.000	0.000
5.339	39.465	0.235	0.235	0.000
5.404	33.104	1.268	0.317	0.000
5.469	40.644	0.721	0.240	0.000
5.535	46.152	0.236	0.000	0.000
5.600	33.497	0.643	0.160	0.163
5.665	41.926	1.188	0.240	0.245
5.730	32.620	1.194	0.480	0.000
5.795	31.827	0.793	0.000	0.000
5.860	33.895	0.942	0.000	0.000
5.926	41.596	0.943	0.000	0.000
5.991	29.209	1.113	0.160	0.159
6.056	36.445	0.962	0.240	0.000
6.121	38.224	1.679	0.481	0.000
6.187	31.466	0.479	0.000	0.000
6.252	38.218	0.243	0.000	0.480
6.317	38.797	0.485	0.237	0.240
6.382	37.396	0.643	0.474	0.160
6.447	32.426	0.955	0.000	0.000
6.513	40.399	0.237	0.000	0.000
6.578	38.255	0.799	0.482	0.000
6.643	35.433	1.909	0.958	0.000
6.708	31.321	1.194	0.719	0.000

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		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
6.773	38.105	1.617	0.648	0.000
6.839	37.637	0.735	0.491	0.000
6.904	43.689	1.219	0.489	0.000
6.969	32.562	0.486	0.324	0.329
7.034	30.920	0.739	0.000	0.493
7.099	34.283	0.739	0.237	1.460
7.165	24.790	0.482	0.321	0.316
7.230	31.564	0.957	0.000	0.000
7.295	34.835	0.717	0.000	0.000
7.360	25.282	0.797	0.000	0.000
7.425	32.044	0.240	0.000	0.000
7.490	26.654	0.236	0.473	0.000
7.556	22.091	0.316	0.315	0.000
7.621	27.481	0.480	0.000	0.000
7.686	25.346	0.240	0.000	0.238
7.751	25.150	0.642	0.157	0.159
7.816	34.742	0.483	0.000	0.000
7.882	27.841	0.723	0.239	0.000
7.947	31.939	0.635	0.319	0.000
8.012	25.967	0.000	0.000	0.000
8.077	21.942	0.000	0.000	0.000
8.142	19.755	0.642	0.000	0.000
8.208	24.462	0.724	0.000	0.000
8.273	21.968	0.718	0.237	0.000
8.338	20.531	0.798	0.316	0.000
8.403	28.826	0.483	0.000	0.000
8.468	24.643	0.235	0.000	0.000
8.534	23.784	0.634	0.000	0.322
8.599	16.510	0.471	0.000	0.242
8.664	30.730	0.955	0.000	0.484
8.729	28.423	0.478	0.000	0.000
8.795	21.944	0.477	0.000	0.000
8.860	25.108	0.000	0.000	0.000
8.925	26.313	0.406	0.243	0.000
8.990	23.863	0.407	0.162	0.000
9.055	24.726	0.000	0.482	0.000
9.120	17.960	0.163	0.241	0.000
9.186	27.296	0.406	0.323	0.000
9.251	22.801	0.000	0.483	0.000
9.316	23.222	0.650	0.484	0.000
9.381	22.984	0.733	0.323	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
9.446	28.480	1.472	0.000	0.000
9.512	26.219	1.292	0.000	0.000
9.577	23.960	1.045	0.000	0.000
9.642	22.807	0.475	0.000	0.000
9.707	23.653	0.642	0.239	0.000
9.773	32.070	0.963	0.159	0.000
9.838	24.182	1.896	0.000	0.000
9.903	21.771	1.102	0.236	0.000
9.968	23.367	0.788	0.157	0.000
10.033	20.552	0.000	0.471	0.000
10.099	20.444	0.397	0.236	0.000
10.164	28.706	0.557	0.157	0.000
10.229	33.411	0.480	0.000	0.000
10.294	33.391	0.720	0.323	0.159
10.359	25.218	0.799	0.484	0.000
10.425	29.002	1.421	1.437	0.000
10.490	30.156	0.629	0.472	0.000
10.555	24.374	0.553	0.314	0.000
10.620	29.891	0.473	0.000	0.000
10.685	30.676	0.398	0.000	0.000
10.750	26.502	0.476	0.000	0.000
10.816	26.891	0.477	0.000	0.000
10.881	30.226	0.962	0.237	0.000
10.946	29.991	0.562	0.158	0.000
11.011	34.430	0.490	0.481	0.000
11.076	30.433	0.802	0.241	0.000
11.142	26.669	0.718	0.160	0.000
11.207	27.967	1.444	0.000	0.000
11.272	31.132	0.966	0.164	0.000
11.337	36.602	1.049	0.246	0.000
11.403	30.820	0.967	0.000	0.000
11.468	31.207	0.163	0.000	0.000
11.533	27.064	0.000	0.000	0.000
11.598	30.921	0.489	0.000	0.000
11.663	36.663	1.287	0.241	0.000
11.728	34.782	1.204	0.161	0.000
11.794	27.835	1.440	0.000	0.000
11.859	27.488	0.718	0.159	0.000
11.924	25.025	0.798	0.238	0.000
11.989	32.591	0.969	0.000	0.000
12.055	34.298	0.722	0.160	0.240

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
12.120	29.246	0.959	0.239	0.160
12.185	28.620	0.479	0.479	0.476
12.250	33.480	0.322	0.161	0.238
12.315	26.070	0.242	0.000	0.159
12.380	27.766	1.433	0.000	0.000
12.446	22.253	0.637	0.162	0.000
12.511	23.746	0.560	0.244	0.000
12.576	25.990	0.963	0.487	0.476
12.641	29.818	1.349	0.000	0.238
12.707	23.755	0.958	0.000	0.159
12.772	19.188	0.000	0.000	0.000
12.837	14.936	0.159	0.000	0.000
12.902	27.030	0.477	0.000	0.000
12.967	20.972	0.953	0.000	0.000
13.033	26.989	0.964	0.321	0.000
13.098	30.826	0.963	0.482	0.000
13.163	30.835	0.964	0.964	0.000
13.228	23.976	0.645	0.000	0.000
13.293	26.132	0.968	0.000	0.000
13.358	21.426	0.000	0.000	0.000
13.424	20.504	0.000	0.000	0.327
13.489	21.360	0.000	0.000	0.491
13.554	21.599	0.000	0.000	0.982
13.619	19.755	0.329	0.000	0.325
13.685	18.606	0.000	0.000	0.487
13.750	23.386	0.000	0.000	0.974
13.815	19.544	0.000	0.000	0.000
13.880	19.281	0.103	0.016	0.008
13.945	20.454	0.484	0.000	0.000
14.010	18.235	0.802	0.000	0.240
14.076	13.931	0.321	0.000	0.160
14.141	15.421	0.000	0.000	0.000
14.206	17.670	0.400	0.000	0.000
14.271	20.513	0.560	0.000	0.000
14.337	17.661	0.961	0.000	0.000
14.402	18.219	0.556	0.158	0.000
14.467	18.525	0.554	0.237	0.000
14.532	15.133	0.000	0.475	0.000
14.597	21.512	0.000	0.000	0.000
14.663	21.683	0.319	0.159	0.000
14.728	19.705	0.000	0.000	0.000

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
14.793	19.471	0.236	0.162	0.000
14.858	19.603	0.474	0.243	0.000
14.923	20.687	0.000	0.962	0.000
14.988	21.533	0.162	0.239	0.000
15.054	20.412	0.315	0.159	0.000
15.119	18.704	0.000	0.000	0.000
15.184	20.621	0.000	0.000	0.000
15.249	16.687	0.158	0.000	0.000
15.314	15.619	0.000	0.000	0.000
15.380	22.628	0.162	0.000	0.000
15.445	21.443	0.000	0.000	0.000
15.510	19.302	0.000	0.000	0.000
15.575	15.814	0.640	0.401	0.000
15.640	20.244	0.563	0.403	0.000
15.706	19.440	0.490	0.482	0.000
15.771	19.389	0.327	0.645	0.000
15.836	19.741	0.246	0.567	0.000
15.901	23.845	0.492	0.492	0.000
15.967	19.919	0.569	0.000	0.000
16.032	22.970	0.812	0.000	0.000
16.097	26.209	0.486	0.000	0.000
16.162	27.358	0.813	0.000	0.000
16.227	25.891	0.732	0.000	0.000
16.292	20.656	0.955	0.478	0.000
16.358	28.805	0.636	0.239	0.000
16.423	19.552	0.318	0.159	0.000
16.488	18.228	0.000	0.000	0.000
16.553	26.848	0.484	0.161	0.000
16.618	25.237	0.241	0.000	0.000
16.684	30.188	1.436	0.000	0.000
16.749	24.549	0.799	0.000	0.000
16.814	25.870	0.718	0.000	0.000
16.879	21.405	0.000	0.000	0.000
16.944	22.490	0.397	0.000	0.000
17.010	21.249	0.000	0.000	0.000
17.075	20.381	0.157	0.000	0.000
17.140	15.481	0.474	0.000	0.000
17.205	19.242	0.237	0.000	0.000
17.271	14.270	0.158	0.000	0.000
17.336	18.205	0.799	0.000	0.000
17.401	19.493	0.238	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
17.466	15.278	0.159	0.158	0.000
17.531	17.782	0.477	0.000	0.000
17.597	16.710	0.474	0.000	0.000
17.662	16.639	0.316	0.000	0.000
17.727	18.247	0.000	0.000	0.000
17.792	11.552	0.000	0.000	0.000
17.857	18.297	0.159	0.000	0.000
17.923	19.172	0.164	0.162	0.000
17.988	18.049	0.729	0.000	0.000
18.053	14.760	0.322	0.000	0.000
18.118	14.688	0.816	0.000	0.000
18.183	18.888	0.974	0.000	0.000
18.249	18.496	1.300	0.000	0.000
18.314	21.610	0.818	0.000	0.000
18.379	20.443	0.727	0.000	0.000
18.444	13.963	0.642	0.000	0.000
18.509	20.714	0.000	0.322	0.000
18.574	14.032	0.241	0.242	0.000
18.640	16.736	0.160	0.483	0.000
18.705	19.993	0.162	0.162	0.000
18.770	12.990	0.243	0.243	0.000
18.835	16.911	0.486	0.486	0.000
18.900	15.737	0.479	0.000	0.000
18.966	17.875	0.471	0.233	0.000
19.031	17.458	0.631	0.156	0.000
19.096	20.568	0.955	0.000	0.000
19.161	19.553	0.716	0.000	0.000
19.226	15.693	1.114	0.000	0.000
19.292	15.300	0.955	0.000	0.000
19.357	15.316	0.476	0.000	0.000
19.422	16.171	0.636	0.000	0.000
19.487	21.088	0.637	0.474	0.161
19.552	14.902	0.481	0.237	0.000
19.618	16.357	0.478	0.158	0.000
19.683	15.664	0.472	0.000	0.158
19.748	15.546	0.706	0.000	0.236
19.813	14.272	0.942	0.000	0.000
19.878	14.958	0.160	0.000	0.000
19.944	17.778	0.478	0.000	0.000
20.009	19.565	0.639	0.158	0.000
20.074	13.914	0.478	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
20.139	18.425	0.239	0.000	0.000
20.204	13.066	0.159	0.159	0.000
20.270	13.881	0.000	0.000	0.161
20.335	16.838	0.000	0.000	0.000
20.400	17.475	0.162	0.000	0.000
20.465	17.386	0.162	0.000	0.163
20.531	15.462	0.724	0.000	0.244
20.596	12.173	0.321	0.162	0.489
20.661	12.309	0.493	0.000	0.000
20.726	16.012	0.488	0.000	0.000
20.791	17.227	0.485	0.000	0.000
20.857	18.219	0.000	0.000	0.000
20.922	13.409	0.238	0.000	0.000
20.987	16.169	0.159	0.000	0.000
21.052	20.894	0.321	0.000	0.000
21.117	17.706	0.481	0.000	0.000
21.183	16.312	0.482	0.000	0.000
21.248	15.800	0.797	0.000	0.000
21.313	15.709	0.714	0.000	0.000
21.378	16.863	0.316	0.000	0.000
21.443	16.485	0.324	0.163	0.000
21.508	18.267	0.243	0.000	0.000
21.574	18.357	0.000	0.000	0.000
21.639	16.563	0.159	0.000	0.000
21.704	21.004	0.239	0.000	0.000
21.769	13.969	0.000	0.000	0.158
21.834	19.222	0.476	0.000	0.000
21.900	20.477	0.706	0.000	0.000
21.965	22.681	1.123	0.000	0.000
22.030	19.570	0.321	0.633	0.000
22.095	24.748	0.242	0.478	0.000
22.160	25.813	0.484	0.799	0.000
22.226	29.016	0.322	0.159	0.000
22.291	21.878	0.239	0.239	0.000
22.356	17.616	0.158	0.000	0.000
22.421	20.696	0.650	0.965	0.000
22.486	25.747	0.731	0.971	0.000
22.552	23.326	1.301	0.320	0.000
22.617	21.346	0.649	0.000	0.000
22.682	23.793	0.728	0.000	0.000
22.747	23.064	0.324	0.000	0.000

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
22.813	18.531	0.000	0.000	0.000
22.878	23.968	0.000	0.000	0.000
22.943	16.521	0.000	0.000	0.000
23.008	18.702	0.159	0.000	0.000
23.073	24.542	0.239	0.000	0.000
23.139	13.198	0.159	0.157	0.000
23.204	15.771	0.956	0.161	0.161
23.269	16.874	1.200	0.481	0.242
23.334	23.516	1.765	0.801	0.000
23.399	17.600	0.318	0.000	0.319
23.464	12.827	0.239	0.000	0.478
23.530	20.501	0.954	0.000	0.478
23.595	17.471	0.158	0.000	0.000
23.660	19.477	0.000	0.000	0.000
23.725	19.060	0.158	0.000	0.000
23.790	16.284	0.635	0.000	0.000
23.856	17.136	1.187	0.000	0.000
23.921	19.871	1.109	0.000	0.000
23.986	21.992	0.797	0.000	0.000
24.051	18.356	0.480	0.000	0.000
24.116	20.566	0.158	0.000	0.000
24.182	20.704	0.626	0.787	0.000
24.247	19.848	0.468	0.712	0.000
24.312	18.615	0.312	0.636	0.000
24.377	21.442	0.161	0.000	0.000
24.443	19.008	0.479	0.237	0.000
24.508	22.592	0.642	0.317	0.159
24.573	20.342	0.483	0.484	0.000
24.638	17.354	0.240	0.482	0.000
24.703	28.767	0.640	0.321	0.000
24.768	20.309	0.812	0.000	0.000
24.834	20.959	0.974	0.243	0.000
24.899	22.137	0.803	0.162	0.000
24.964	19.541	0.483	0.159	0.000
25.029	15.394	0.965	0.000	0.000
25.094	27.264	1.134	0.000	0.000
25.160	18.423	0.807	0.161	0.000
25.225	18.309	0.242	0.241	0.000
25.290	19.193	0.480	0.160	0.000
25.355	17.760	1.116	0.000	0.000
25.420	19.059	0.953	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
25.486	18.389	1.586	0.000	0.000
25.551	23.688	0.478	0.000	0.000
25.616	22.992	0.478	0.000	0.000
25.681	16.649	0.636	0.000	0.000
25.747	19.425	0.000	0.000	0.000
25.812	18.158	0.000	0.000	0.000
25.877	16.451	0.160	0.000	0.000
25.942	24.374	0.476	0.477	0.000
26.007	17.119	0.952	0.238	0.000
26.073	21.423	0.795	0.159	0.000
26.138	16.761	1.118	0.159	0.000
26.203	18.934	0.238	0.474	0.000
26.268	16.473	0.315	0.156	0.000
26.333	21.956	1.275	0.474	0.000
26.398	17.756	1.199	0.237	0.000
26.464	21.921	1.274	0.158	0.000
26.529	15.157	0.159	0.471	0.000
26.594	25.202	0.000	0.235	0.000
26.659	16.864	0.000	0.157	0.000
26.725	21.064	1.112	0.000	0.000
26.790	23.763	0.947	0.000	0.000
26.855	21.574	0.631	0.000	0.000
26.920	25.922	0.643	1.120	0.000
26.985	21.693	0.963	0.721	0.239
27.050	21.590	1.123	0.801	0.159
27.116	22.362	0.967	0.161	0.161
27.181	19.056	0.484	0.242	0.242
27.246	18.857	0.483	0.484	0.484
27.311	18.860	1.135	0.000	0.000
27.376	18.947	1.218	0.000	0.000
27.442	21.014	1.303	0.000	0.000
27.507	19.242	0.316	0.000	0.000
27.572	20.716	0.946	0.000	0.000
27.637	23.245	1.264	0.000	0.000
27.702	17.672	0.160	0.000	0.160
27.768	20.032	0.472	0.236	0.000
27.833	14.695	0.472	0.157	0.000
27.898	22.873	0.000	0.000	0.000
27.963	17.262	0.000	0.000	0.000
28.028	19.960	0.000	0.000	0.157
28.094	17.440	0.159	0.000	0.318

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
28.159	25.651	0.711	0.000	0.478
28.224	15.760	0.793	0.000	0.955
28.289	25.255	0.474	0.000	0.000
28.355	19.277	0.237	0.000	0.000
28.420	26.706	0.158	0.000	0.000
28.485	17.265	0.321	0.000	0.000
28.550	17.198	0.000	0.000	0.000
28.615	27.781	0.000	0.000	0.000
28.681	19.663	0.473	0.000	0.000
28.746	19.724	0.237	0.477	0.000
28.811	19.997	0.315	0.632	0.000
28.876	26.828	0.314	0.000	0.000
28.941	21.379	0.000	0.000	0.000
29.006	24.942	0.159	0.000	0.000
29.072	23.456	0.159	0.159	0.000
29.137	22.851	0.238	0.238	0.000
29.202	30.621	0.159	0.000	0.000
29.267	20.857	0.807	0.000	0.000
29.333	28.616	0.965	0.000	0.000
29.398	21.525	1.122	0.000	0.000
29.463	21.495	0.160	0.000	0.000
29.528	23.521	0.240	0.000	0.000
29.593	25.041	0.481	0.000	0.000
29.659	28.167	0.479	0.478	0.161
29.724	24.112	0.482	0.239	0.241
29.789	25.473	0.483	0.321	0.000
29.854	23.136	0.159	0.159	0.000
29.919	23.802	0.239	0.239	0.000
29.984	30.892	0.157	0.477	0.000
30.050	30.636	0.952	0.318	0.000
30.115	28.919	0.712	0.477	0.000
30.180	29.110	0.628	0.157	0.000
30.245	27.039	0.950	0.000	0.000
30.310	23.362	0.952	0.000	0.000
30.376	26.645	1.111	0.000	0.000
30.441	25.118	0.474	0.160	0.000
30.506	22.905	0.237	0.239	0.000
30.571	26.377	0.158	0.000	0.000
30.636	20.430	0.000	0.317	0.000
30.702	21.149	0.234	0.710	0.000
30.767	26.012	0.156	1.108	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
30.832	24.305	0.943	0.000	0.000
30.897	21.890	0.939	0.000	0.000
30.963	19.653	1.561	0.000	0.000
31.028	16.971	0.315	0.000	0.000
31.093	21.434	0.000	0.000	0.000
31.158	23.695	0.000	0.000	0.000
31.223	19.064	0.475	0.000	0.000
31.289	18.558	0.475	0.000	0.000
31.354	26.269	0.476	0.000	0.000
31.419	22.781	0.159	0.000	0.000
31.484	16.075	0.237	0.237	0.000
31.549	23.694	0.319	0.158	0.000
31.614	20.412	0.487	0.159	0.000
31.680	17.935	0.727	0.238	0.000
31.745	19.625	0.321	0.477	0.000
31.810	16.902	0.811	0.483	0.163
31.875	17.142	0.734	0.241	0.244
31.940	20.444	0.491	0.161	0.000
32.006	20.071	0.478	0.000	0.000
32.071	18.863	0.474	0.000	0.000
32.136	21.816	0.474	0.000	0.000
32.201	10.427	0.000	0.000	0.000
32.266	28.103	0.468	0.000	0.000
32.332	20.890	0.312	0.000	0.000
32.397	15.848	0.320	0.000	0.000
32.462	26.539	0.000	0.236	0.000
32.527	17.065	0.000	0.157	0.000
32.593	16.110	0.159	0.000	0.000
32.658	17.752	0.239	0.000	0.000
32.723	16.588	0.159	0.000	0.000
32.788	21.632	0.158	0.316	0.000
32.853	20.841	0.237	0.238	0.000
32.918	21.376	0.000	0.476	0.000
32.984	20.076	0.158	0.158	0.000
33.049	17.510	0.237	0.237	0.000
33.114	14.306	0.000	0.000	0.000
33.179	19.154	1.595	0.000	0.000
33.244	17.514	0.718	0.000	0.000
33.310	17.371	0.634	0.000	0.000
33.375	16.629	0.480	0.000	0.000
33.440	12.437	0.720	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
33.505	23.444	1.279	0.000	0.000
33.570	18.883	0.793	0.158	0.161
33.636	20.103	0.719	0.000	0.242
33.701	20.281	0.157	0.000	0.000
33.766	14.926	0.957	0.162	0.000
33.831	17.297	0.719	0.241	0.000
33.896	18.755	0.479	0.160	0.000
33.962	22.685	0.325	0.000	0.000
34.027	19.559	0.246	0.000	0.000
34.092	17.430	0.492	0.000	0.000
34.157	17.445	0.629	0.000	0.000
34.223	22.415	0.711	0.000	0.000
34.288	24.337	0.475	0.160	0.000
34.353	19.844	0.950	0.311	0.000
34.418	18.959	0.950	0.000	0.000
34.483	21.888	0.950	0.000	0.000
34.548	20.420	0.159	0.158	0.000
34.614	20.327	0.000	0.238	0.000
34.679	16.107	0.000	0.475	0.000
34.744	22.227	0.473	0.000	0.000
34.809	28.527	1.418	0.000	0.000
34.875	19.204	1.411	0.000	0.156
34.940	20.985	0.000	0.000	0.000
35.005	25.925	0.000	0.000	0.000
35.070	21.356	0.157	0.000	0.000
35.135	23.617	0.788	0.000	0.000
35.201	20.292	0.237	0.000	0.000
35.266	20.063	0.316	0.000	0.000
35.331	23.786	0.000	0.160	0.157
35.396	20.548	0.000	0.000	0.236
35.461	21.199	0.000	0.000	0.472
35.527	26.530	1.106	0.000	0.000
35.592	21.319	1.185	0.000	0.000
35.657	21.241	1.100	0.000	0.000
35.722	20.167	0.479	0.322	0.000
35.787	25.402	0.719	0.000	0.000
35.852	21.478	0.000	0.000	0.000
35.918	20.413	0.160	0.319	0.000
35.983	27.389	0.479	0.240	0.000
36.048	22.611	0.639	0.480	0.000
36.113	19.245	0.158	0.481	0.000

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
36.178	22.335	0.237	0.241	0.000
36.244	20.215	0.000	0.160	0.000
36.309	24.308	0.976	0.163	0.000
36.374	25.952	0.731	0.000	0.000
36.439	25.044	0.321	0.000	0.160
36.505	18.701	0.160	0.000	0.000
36.570	18.742	0.240	0.240	0.000
36.635	24.047	0.000	0.160	0.000
36.700	22.846	0.941	0.623	0.000
36.765	22.672	0.948	0.469	0.000
36.831	22.903	1.430	0.155	0.000
36.896	17.151	0.000	0.000	0.160
36.961	18.783	0.000	0.000	0.000
37.026	21.720	0.157	0.000	0.157
37.091	21.021	0.318	0.000	0.000
37.156	18.593	0.477	0.000	0.000
37.222	22.224	0.633	0.157	0.000
37.287	20.791	1.256	0.159	0.000
37.352	23.276	0.945	0.000	0.000
37.417	18.916	0.471	0.000	0.000
37.482	18.809	0.157	0.000	0.000
37.548	19.919	0.236	0.236	0.000
37.613	22.658	0.482	0.157	0.000
37.678	20.429	0.791	0.473	0.159
37.743	18.963	0.714	0.237	0.000
37.808	23.242	1.112	0.315	0.000
37.874	20.516	0.473	0.158	0.000
37.939	26.902	0.944	0.472	0.000
38.004	18.764	0.625	0.313	0.000
38.069	20.925	0.322	0.000	0.000
38.135	18.664	0.484	0.000	0.000
38.200	21.537	0.967	0.158	0.000
38.265	20.948	1.131	0.153	0.000
38.330	23.606	0.986	0.229	0.000
38.395	17.422	0.477	0.458	0.000
38.461	23.517	0.320	0.000	0.000
38.526	21.925	0.240	0.238	0.000
38.591	24.271	0.158	0.158	0.000
38.656	27.124	0.470	0.157	0.157
38.721	23.483	1.174	0.235	0.235
38.786	17.558	0.466	0.000	0.000

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
38.852	22.243	0.469	0.000	0.000
38.917	18.112	0.700	0.000	0.000
38.982	21.720	0.624	0.000	0.000
39.047	26.288	0.766	0.000	0.000
39.112	25.695	0.457	0.229	0.000
39.178	21.392	0.457	0.153	0.000
39.243	24.442	0.000	0.315	0.000
39.308	22.771	0.000	0.472	0.000
39.373	28.254	0.000	0.483	0.000
39.438	13.872	0.261	0.105	0.000
39.504	19.661	0.233	0.000	0.228
39.569	18.018	0.618	0.000	0.152
39.634	21.764	0.614	0.000	0.000
39.699	20.103	0.466	0.000	0.000
39.764	20.176	0.780	0.152	0.000
39.830	29.701	1.093	0.000	0.000
39.895	22.683	0.940	0.226	0.000
39.960	18.776	1.100	0.302	0.000
40.025	20.021	0.000	0.156	0.000
40.090	24.349	0.000	0.234	0.000
40.156	20.845	0.151	0.000	0.000
40.221	20.676	0.159	0.620	0.000
40.286	11.300	0.228	0.230	0.000
40.351	18.212	0.305	0.154	0.000
40.416	13.523	0.321	0.161	0.000
40.482	18.427	0.481	0.241	0.000
40.547	17.447	0.480	0.000	0.000
40.612	18.176	0.321	0.000	0.000
40.677	19.783	0.712	0.000	0.000
40.743	15.119	0.636	0.154	0.000
40.808	15.703	1.873	0.000	0.000
40.873	18.362	1.420	0.000	0.000
40.938	23.174	1.433	0.000	0.000
41.003	18.039	0.625	0.157	0.467
41.069	20.297	0.699	0.236	0.234
41.134	18.519	0.931	0.472	0.156
41.199	15.422	0.319	0.000	0.000
41.264	23.307	0.000	0.000	0.000
41.329	22.428	0.000	0.000	0.000
41.395	20.877	0.464	0.000	0.000
41.460	17.626	0.921	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
41.525	19.793	1.693	0.000	0.000
41.590	16.005	0.783	0.000	0.160
41.655	14.064	0.467	0.000	0.240
41.720	22.448	0.631	0.151	0.480
41.786	20.699	0.000	0.457	0.000
41.851	23.587	0.000	0.228	0.000
41.916	12.878	0.000	0.152	0.000
41.981	13.741	0.611	0.000	0.000
42.046	16.527	0.225	0.229	0.000
42.112	12.029	0.301	0.153	0.000
42.177	13.518	0.775	0.000	0.000
42.242	11.791	0.712	0.000	0.000
42.307	13.648	0.638	0.000	0.000
42.373	14.572	0.617	0.000	0.000
42.438	15.062	0.472	0.000	0.227
42.503	12.708	0.641	0.000	0.151
42.568	16.747	0.491	0.000	0.000
42.633	15.424	0.714	0.000	0.000
42.699	21.933	0.636	0.000	0.000
42.764	17.579	0.624	0.164	0.000
42.829	17.397	0.708	0.246	0.000
42.894	19.149	0.800	0.492	0.000
42.959	16.261	0.339	0.000	0.000
43.024	15.000	0.738	0.000	0.000
43.090	18.863	0.967	0.000	0.000
43.155	18.578	0.000	0.000	0.000
43.220	16.111	0.225	0.225	0.000
43.285	13.155	0.150	0.150	0.000
43.350	21.782	0.617	0.328	0.000
43.416	21.206	0.473	0.492	0.000
43.481	15.538	0.302	0.000	0.000
43.546	16.386	0.492	0.000	0.000
43.611	20.308	0.727	0.000	0.000
43.676	17.965	0.947	0.000	0.151
43.742	13.300	0.493	0.000	0.000
43.807	15.113	0.700	0.000	0.000
43.872	20.495	0.949	0.000	0.000
43.937	18.480	0.450	0.164	0.000
44.003	15.472	0.225	0.246	0.000
44.068	15.481	0.150	0.492	0.000
44.133	19.170	0.953	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
44.198	19.049	0.478	0.000	0.000
44.263	16.155	0.151	0.000	0.000
44.328	15.502	0.163	0.000	0.000
44.394	21.880	0.226	0.000	0.000
44.459	20.415	0.450	0.000	0.000
44.524	17.166	0.000	0.000	0.000
44.589	22.415	0.451	0.000	0.000
44.654	22.200	0.604	0.000	0.000
44.720	23.834	0.000	0.000	0.000
44.785	19.061	0.000	0.000	0.000
44.850	21.773	0.153	0.000	0.000
44.915	24.672	0.333	0.333	0.000
44.980	19.249	0.711	0.499	0.000
45.046	19.551	1.109	0.495	0.000
45.111	18.345	0.334	0.000	0.000
45.176	19.026	0.731	0.000	0.000
45.241	20.027	0.802	0.000	0.000
45.306	23.695	0.623	0.000	0.000
45.372	25.747	0.230	0.000	0.000
45.437	14.718	0.153	0.000	0.000
45.502	17.462	0.165	0.000	0.000
45.567	17.812	0.248	0.000	0.000
45.633	24.938	0.798	0.000	0.000
45.698	20.361	1.242	0.164	0.000
45.763	23.601	0.947	0.471	0.000
45.828	20.554	0.791	0.150	0.000
45.893	19.352	0.163	0.000	0.000
45.958	18.890	0.227	0.000	0.000
46.024	19.159	0.152	0.151	0.000
46.089	21.160	0.000	0.000	0.000
46.154	15.705	0.227	0.000	0.000
46.219	25.023	0.151	0.152	0.000
46.285	19.482	0.452	0.000	0.000
46.350	18.630	0.226	0.225	0.000
46.415	15.067	0.151	0.150	0.000
46.480	19.449	0.487	0.000	0.000
46.545	22.082	0.949	0.000	0.000
46.611	23.352	1.908	0.000	0.000
46.676	9.490	0.000	0.166	0.000
46.741	15.181	0.000	0.248	0.000
46.806	20.037	0.000	0.497	0.000

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
46.871	16.648	0.167	0.000	0.000
46.937	16.781	0.250	0.000	0.000
47.002	17.363	0.000	0.000	0.000
47.067	24.492	0.919	0.332	0.000
47.132	16.685	0.460	0.498	0.000
47.197	22.551	0.306	0.996	0.000
47.262	18.086	0.793	0.000	0.000
47.328	20.074	0.480	0.000	0.000
47.393	19.388	0.306	0.000	0.000
47.458	17.554	0.000	1.088	0.000
47.523	23.318	0.231	0.710	0.000
47.588	19.292	0.154	0.307	0.000
47.654	28.915	0.325	0.329	0.000
47.719	16.138	0.448	0.493	0.000
47.784	21.640	0.448	0.987	0.000
47.849	22.443	0.329	0.000	0.000
47.915	19.852	0.494	0.228	0.000
47.980	21.264	0.987	0.152	0.000
48.045	20.856	0.781	0.165	0.904
48.110	21.747	0.947	0.247	0.680
48.175	23.383	0.795	0.151	0.454
48.241	24.986	0.784	0.000	0.000
48.306	25.870	0.476	0.226	0.000
48.371	30.811	0.454	0.302	0.000
48.436	30.593	0.487	0.324	0.162
48.501	26.950	0.245	0.448	0.000
48.566	27.950	0.151	0.298	0.000
48.632	23.382	0.456	0.000	0.000
48.697	27.100	0.904	0.000	0.000
48.762	24.632	0.603	0.000	0.000
48.827	21.335	0.615	0.000	0.164
48.892	24.905	0.471	0.000	0.245
48.958	19.477	0.641	0.000	0.491
49.023	20.492	0.333	0.000	0.000
49.088	17.550	0.475	0.000	0.000
49.153	20.199	0.648	0.000	0.000
49.218	15.739	1.248	0.164	0.000
49.284	26.101	0.708	0.000	0.000
49.349	26.911	0.306	0.000	0.000
49.414	22.185	0.802	0.000	0.000
49.479	20.197	0.485	0.000	0.000

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		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
49.544	21.016	0.659	0.000	0.000
49.610	20.304	0.000	0.163	0.000
49.675	21.439	0.000	0.245	0.000
49.740	23.476	0.000	0.489	0.000
49.805	22.591	0.454	0.164	0.454
49.871	23.935	0.227	0.472	0.454
49.936	28.475	0.000	0.982	0.000
50.001	22.492	0.000	0.000	0.000
50.066	19.089	0.132	0.035	0.006
50.131	25.522	0.088	0.023	0.004
50.196	22.287	0.163	0.000	0.000
50.262	25.780	0.244	0.000	0.000
50.327	21.815	0.000	0.174	0.000
50.392	20.544	0.328	0.162	0.000
50.457	22.239	0.507	0.243	0.000
50.522	22.711	0.662	0.486	0.000
50.588	23.696	0.522	0.162	0.000
50.653	20.884	0.261	0.000	0.000
50.718	14.358	0.174	0.000	0.000
50.783	20.700	0.657	0.165	0.000
50.848	22.700	0.246	0.247	0.000
50.914	23.087	0.327	0.326	0.000
50.979	16.792	0.328	0.327	0.000
51.044	19.929	0.245	0.243	0.000
51.109	21.959	0.491	0.000	0.000
51.174	22.114	0.494	0.000	0.000
51.240	28.269	0.494	0.000	0.000
51.305	20.136	0.164	0.000	0.000
51.370	36.330	0.832	0.167	0.000
51.435	29.945	0.999	0.250	0.000
51.500	37.088	1.664	0.000	0.000
51.566	25.927	0.166	0.000	0.000
51.631	28.351	0.250	0.000	0.000
51.696	32.272	0.165	0.000	0.000
51.761	25.367	0.830	0.163	0.000
51.826	24.743	0.250	0.495	0.000
51.892	26.372	0.333	0.167	0.000
51.957	30.748	0.330	0.498	0.000
52.022	27.381	0.747	0.748	0.000
52.087	30.367	0.333	0.662	0.000
52.153	27.522	0.164	0.167	0.000

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
52.218	21.809	0.000	0.495	0.000
52.283	20.447	0.000	0.163	0.000
52.348	26.921	0.981	0.000	0.000
52.413	22.378	0.980	0.000	0.000
52.479	23.563	1.473	0.000	0.000
52.544	27.189	0.824	0.000	0.000
52.609	29.961	0.742	0.000	0.000
52.674	25.744	0.664	0.000	0.164
52.739	26.670	0.000	0.163	0.000
52.805	27.736	0.000	0.245	0.000
52.870	24.541	0.328	0.490	0.000
52.935	27.103	0.333	0.167	0.000
53.000	29.703	0.494	0.250	0.000
53.065	27.976	0.163	0.000	0.000
53.130	23.330	0.652	0.000	0.000
53.196	23.986	0.492	0.000	0.000
53.261	32.106	0.823	0.000	0.000
53.326	24.807	0.333	0.496	0.000
53.391	25.558	0.992	0.248	0.000
53.456	27.321	1.491	0.165	0.000
53.522	25.879	0.662	0.000	0.000
53.587	22.535	0.248	0.000	0.000
53.652	28.853	0.331	0.000	0.000
53.717	19.908	1.492	0.000	0.000
53.783	20.547	1.248	0.250	0.000
53.848	25.668	0.833	0.167	0.000
53.913	32.941	1.168	0.500	0.000
53.978	20.605	0.753	0.250	0.000
54.043	28.748	0.333	0.334	0.000
54.109	22.686	0.507	0.000	0.000
54.174	19.936	0.254	0.000	0.000
54.239	24.144	0.169	0.000	0.000
54.304	26.071	0.491	0.163	0.163
54.369	25.971	0.735	0.245	0.245
54.434	31.225	0.488	0.000	0.000
54.500	26.091	0.165	0.165	0.000
54.565	26.081	0.490	0.247	0.000
54.630	16.818	0.327	0.495	0.000
54.695	26.940	1.142	0.000	0.163
54.760	27.567	0.490	0.245	0.000
54.826	27.748	0.326	0.163	0.164

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
54.891	21.918	1.815	0.496	0.000
54.956	26.915	1.479	0.248	0.000
55.021	26.401	1.474	0.165	0.000
55.086	24.600	0.985	0.490	0.000
55.152	23.302	0.989	0.245	0.000
55.217	20.721	0.656	0.163	0.000
55.282	22.204	0.166	0.165	0.000
55.347	18.738	0.740	0.245	0.000
55.413	23.792	0.657	0.329	0.000
55.478	18.244	0.492	0.000	0.000
55.543	17.789	0.246	0.000	0.000
55.608	19.372	0.492	0.000	0.000
55.673	18.415	0.500	0.500	0.000
55.738	29.521	0.250	0.250	0.000
55.804	14.456	0.167	0.167	0.000
55.869	14.989	0.831	0.498	0.000
55.934	19.165	0.750	0.502	0.000
55.999	17.453	0.831	0.334	0.000
56.064	20.987	0.836	0.000	0.169
56.130	24.194	1.006	0.000	0.254
56.195	22.705	0.839	0.000	0.000
56.260	23.971	0.330	0.000	0.000
56.325	17.434	0.494	0.000	0.000
56.390	22.718	1.153	0.000	0.000
56.456	22.197	0.985	0.000	0.000
56.521	27.895	0.492	0.000	0.000
56.586	19.690	0.491	0.000	0.000
56.651	19.823	0.984	0.492	0.000
56.716	14.452	0.742	0.246	0.000
56.782	18.289	0.494	0.164	0.000
56.847	20.683	0.165	0.000	0.000
56.912	17.782	0.247	0.000	0.000
56.977	19.788	0.494	0.000	0.000
57.042	23.041	0.165	0.819	0.000
57.108	19.713	0.736	0.493	0.000
57.173	16.730	0.983	0.163	0.000
57.238	18.841	0.166	0.000	0.000
57.303	10.819	0.494	0.000	0.000
57.368	16.285	0.661	0.000	0.000
57.434	18.474	0.000	0.000	0.000
57.499	19.788	0.000	0.000	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
57.564	16.599	0.000	0.000	0.000
57.629	22.507	0.165	0.000	0.000
57.694	14.203	0.244	0.000	0.000
57.760	16.874	0.327	0.000	0.000
57.825	20.218	0.828	0.000	0.000
57.890	20.862	0.750	0.000	0.000
57.955	18.486	1.172	0.000	0.000
58.021	25.589	0.167	0.000	0.502
58.086	21.099	0.251	0.000	0.251
58.151	22.075	0.166	0.000	0.167
58.216	16.573	1.333	0.000	0.000
58.281	20.150	0.999	0.000	0.000
58.346	20.938	1.332	0.000	0.000
58.412	18.010	0.000	0.000	0.000
58.477	20.603	0.000	0.000	0.000
58.542	23.706	0.000	0.169	0.000
58.607	20.731	0.494	0.164	0.000
58.672	14.743	0.249	0.000	0.000
58.738	15.843	0.661	0.000	0.000
58.803	20.349	0.164	0.329	0.000
58.868	18.696	0.492	0.738	0.000
58.933	14.740	0.327	0.657	0.163
58.998	22.479	0.813	0.000	0.000
59.064	17.683	0.243	0.000	0.000
59.129	19.008	0.325	0.000	0.000
59.194	16.801	0.331	0.000	0.000
59.259	20.125	0.247	0.000	0.000
59.324	25.097	0.658	0.000	0.000
59.390	22.687	0.329	0.000	0.000
59.455	18.720	0.493	0.000	0.000
59.520	19.720	0.824	0.000	0.000
59.585	17.798	0.494	0.000	0.000
59.650	21.141	0.493	0.000	0.000
59.716	19.644	1.475	0.000	0.000
59.781	20.143	0.165	0.000	0.000
59.846	19.245	0.000	0.000	0.245
59.911	17.317	0.165	0.000	0.163
59.976	19.847	0.500	0.000	0.000
60.042	19.957	0.251	0.000	0.248
60.107	15.871	0.000	0.000	0.165
60.172	17.437	0.000	0.501	0.000

ARCADIS Design & Consultancy for natural and built assets

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
60.237	16.439	0.000	0.251	0.000
60.302	19.425	0.000	0.167	0.000
60.368	21.514	0.332	0.000	0.000
60.433	26.024	0.248	0.000	0.000
60.498	22.646	0.167	0.000	0.000
60.563	20.689	0.000	0.000	0.000
60.628	22.530	0.251	0.000	0.000
60.694	18.140	0.167	0.000	0.000
60.759	16.463	0.331	0.000	0.000
60.824	20.645	0.497	0.000	0.000
60.889	12.219	0.163	0.000	0.000
60.954	16.393	0.155	0.155	0.155
61.020	11.890	0.233	0.233	0.232
61.085	18.136	0.465	0.465	0.000
61.150	21.210	0.648	0.000	0.000
61.215	16.215	0.478	0.000	0.000
61.280	19.858	0.627	0.000	0.000
61.346	14.392	0.648	0.154	0.156
61.411	20.167	0.725	0.231	0.234
61.476	20.004	0.327	0.462	0.000
61.541	20.011	0.980	0.155	0.000
61.606	14.240	0.490	0.000	0.000
61.672	26.577	0.653	0.000	0.000
61.737	23.226	1.150	0.492	0.000
61.802	17.642	0.739	0.246	0.000
61.867	17.014	0.493	0.164	0.000
61.932	20.749	0.159	0.159	0.000
61.998	27.236	0.000	0.485	0.000
62.063	22.796	0.000	0.328	0.000
62.128	16.523	0.319	0.475	0.000
62.193	16.044	0.236	0.713	0.000
62.258	20.793	0.472	1.109	0.000
62.324	20.956	0.987	0.958	0.000
62.389	20.294	0.986	0.704	0.000
62.454	21.962	0.657	0.165	0.000
62.519	20.615	0.153	0.000	0.000
62.584	19.424	0.229	0.000	0.000
62.650	20.669	0.458	0.000	0.000
62.715	21.106	0.000	0.000	0.000
62.780	21.503	0.000	0.253	0.000
62.845	18.539	0.333	0.168	0.000

		Spectral Gamma Ray		
Depth (feet)	Total Gamma Ray[1] (cps)	Potassium (cps)	Uranium (cps)	Thorium (cps)
62.910	18.170	0.574	0.017	0.004
62.976	18.225	0.365	0.025	0.006

Notes

1 - Total Gamma Ray based on spectral gamma readings.

cps - counts per second

APPENDIX E

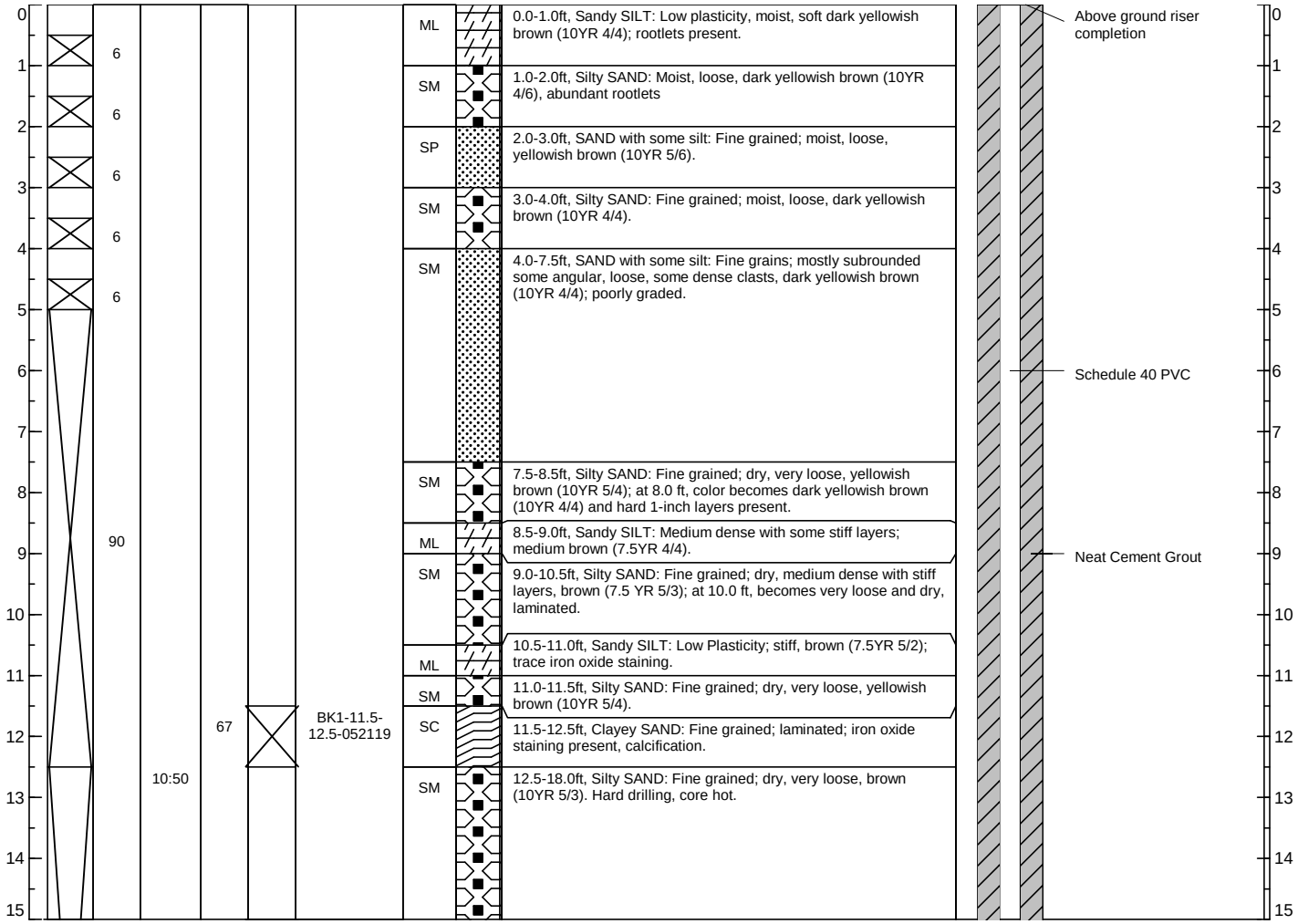
Drilling Logs

Boring and Well Construction Log

Date Drilling Started:	5/20/2019	**Latitude:** 107.86836 **Longitude:** 35.25157		**ID: BK1c**	
Date Drilling Finished:	5/20/2019	**Surface Elevation:** 6584			
Date Well Complete:	5/21/2019	**Total Borehole Depth:** 75.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation
Driller's Name:	SOP LOM	**Sampling Interval:** Continuous			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	SAMPLING DETAIL: Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	LITHOLOGY: USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
0							ML		0.0-1.0ft, Sandy SILT: Low plasticity, moist, soft dark yellowish brown (10YR 4/4); rootlets present.		0
1		6					SM		1.0-2.0ft, Silty SAND: Moist, loose, dark yellowish brown (10YR 4/6), abundant rootlets		1
2		6					SP		2.0-3.0ft, SAND with some silt: Fine grained; moist, loose, yellowish brown (10YR 5/6).		2
3		6					SM		3.0-4.0ft, Silty SAND: Fine grained; moist, loose, dark yellowish brown (10YR 4/4).		3
4		6					SM		4.0-7.5ft, SAND with some silt: Fine grains; mostly subrounded some angular, loose, some dense clasts, dark yellowish brown (10YR 4/4); poorly graded.		4
5		6									5
6											6
7											7
8							SM		7.5-8.5ft, Silty SAND: Fine grained; dry, very loose, yellowish brown (10YR 5/4); at 8.0 ft, color becomes dark yellowish brown (10YR 4/4) and hard 1-inch layers present.		8
9		90					ML		8.5-9.0ft, Sandy SILT: Medium dense with some stiff layers; medium brown (7.5YR 4/4).		9
10							SM		9.0-10.5ft, Silty SAND: Fine grained; dry, medium dense with stiff layers, brown (7.5 YR 5/3); at 10.0 ft, becomes very loose and dry, laminated.		10
11							ML		10.5-11.0ft, Sandy SILT: Low Plasticity; stiff, brown (7.5YR 5/2); trace iron oxide staining.		11
12			10:50	67		BK1-11.5-12.5-052119	SM		11.0-11.5ft, Silty SAND: Fine grained; dry, very loose, yellowish brown (10YR 5/4).		12
							SC		11.5-12.5ft, Clayey SAND: Fine grained; laminated; iron oxide staining present, calcification.		
13							SM		12.5-18.0ft, Silty SAND: Fine grained; dry, very loose, brown (10YR 5/3). Hard drilling, core hot.		13
14											14
15											15

WELL CASING: Schedule 40 PVC
SAND PACK: 2/12 Sand
WELL DIAMETER: 2 inches
ANNULUS SEAL: Hydrated Bentonite
WELL SCREEN: Schedule 40 PVC
GROUT: Neat Cement Grout
SCREEN DIAMETER: 2 inches
COMPLETION TYPE: 3 ft PVC stick-up
SLOT SIZE: 0.010 inches

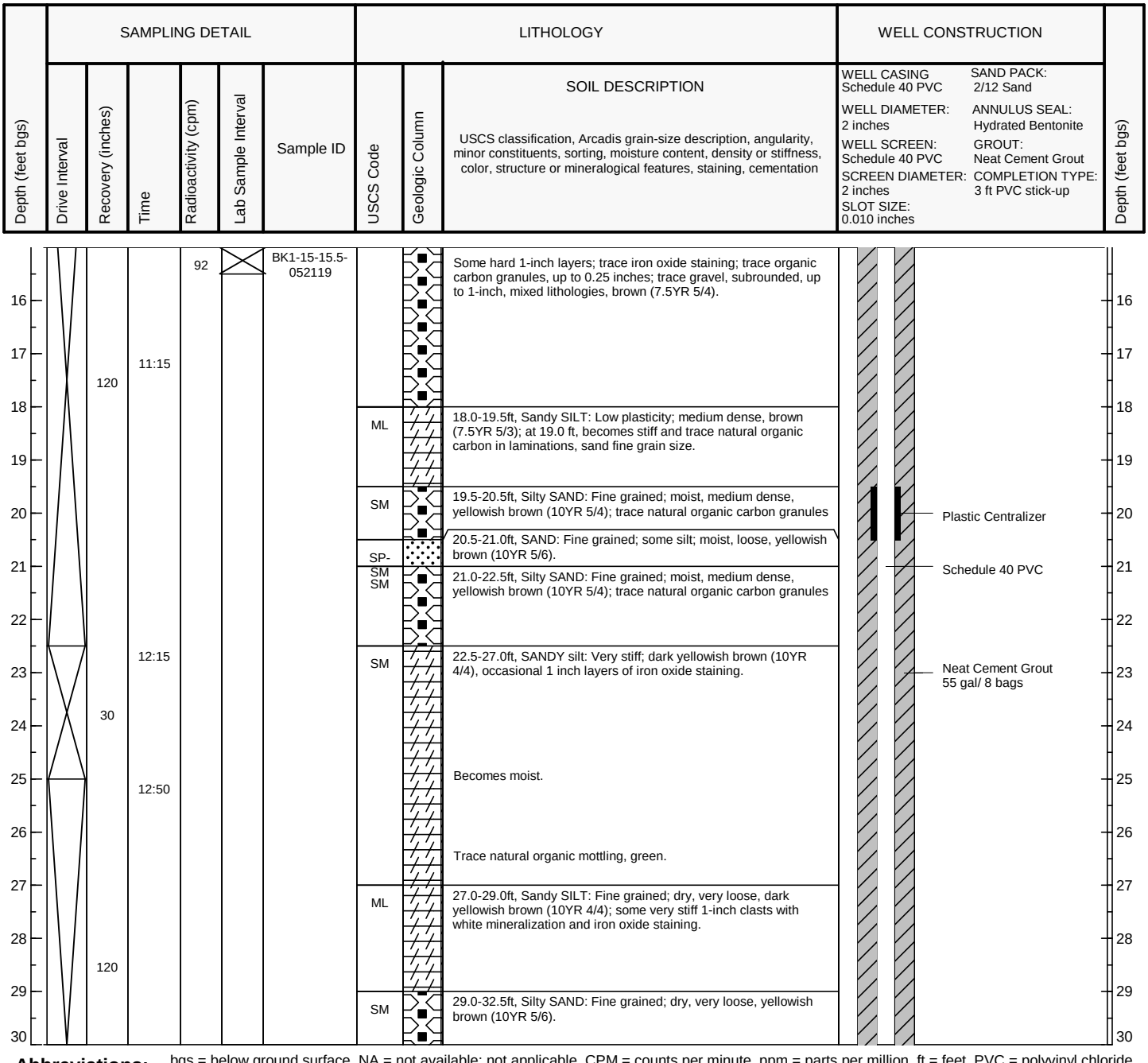


Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/20/2019	**Latitude:** 107.86836 **Longitude:** 35.25157		**ID: BK1c**	
Date Drilling Finished:	5/20/2019	**Surface Elevation:** 6584			
Date Well Complete:	5/21/2019	**Total Borehole Depth:** 75.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation
Driller's Name:	SOP LOM	**Sampling Interval:** Continuous			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

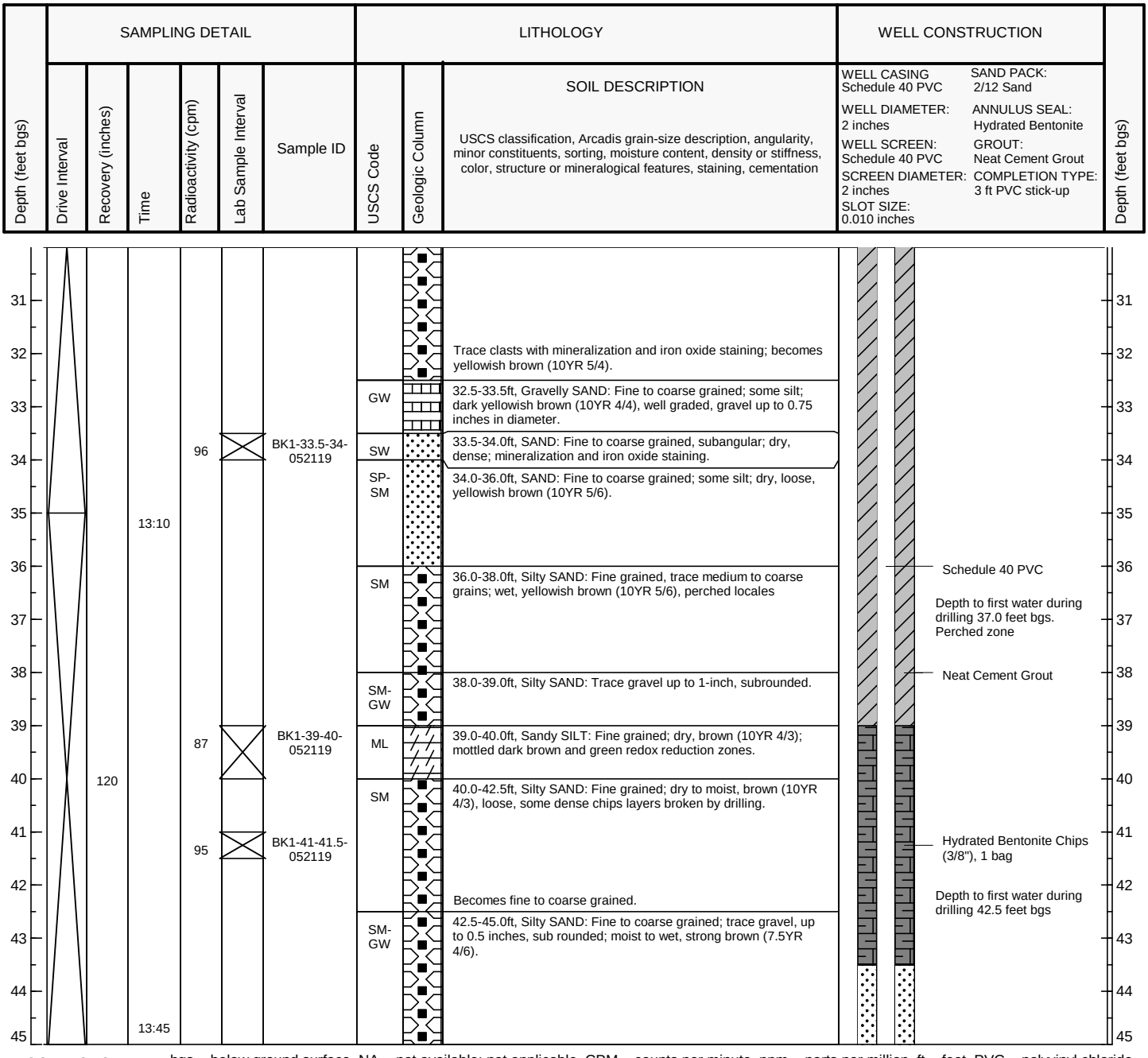


Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/20/2019	**Latitude:** 107.86836 **Longitude:** 35.25157		**ID: BK1c**	
Date Drilling Finished:	5/20/2019	**Surface Elevation:** 6584			
Date Well Complete:	5/21/2019	**Total Borehole Depth:** 75.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation
Driller's Name:	SOP LOM	**Sampling Interval:** Continuous			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

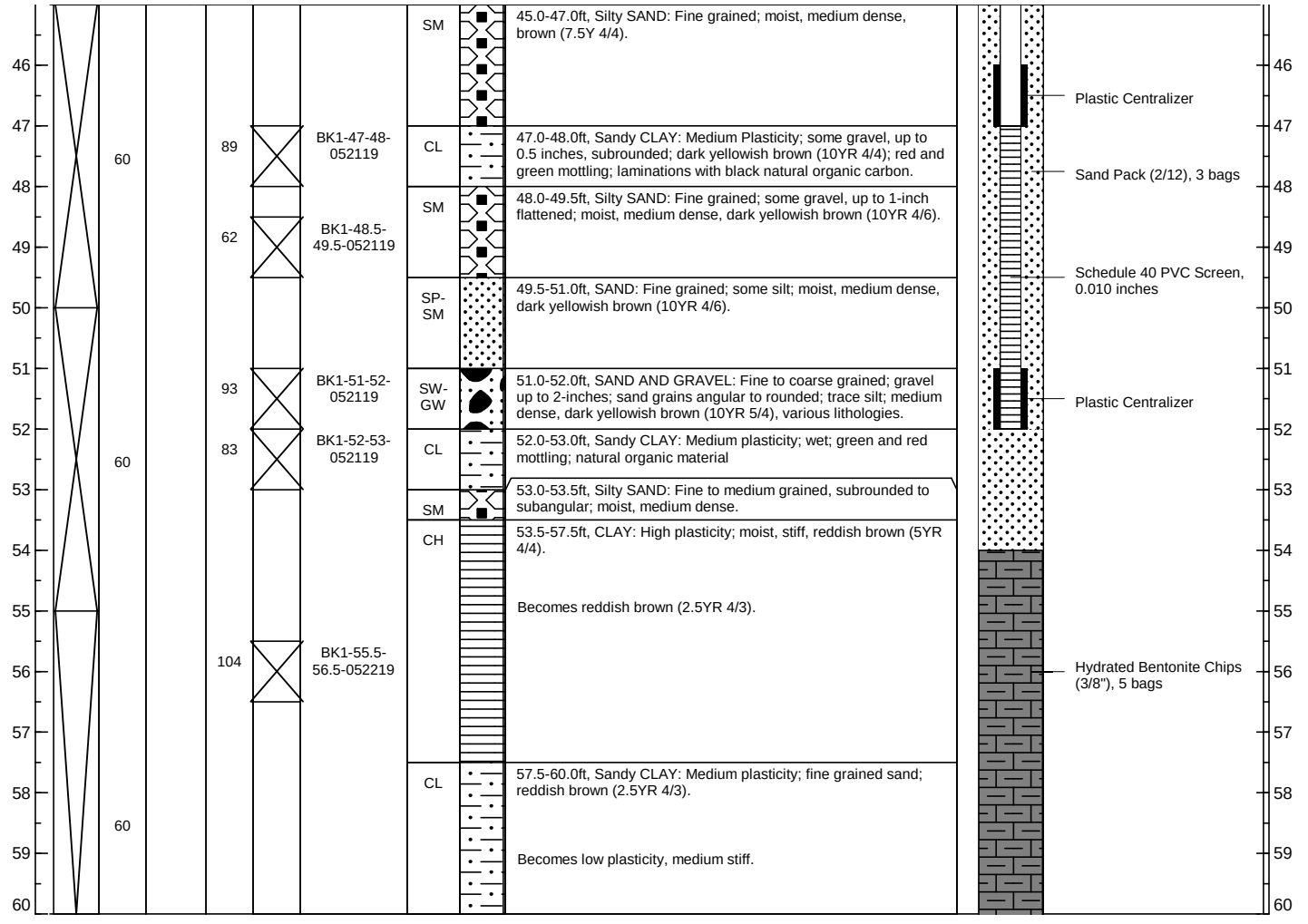


Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/20/2019	**Latitude:** 107.86836 **Longitude:** 35.25157		**ID: BK1c**	
Date Drilling Finished:	5/20/2019	**Surface Elevation:** 6584			
Date Well Complete:	5/21/2019	**Total Borehole Depth:** 75.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation
Driller's Name:	SOP LOM	**Sampling Interval:** Continuous			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376



Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/20/2019	**Latitude:** 107.86836 **Longitude:** 35.25157		**ID: BK1c**	
Date Drilling Finished:	5/20/2019	**Surface Elevation:** 6584			
Date Well Complete:	5/21/2019	**Total Borehole Depth:** 75.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation
Driller's Name:	SOP LOM	**Sampling Interval:** Continuous			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	SAMPLING DETAIL: Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	LITHOLOGY: USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
60							CL		60.0-62.5ft, CLAY: Medium plasticity; trace coarse sand; trace gravel; stiff.	WELL CASING: Schedule 40 PVC; SAND PACK: 2/12 Sand; WELL DIAMETER: 2 inches; ANNULUS SEAL: Hydrated Bentonite; WELL SCREEN: Schedule 40 PVC; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: 0.010 inches	60
63							Rx Sh		62.5-75.0ft, SHALE: Weathered bedrock; Shale; moist, hard, reddish brown (10YR 4/3); mottled with greenish gray chemical clasts, angular and weak planes with white precipitation.		63
65										Hydrated Bentonite Chips (3/8")	65
66									Becomes dry and weak		66
67									Becomes competent rock		67
75											75

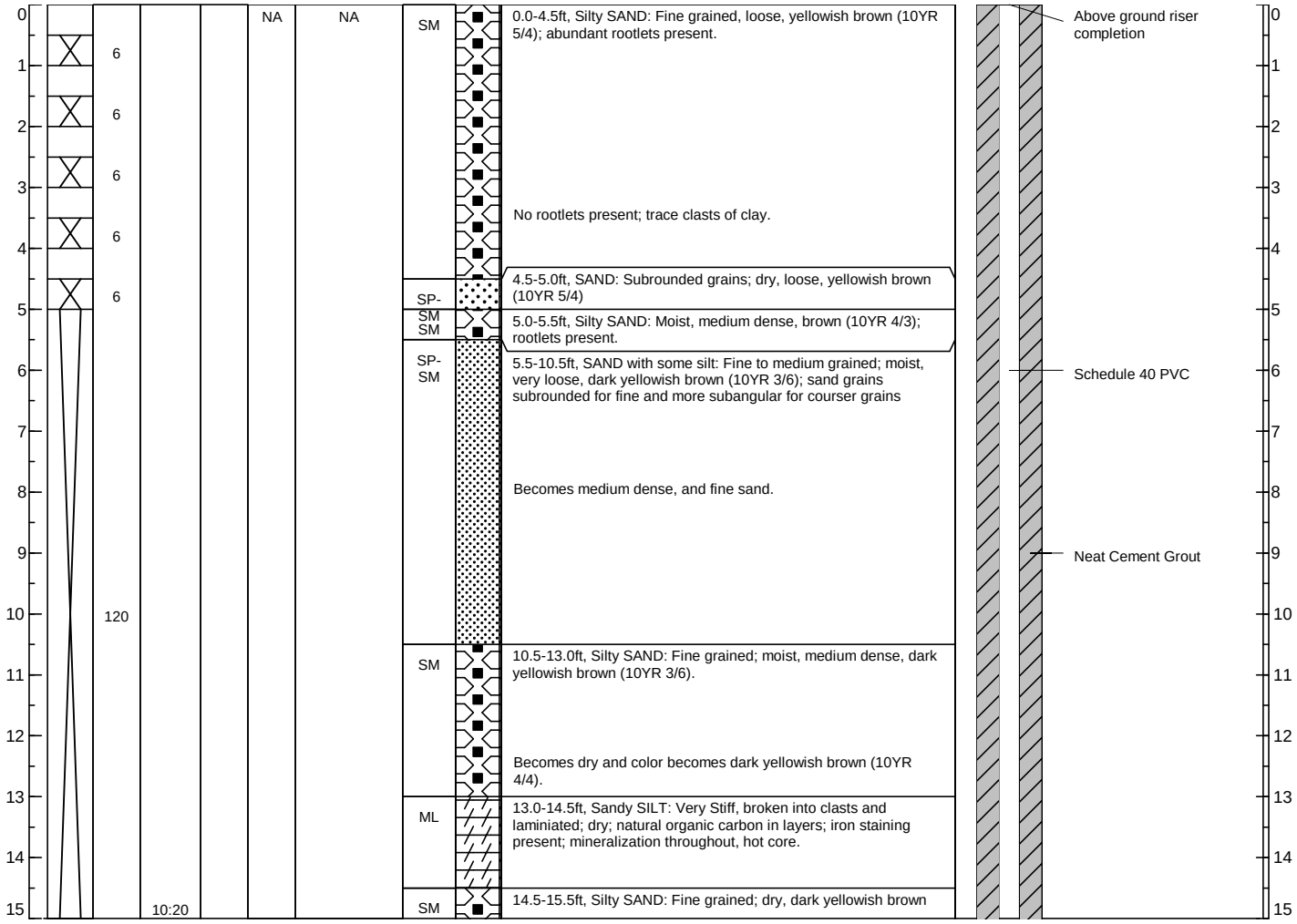
Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/22/2019	**Latitude:** 35.25163	**Longitude:** 107.86831	**ID: BK1f**	
Date Drilling Finished:	5/22/2019	**Surface Elevation:**	6584		
Date Well Complete:	5/22/2019	**Total Borehole Depth:**	65.0 feet bgs		
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:**	6 inches	**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:**	Sonic	**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:**	Continuous		Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:**	NA	**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:**	None	**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
	SAMPLING DETAIL						LITHOLOGY		USCS classification, Arcadis grain-size description, angularity, minor constituents, sorting, moisture content, density or stiffness, color, structure or mineralogical features, staining, cementation	WELL CASING: Schedule 40 PVC; SAND PACK: 2/12 Sand; WELL DIAMETER: 2 inches; ANNULUS SEAL: Hydrated Bentonite; WELL SCREEN: Schedule 40 PVC; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: 0.010 inches	



Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/22/2019	**Latitude:** 35.25163 **Longitude:** 107.86831		**ID: BK1f**	
Date Drilling Finished:	5/22/2019	**Surface Elevation:** 6584			
Date Well Complete:	5/22/2019	**Total Borehole Depth:** 65.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Continuous			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	SAMPLING DETAIL: Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	LITHOLOGY: USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
									USCS classification, Arcadis grain-size description, angularity, minor constituents, sorting, moisture content, density or stiffness, color, structure or mineralogical features, staining, cementation	WELL CASING: Schedule 40 PVC; SAND PACK: 2/12 Sand; WELL DIAMETER: 2 inches; ANNULUS SEAL: Hydrated Bentonite; WELL SCREEN: Schedule 40 PVC; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: 0.010 inches	
15					NA	NA			(10YR 4/4), hot core.		15
16							SM-GW		15.5-16.5ft, SAND with trace gravel: Sand is fine to medium grained; gravel is up to 0.5 inches, subrounded; dry, loose, hot core.		16
17							SM		16.5-18.0ft, Silty SAND: Fine grained; dry, very loose, dark yellowish brown (10YR 4/6); at 17.5 ft, 1-inch lense of medium grained sand, hot core.		17
18		60					SP-SM		18.0-19.5ft, SAND with some silt: Fine grained; dry, very loose, dark yellowish brown (7.5YR 5/4), hot core.		18
19							SM		19.5-20.0ft, Silty SAND: Fine to coarse grained, mostly fine grained; dry, very loose, hot core.		19
20			10:35				SP-SM		20.0-20.5ft, SAND with some silt and trace gravel: Fine to coarse grained, mostly fine grained; gravel is up to 1-inches, subrounded, hot core.		20
21							SM		20.5-22.0ft, SAND with some Silt: Very loose, dry, dark yellowish brown (10YR 4/6).	Schedule 40 PVC	21
22							SM		22.0-25.0ft, Silty SAND: Fine grained; dry, very loose, dark yellowish brown (10YR 4/6), hot core.		22
23		60								Neat Cement Grout	23
24									2-inch layer of Silty SAND with trace gravel, fine to coarse grained, iron oxide staining.		24
25			10:55				SM		25.0-26.0ft, SILTY SAND with trace gravel: Fine to medium grained; gravel is up to 1-inch at top of layer, subrounded; moist, medium dense, brown (10YR 4/3).	Plastic Centralizer	25
26							SM		26.0-27.5ft, Sandy SILT: Low plasticity, soft, brown (10YR 4/3).		26
27											27
28							SP-GP		27.5-28.5ft, Gravelly SAND with some silt: Fine to coarse grained, mostly fine grained; gravel up to 1.5-inches, subrounded, mixed lithologies.		28
29		120					ML		28.5-29.0ft, Sandy SILT: Hard, mottled, browns and blacks, with natural organic carbon.		29
30							SM		29.0-31.0ft, Silty SAND: Dry, loose, brown (10YR 4/3), silt content increases with depth.		30

Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/22/2019	**Latitude:** 35.25163 **Longitude:** 107.86831		**ID: BK1f**	
Date Drilling Finished:	5/22/2019	**Surface Elevation:** 6584			
Date Well Complete:	5/22/2019	**Total Borehole Depth:** 65.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Continuous			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
					NA	NA					
31							ML		31.0-32.5ft, Sandy SILT: No plasticity, dry, soft with hard clasts; iron oxide staining, green and orange mottling carbonate mineralization.		31
32											32
33							SM		32.5-33.5ft, Silty SAND: Fine grained, loose with hard clasts, dark yellowish brown (10YR 4/4), silt content increases upwards		33
34							SW-GW SM		33.5-34.0ft, Gravelly SAND with some silt: Dry, loose, dark yellowish brown (10YR 4/4), well graded. 34.0-37.0ft, Silty SAND: Fine grained; dry, very loose, dark yellowish brown (10YR 4/4).		34
35			12:00								35
36									With trace gravel up to 0.5 inches, moist to wet; at 36.5 ft, becomes dry.	Schedule 40 PVC	36
37							GW-SW		37.0-38.0ft, Sandy GRAVEL with some silt: Up to 2 inches, angular to subrounded; brown (7.5Y 4/3), mixed lithologies		37
38							SM		38.0-41.5ft, Silty SAND: Fine to coarse grained, mostly fined grained; moist, medium dense; clasts mottled with browns and greens; reduction zones present, strong brown, mixed lithologies	Neat Cement Grout	38
39											39
40		120							With trace gravels, up to 1-inch.		40
41											41
42							SP-GP SW-GW		41.5-42.0ft, Gravelly SAND with some silt: gravel up to 2-inches, subrounded, poorly graded. 42.0-43.0ft, Gravelly SAND: Fine to coarse grained; gravel up to 2-inches, subrounded; wet; well graded.	Depth to first water during drilling 42.5 feet bgs	42
43							CL		43.0-45.0ft, Sandy CLAY: Medium plasticity; trace gravel; mottled with reds and greens; trace organic carbon granules, up to 0.5 inches, black.		43
44									Becomes very stiff and moist.		44
45			12:40							Hydrated Bentonite Chips (3/8")	45

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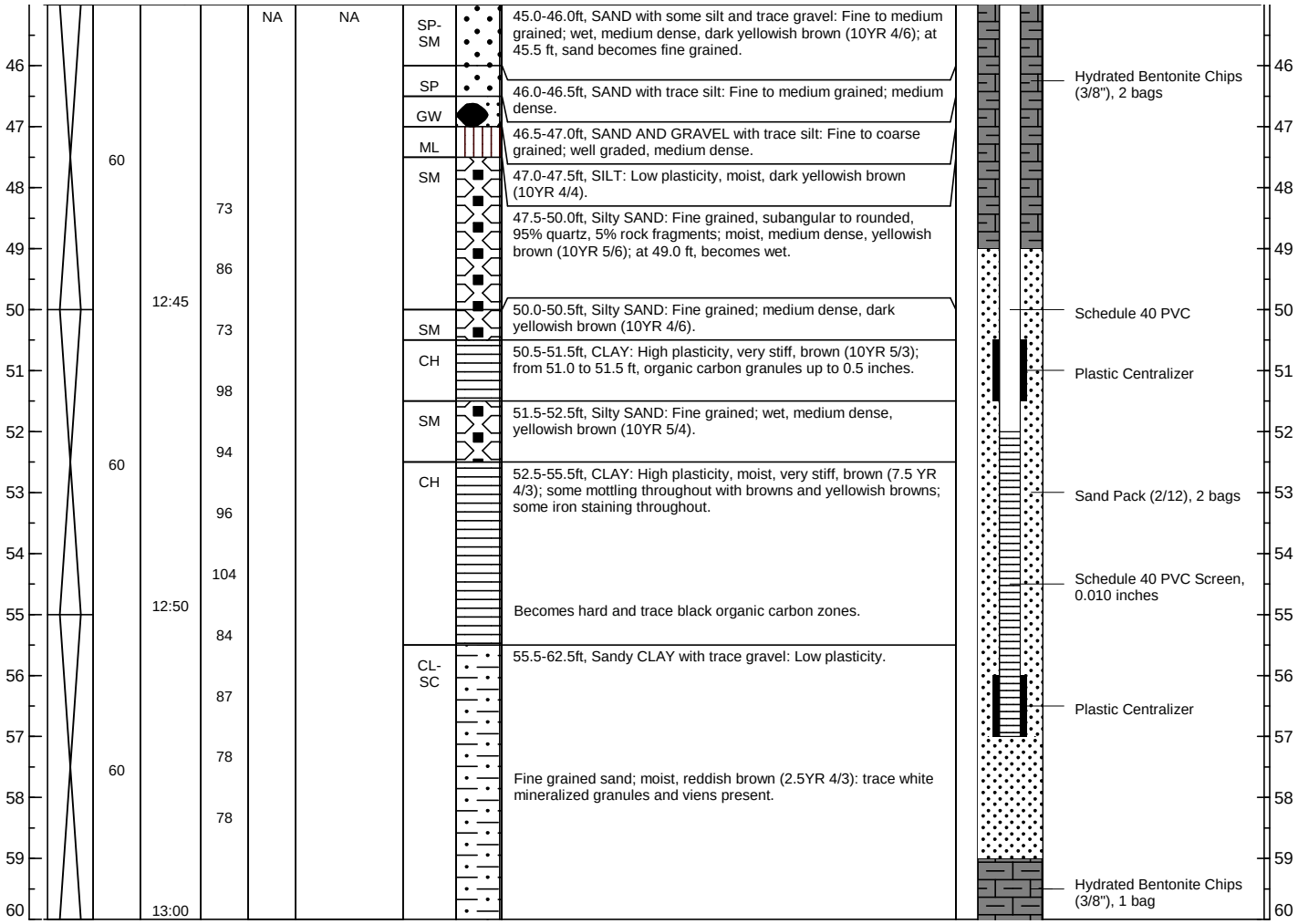
Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/22/2019	**Latitude:** 35.25163 **Longitude:** 107.86831		**ID: BK1f**	
Date Drilling Finished:	5/22/2019	**Surface Elevation:** 6584			
Date Well Complete:	5/22/2019	**Total Borehole Depth:** 65.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Continuous			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
	SAMPLING DETAIL						LITHOLOGY		USCS classification, Arcadis grain-size description, angularity, minor constituents, sorting, moisture content, density or stiffness, color, structure or mineralogical features, staining, cementation	WELL CASING Schedule 40 PVC; SAND PACK: 2/12 Sand; WELL DIAMETER: 2 inches; ANNULUS SEAL: Hydrated Bentonite; WELL SCREEN: Schedule 40 PVC; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: 0.010 inches	



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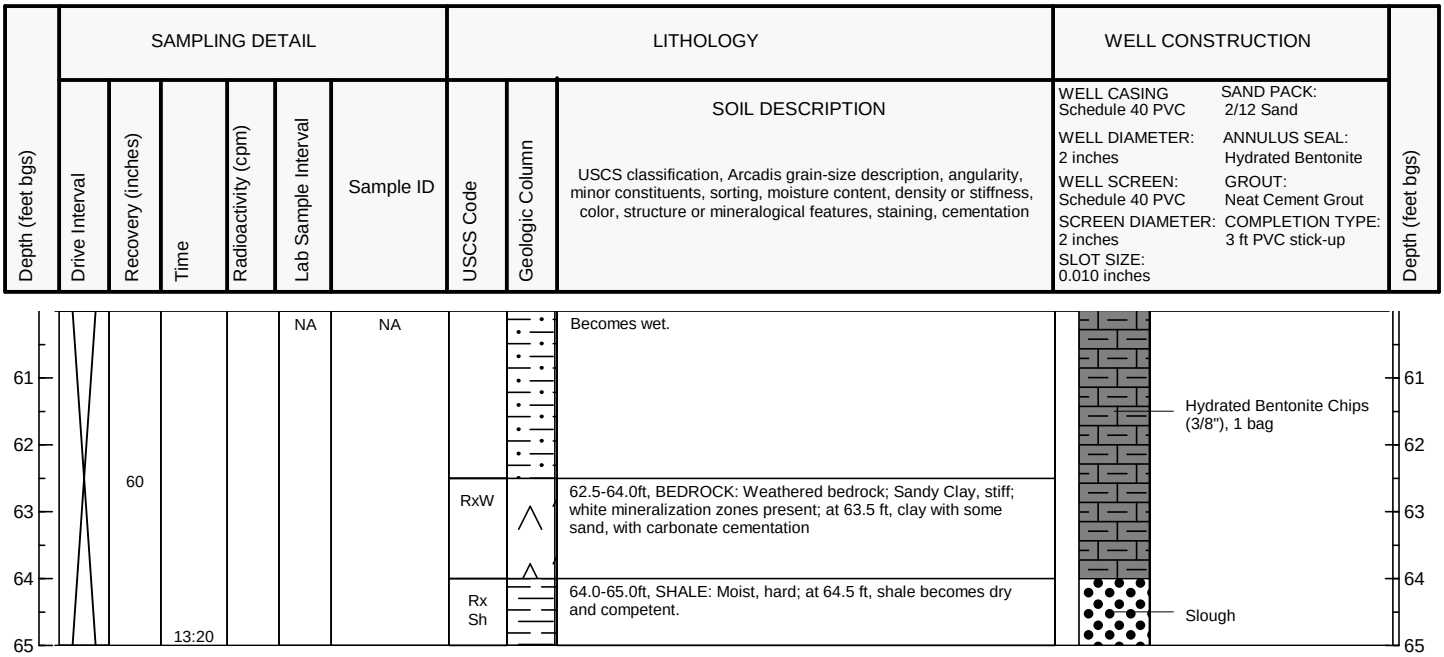
Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/22/2019	**Latitude:** 35.25163	**Longitude:** 107.86831	**ID: BK1f**	
Date Drilling Finished:	5/22/2019	**Surface Elevation:**	6584		
Date Well Complete:	5/22/2019	**Total Borehole Depth:**	65.0 feet bgs		
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:**	6 inches	**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:**	Sonic	**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:**	Continuous		Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:**	NA	**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:**	None	**Reviewed By:**	Shawn Roberts, PG #8376



Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/13/2019	**Latitude:** 35.25090	**Longitude:** 107.86170	**ID: BK2c**	
Date Drilling Finished:	5/14/2019	**Surface Elevation:**	6592		
Date Well Complete:	5/16/2019	**Total Borehole Depth:**	92.5 feet bgs		
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:**	6 inches	**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:**	Sonic	**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:**	Continuous		Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:**	NA	**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:**	None	**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	SAMPLING DETAIL: Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	LITHOLOGY: USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
0–15		6	12:40	82			SM		0.0-3.0ft, Silty SAND: Fine to medium grained, subrounded to rounded; dry, very loose, brown (10YR 5/4).	Above ground riser completion	0–15
		6									
		6	13:00				ML		3.0-4.0ft, SILT with some sand: Brown (7.5YR 5/3).		
		6	13:05				SP		4.0-6.0ft, SAND with trace silt: Fine grained, subrounded; brown (7.5YR 5/4). Becomes reddish brown (5YR 5/3).		
		6	13:55				SM		6.0-6.5ft, Clayey SAND: Fine grained; moist, very stiff	Schedule 40 PVC	
		60		65			SP		6.5-8.5ft, SAND with trace silt: Fine grained; moist loose, dark reddish brown (5YR 3/3). Sand becomes fine to coarse grained; becomes dry and brown (7.5YR 5/4).		
				75			SW		8.5-10.0ft, SAND with trace silt and trace gravel: Sand is fine to coarse grained; gravel is up to 0.5-inches; dry, brown (7.5YR 5/4)	Neat Cement Grout 12 bags 75 gallons	
			14:20	75			SP		10.0-12.0ft, SAND with trace silt: Fine to medium grained; dry, poorly graded, yellowish brown (10YR 5/4).		
		60		85		BK2-12-13-051519	CL		12.0-13.5ft, Sandy CLAY with trace gravel: Gravel is up to 1-inch, subrounded; dry; clay layered concretions; some iron oxide staining.		
				65-115			SP-SM		13.5-14.5ft, SAND with some silt: Fine to medium grained; dry; iron staining throughout.		
				70			SP		14.5-15.0ft, SAND with trace silt: Fine grained; dry, loose, strong		
			14:30								

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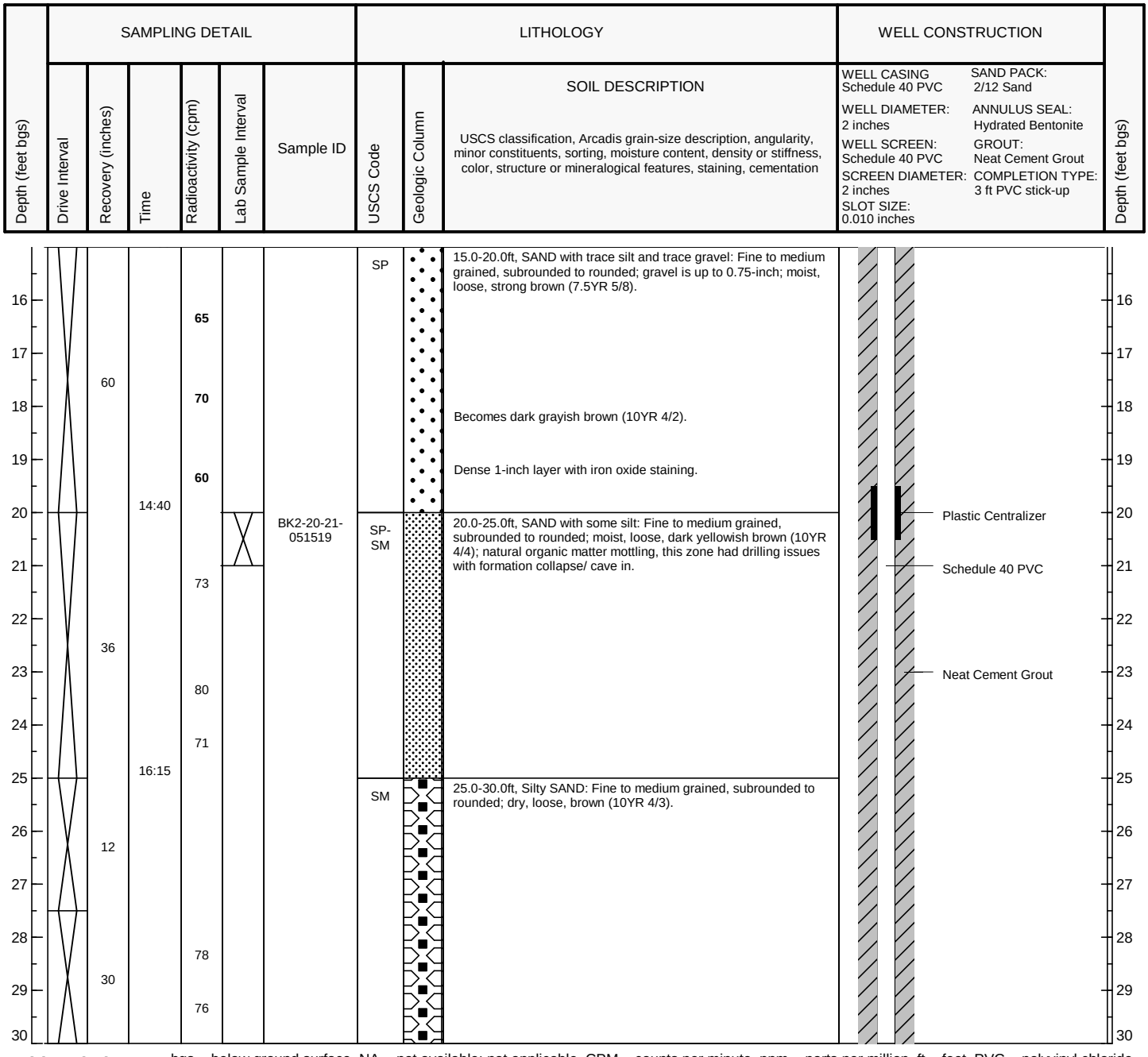
Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/13/2019	**Latitude:** 35.25090	**Longitude:** 107.86170	**ID: BK2c**	
Date Drilling Finished:	5/14/2019	**Surface Elevation:**	6592		
Date Well Complete:	5/16/2019	**Total Borehole Depth:**	92.5 feet bgs		
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:**	6 inches	**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:**	Sonic	**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:**	Continuous		Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:**	NA	**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:**	None	**Reviewed By:**	Shawn Roberts, PG #8376



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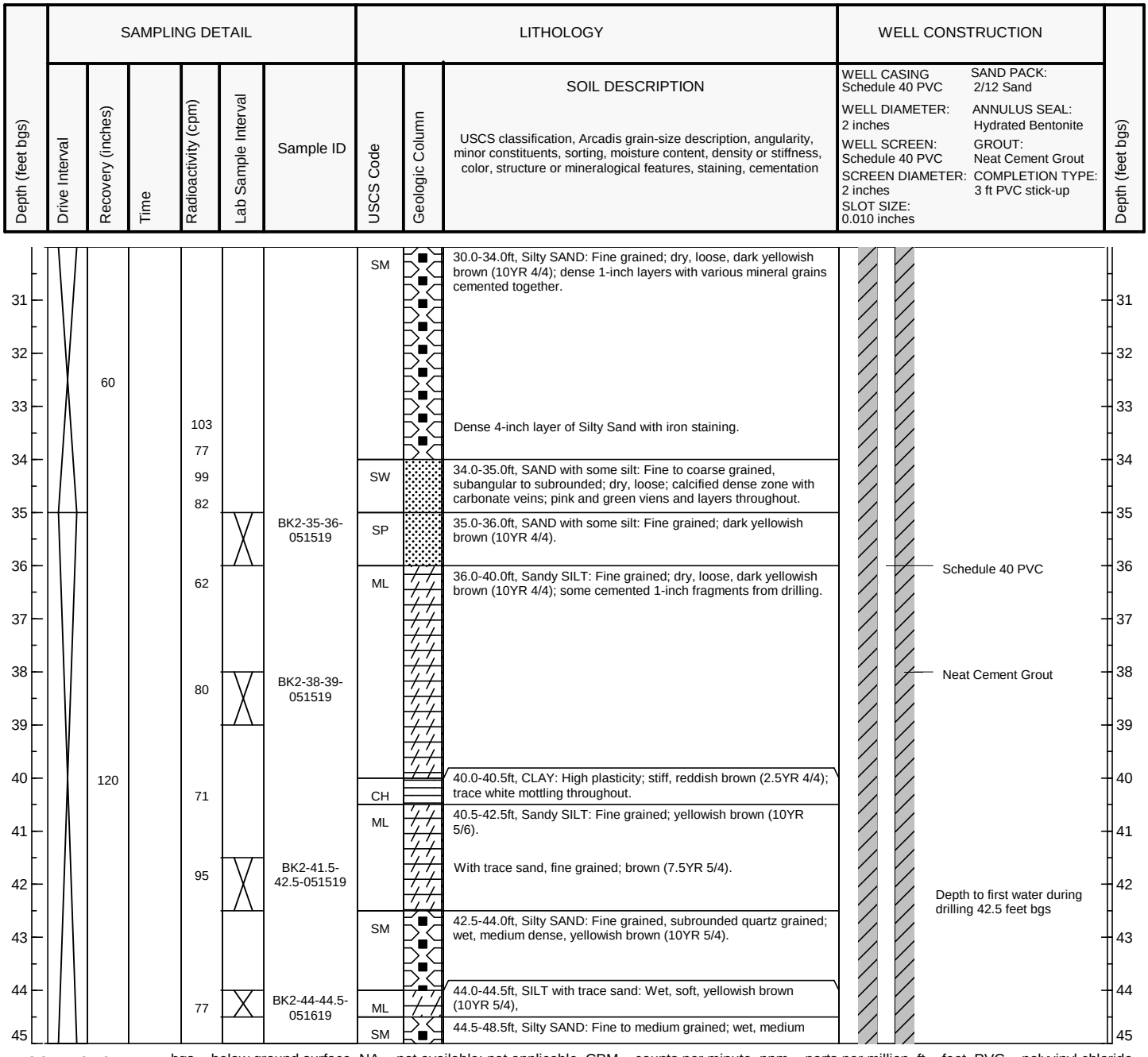
Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/13/2019	**Latitude:** 35.25090 **Longitude:** 107.86170		**ID: BK2c**	
Date Drilling Finished:	5/14/2019	**Surface Elevation:** 6592			
Date Well Complete:	5/16/2019	**Total Borehole Depth:** 92.5 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Continuous			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376



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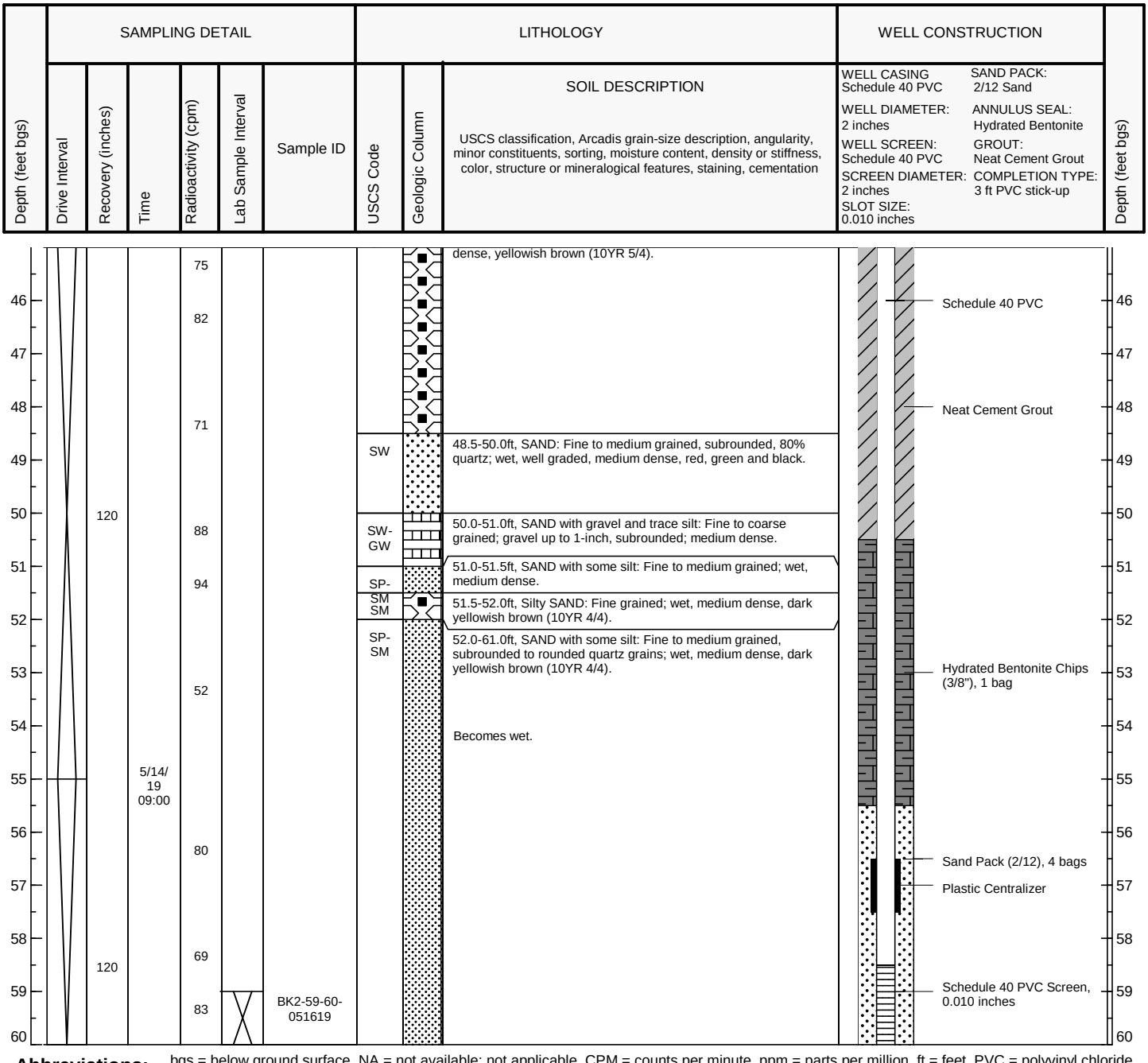
Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/13/2019	**Latitude:** 35.25090	**Longitude:** 107.86170	**ID: BK2c**	
Date Drilling Finished:	5/14/2019	**Surface Elevation:**	6592		
Date Well Complete:	5/16/2019	**Total Borehole Depth:**	92.5 feet bgs		
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:**	6 inches	**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:**	Sonic	**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:**	Continuous		Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:**	NA	**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:**	None	**Reviewed By:**	Shawn Roberts, PG #8376



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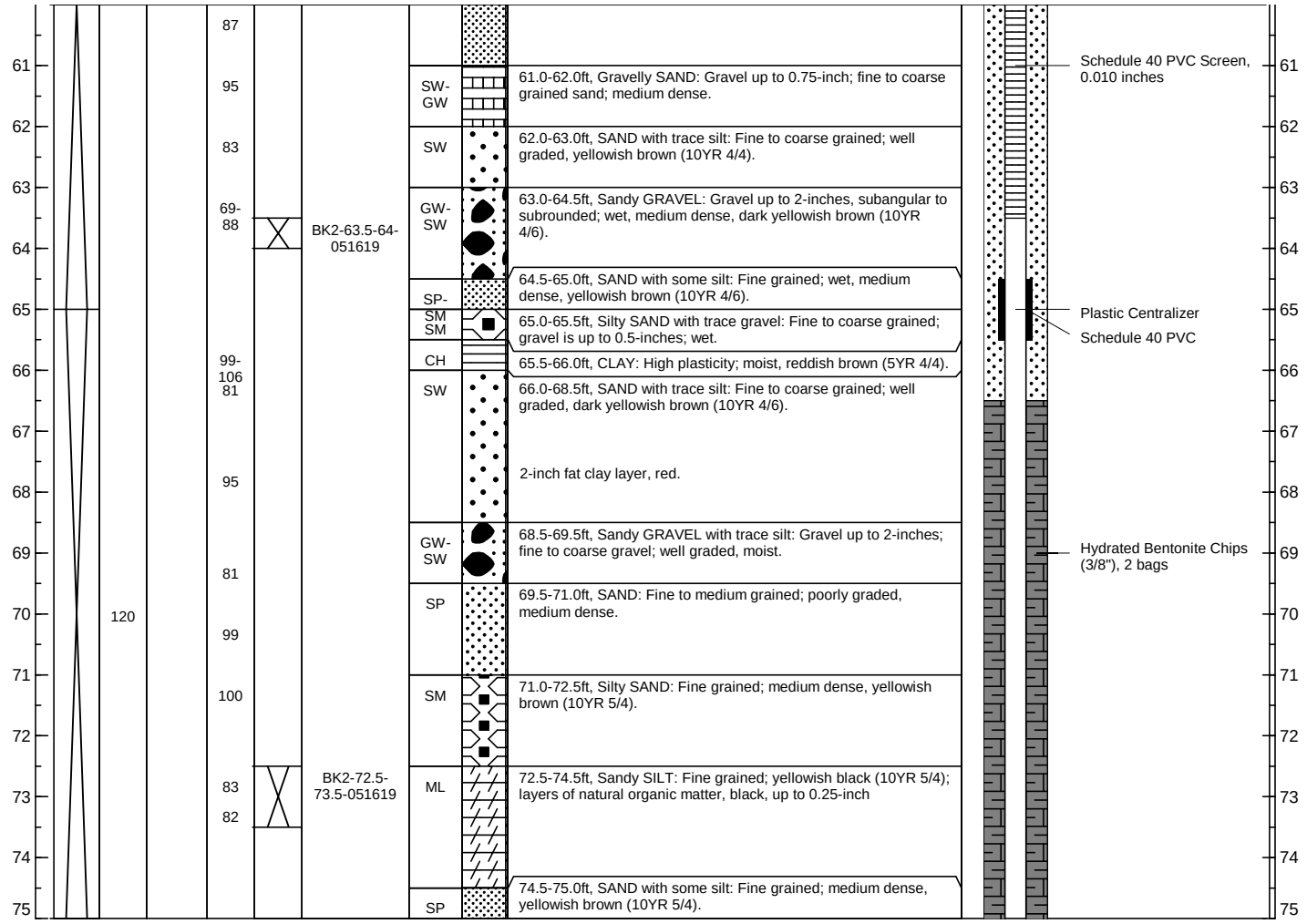
Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/13/2019	**Latitude:** 35.25090 **Longitude:** 107.86170		**ID: BK2c**	
Date Drilling Finished:	5/14/2019	**Surface Elevation:** 6592			
Date Well Complete:	5/16/2019	**Total Borehole Depth:** 92.5 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Continuous			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376



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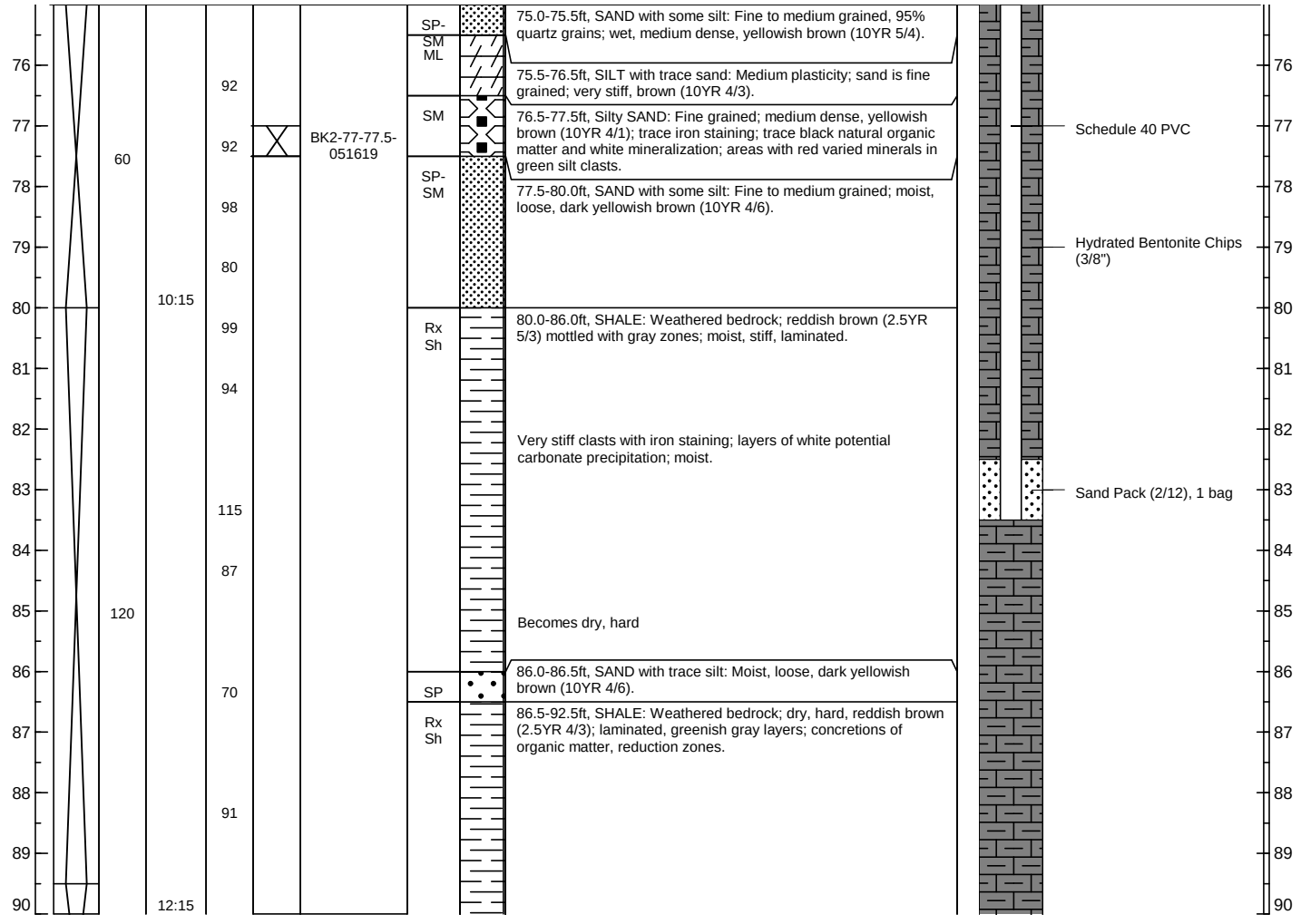
Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/13/2019	**Latitude:** 35.25090 **Longitude:** 107.86170		**ID: BK2c**	
Date Drilling Finished:	5/14/2019	**Surface Elevation:** 6592			
Date Well Complete:	5/16/2019	**Total Borehole Depth:** 92.5 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Continuous			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376



Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/13/2019	**Latitude:** 35.25090 **Longitude:** 107.86170		**ID: BK2c**	
Date Drilling Finished:	5/14/2019	**Surface Elevation:**	6592		
Date Well Complete:	5/16/2019	**Total Borehole Depth:**	92.5 feet bgs		
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:**	6 inches	**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:**	Sonic	**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:**	Continuous		Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:**	NA	**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:**	None	**Reviewed By:**	Shawn Roberts, PG #8376

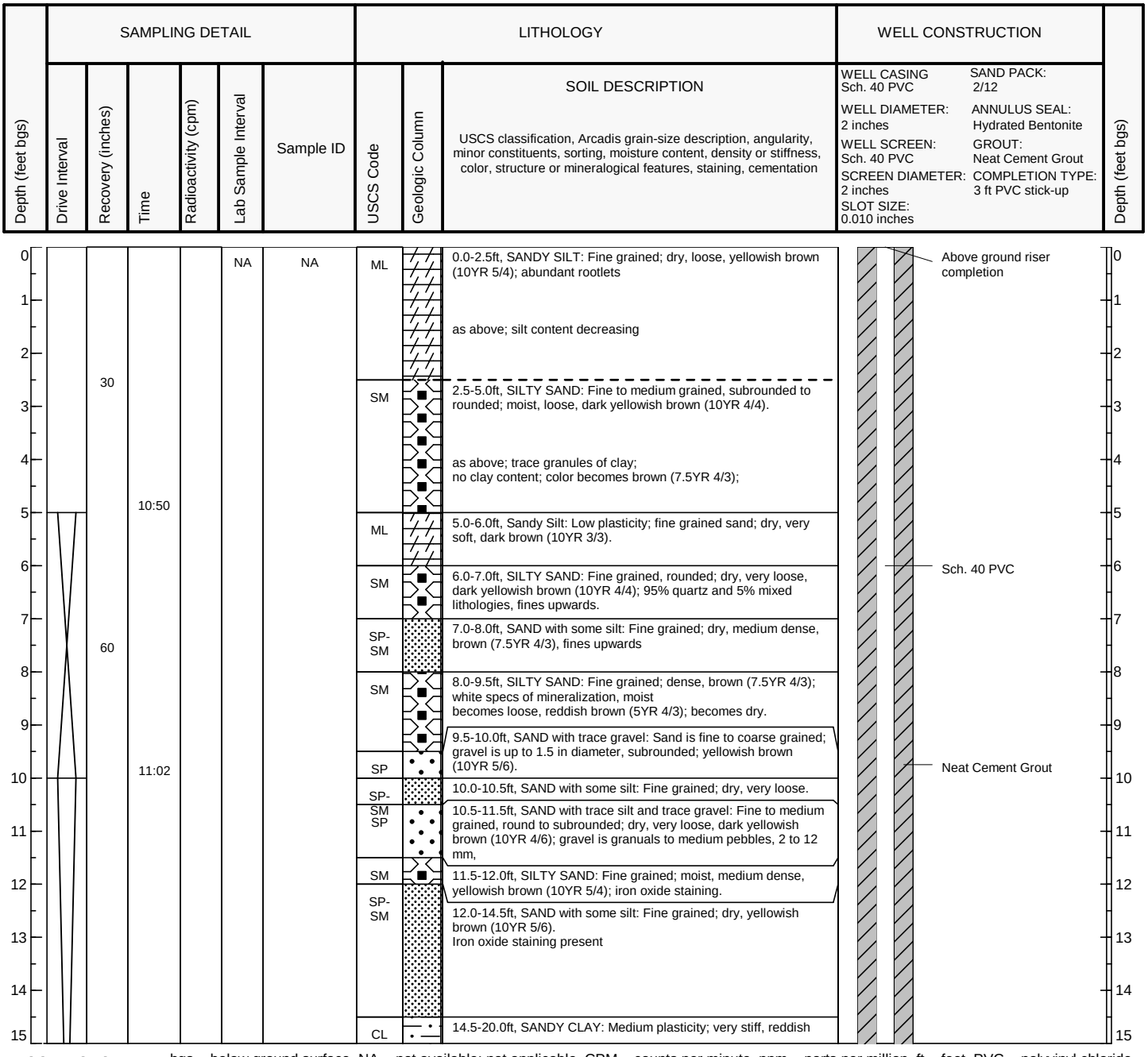
Depth (feet bgs)	SAMPLING DETAIL: Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	LITHOLOGY: USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
									USCS classification, Arcadis grain-size description, angularity, minor constituents, sorting, moisture content, density or stiffness, color, structure or mineralogical features, staining, cementation	WELL CASING: Schedule 40 PVC; SAND PACK: 2/12 Sand; WELL DIAMETER: 2 inches; ANNULUS SEAL: Hydrated Bentonite; WELL SCREEN: Schedule 40 PVC; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: 0.010 inches	
91		30	13:45						Becomes weak and crumbles easily	Hydrated Bentonite Chips (3/8"), 1 bag + heave	91
92											92

Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/16/2019	**Latitude:** 35.25086	**Longitude:** 107.86165	**ID: BK2f**	
Date Drilling Finished:	5/16/2019	**Surface Elevation:**	6592		
Date Well Complete:	5/17/2019	**Total Borehole Depth:**	85.0 feet bgs		
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:**	6 inches	**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:**	Sonic	**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:**	Discrete		Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:**	NA	**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:**	None	**Reviewed By:**	Shawn Roberts, PG #8376



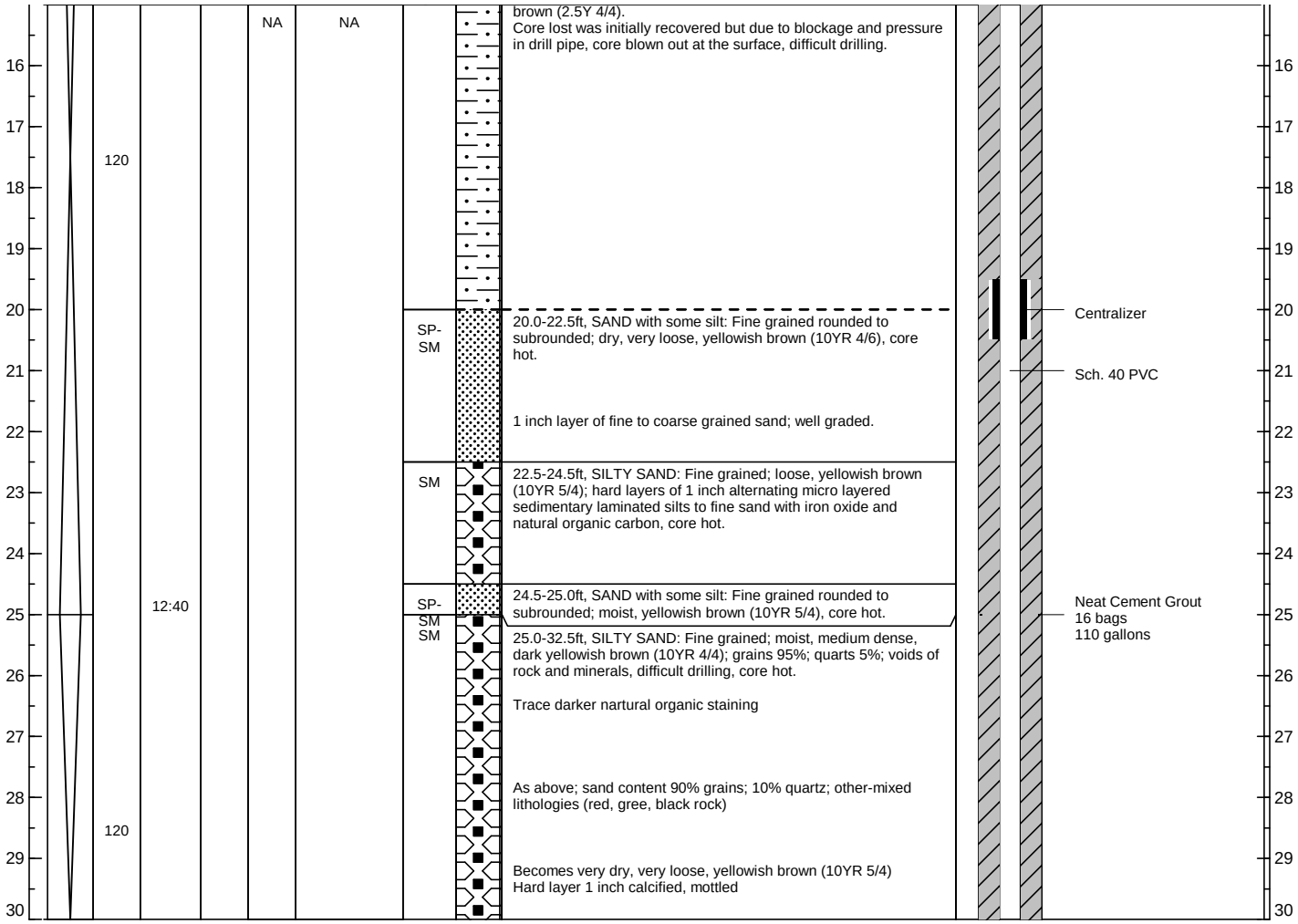
Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/16/2019	**Latitude:** 35.25086 **Longitude:** 107.86165		**ID: BK2f**	
Date Drilling Finished:	5/16/2019	**Surface Elevation:** 6592			
Date Well Complete:	5/17/2019	**Total Borehole Depth:** 85.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Discrete			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	SAMPLING DETAIL: Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	LITHOLOGY: USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
									USCS classification, Arcadis grain-size description, angularity, minor constituents, sorting, moisture content, density or stiffness, color, structure or mineralogical features, staining, cementation	WELL CASING: Sch. 40 PVC; SAND PACK: 2/12; WELL DIAMETER: 2 inches; ANNULUS SEAL: Hydrated Bentonite; WELL SCREEN: Sch. 40 PVC; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: 0.010 inches	



Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/16/2019	**Latitude:** 35.25086 **Longitude:** 107.86165		**ID: BK2f**	
Date Drilling Finished:	5/16/2019	**Surface Elevation:** 6592			
Date Well Complete:	5/17/2019	**Total Borehole Depth:** 85.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Discrete			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
									USCS classification, Arcadis grain-size description, angularity, minor constituents, sorting, moisture content, density or stiffness, color, structure or mineralogical features, staining, cementation	WELL CASING: Sch. 40 PVC; SAND PACK: 2/12; WELL DIAMETER: 2 inches; ANNULUS SEAL: Hydrated Bentonite; WELL SCREEN: Sch. 40 PVC; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: 0.010 inches	
31					NA	NA					31
32									32.5-33.5ft, SAND with some silt: Fine to coarse grained; poorly sorted, dry, loose. Solidified layer with mineralization, white and black mottled, iron oxide present, core hot.		32
33							SW				33
34							SP-SM		33.5-35.0ft, SAND with some silt: Fine grained; poorly graded Trace gravel present; hard calcified layer, iron oxide staining.		34
35			13:15							Neat Cement Grout	35
36							SM		35.0-36.5ft, SILTY SAND: Fine grained; medium dense, yellowish brown (10YR 5/6), core hot. Fine grained; medium dense; 70% grains; 30% quartz. mixed lithologies		36
37							SP-SM		36.5-41.8ft, SAND: Fine grained, subrounded; trace gravel, granules to 12 mm pebbles; dark yellowish brown (10YR 4/4).	Sch. 40 PVC	37
38									Grains become fine to coarse grained; silt content decreases		38
39									Trace granules to 12 mm pebles; rounded.		39
40		108							Whitish layer		40
41											41
42							ML		41.8-42.3ft, SANDY SILT: Fine grained; soft, dark yellowish brown (10YR 4/4).		42
							CH		42.3-42.8ft, CLAY: High plasticity; moist, very stiff, brown (7.5YR 4/4)		
43							ML		42.8-43.5ft, SILT with some sand: Sand is fine grained; moist, stiff.		43
44							SM		43.5-45.0ft, SILTY SAND: Fine grained; wet, yellowish brown (10YR 5/4).		44
45			13:25						Organic matter staining and layers.		45

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Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/16/2019	**Latitude:** 35.25086 **Longitude:** 107.86165		**ID: BK2f**	
Date Drilling Finished:	5/16/2019	**Surface Elevation:** 6592			
Date Well Complete:	5/17/2019	**Total Borehole Depth:** 85.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Discrete			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
	SAMPLING DETAIL						LITHOLOGY				
46					NA	NA	ML		45.0-46.3ft, SANDY SILT: Wet, medium dense, laminations of natural organic material (black) and variable colored layers.	WELL CASING Sch. 40 PVC; SAND PACK: 2/12; WELL DIAMETER: 2 inches; ANNULUS SEAL: Hydrated Bentonite; WELL SCREEN: Sch. 40 PVC; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: 0.010 inches	46
47							SM		46.3-48.0ft, SILTY SAND: Fine to coarse grained; dark yellowish brown (10YR 4/4); trace organic staining.		47
48							SP-SM		48.0-49.5ft, SAND with some silt: Fine grained; dark yellowish brown (10YR 4/6); trace natural organic staining.		48
49							GW		49.5-50.0ft, SAND AND GRAVEL: Fine to coarse grained; granules to medium pebbles, 2 to 12 mm, subrounded; poorly sorted, wet, medium dense.		49
50		120					SM		50.0-51.5ft, SILTY SAND: Fine grained; wet, medium dense, yellowish brown (10YR 5/6); trace organic staining in zones, greenish gray.	Sch. 40 PVC	50
51											51
52							SP-SM		51.5-55.0ft, SAND with some silt: Fine to coarse grained; yelowish brown (10YR 5/4); sand content 80% quartz, 20% other material/rock types.		52
53									Fine grained sand and some silt; as above.		53
54									Organic matter, black, vein line, and as chunks		54
55			14:15				SM		55.0-60.5ft, SILTY SAND: Fine to medium grained; wet, medium dense, yellowish brown (10YR 5/4); trace organic nartural staining.	Neat Cement Grout	55
56											56
57									beomes fine to coarse grained; wet, as above.		57
58									Silty SAND with trace gravel, 2 to 12mm, various rock type, subangular to subrounded.		58
59		120							organic, green to black, mottled.		59
60											60

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Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/16/2019	**Latitude:** 35.25086 **Longitude:** 107.86165		**ID: BK2f**	
Date Drilling Finished:	5/16/2019	**Surface Elevation:** 6592			
Date Well Complete:	5/17/2019	**Total Borehole Depth:** 85.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Discrete			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
									USCS classification, Arcadis grain-size description, angularity, minor constituents, sorting, moisture content, density or stiffness, color, structure or mineralogical features, staining, cementation	WELL CASING: Sch. 40 PVC; SAND PACK: 2/12; WELL DIAMETER: 2 inches; ANNULUS SEAL: Hydrated Bentonite; WELL SCREEN: Sch. 40 PVC; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: 0.010 inches	
60				69	NA	NA					60
61				64			SP-SM		60.5-62.5ft, SAND with some silt: Fine to coarse grained, subrounded to subangular; wet, medium dense. sand content 90% quartz, 10% various lithologies.		61
62										Sch. 40 PVC	62
63				84			GW-SW		62.5-64.5ft, SAND AND GRAVEL: Gravel up to 2 inch in diameter; some silt; well graded, wet, medium dense.		63
64				76-105					Trace silt; gravel up to 2 inch in diameter.		64
				66					Thin clay rich layer at base, gravel content, up to 0.5 inch diameter.		
65			14:55				SW		64.5-75.0ft, SAND with some silt: Fine to coarse grained, rounded to subrounded; wet, medium dense; sand content 98% quartz, 2% other rock/mineral types.	Neat Cement Grout	65
66											66
67											67
68									Zone drilled and dropped, returns mixed. Not reliable lithology	Hydrated Bentonite Chips (3/8"), 1.5 bags	68
69											69
70		0									70
71										2/12 Sand Pack, 2.5 bags	71
72										Centralizer	72
73											73
74											74
75			15:36							Sch. 40 PVC; 0.010 inches	75

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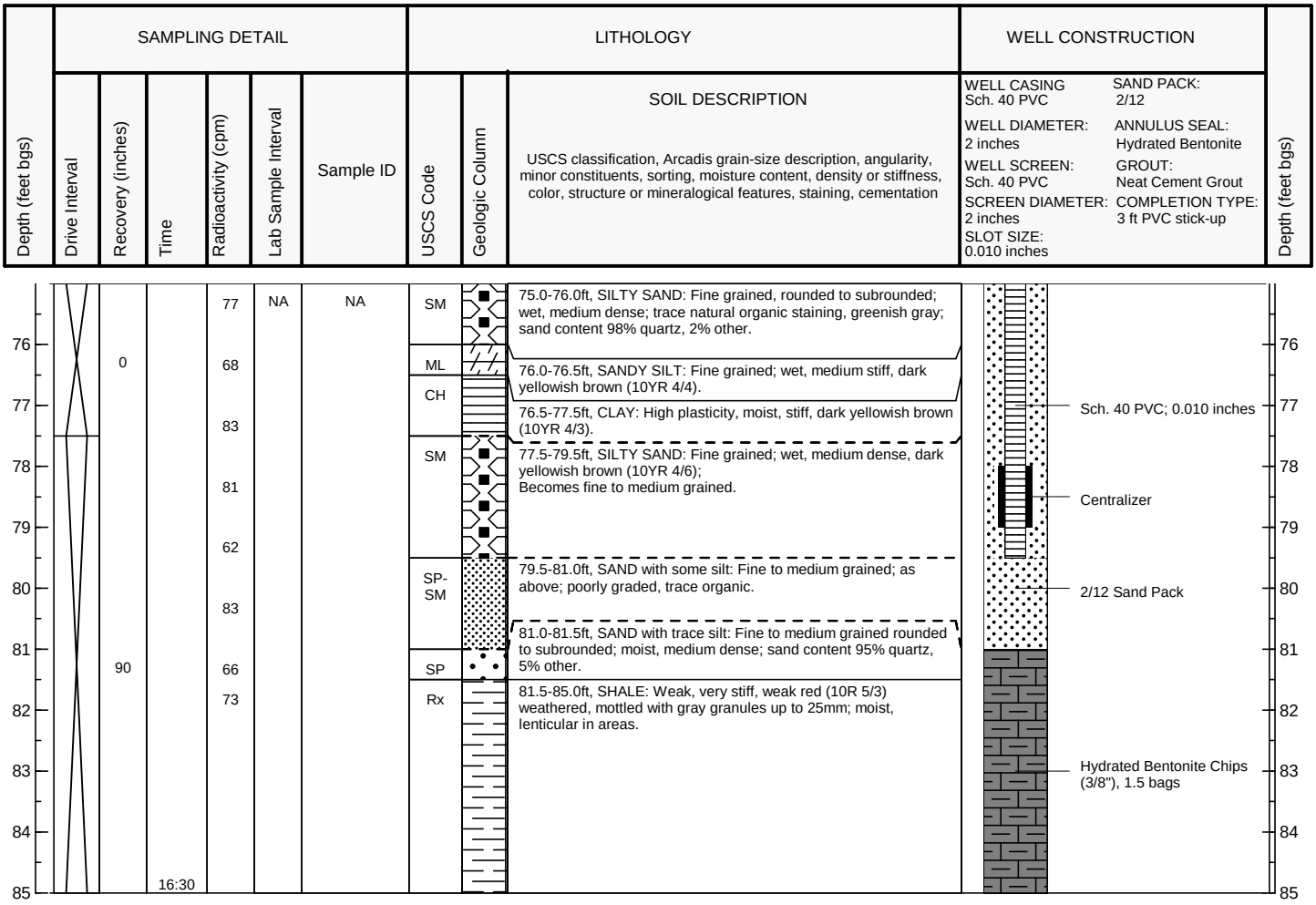
Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/16/2019	**Latitude:** 35.25086 **Longitude:** 107.86165		**ID: BK2f**	
Date Drilling Finished:	5/16/2019	**Surface Elevation:** 6592			
Date Well Complete:	5/17/2019	**Total Borehole Depth:** 85.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Discrete			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376



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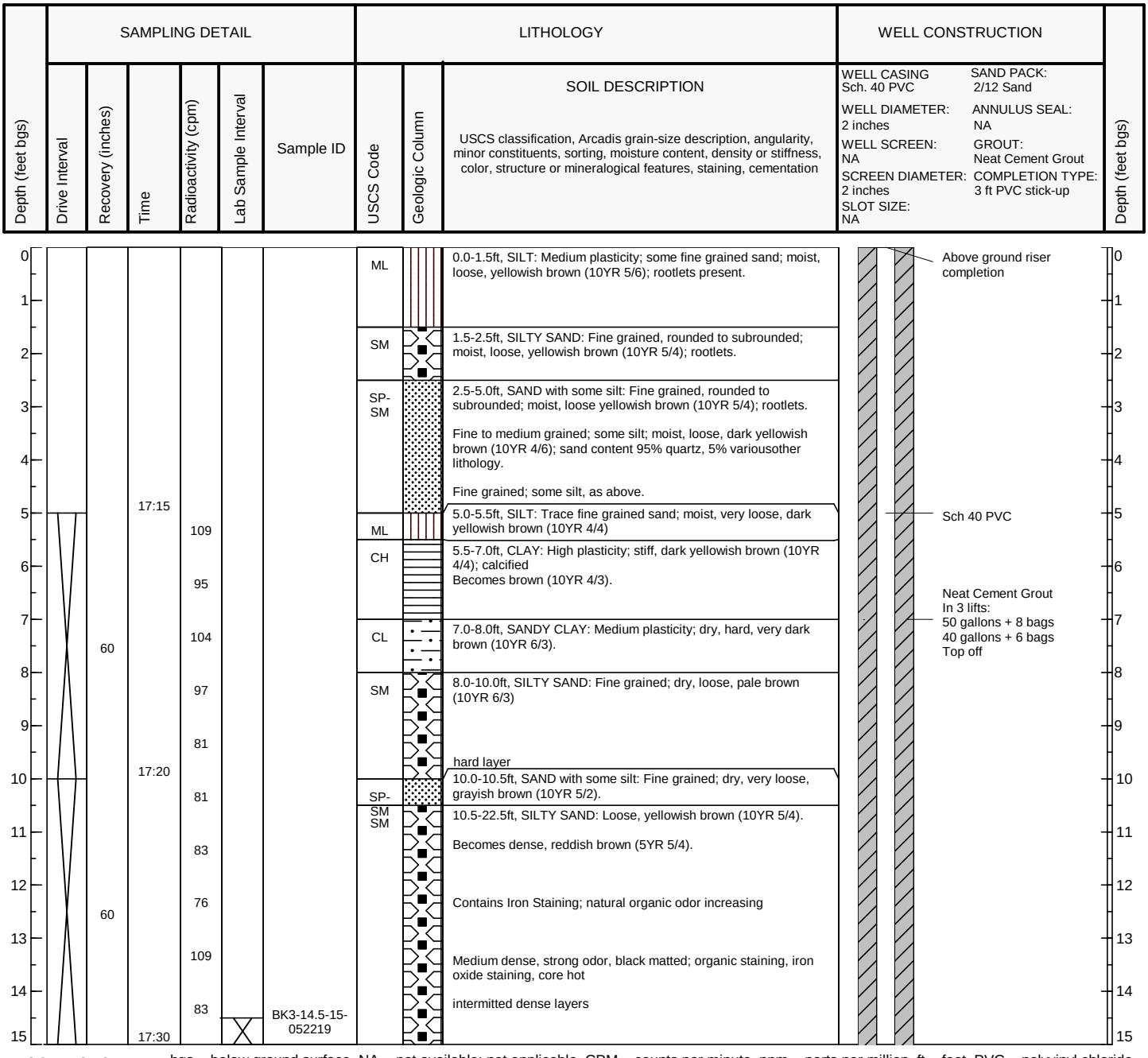
Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/17/2019	**Latitude:** 35.24930	**Longitude:** 107.85216	**ID: BK3**	
Date Drilling Finished:	5/17/2019	**Surface Elevation:**	6595		
Date Well Complete:	5/18/2019	**Total Borehole Depth:**	73.0 feet bgs		
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:**	6 inches	**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:**	Sonic	**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:**	Discrete		Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:**	NA	**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:**	None	**Reviewed By:**	Shawn Roberts, PG #8376



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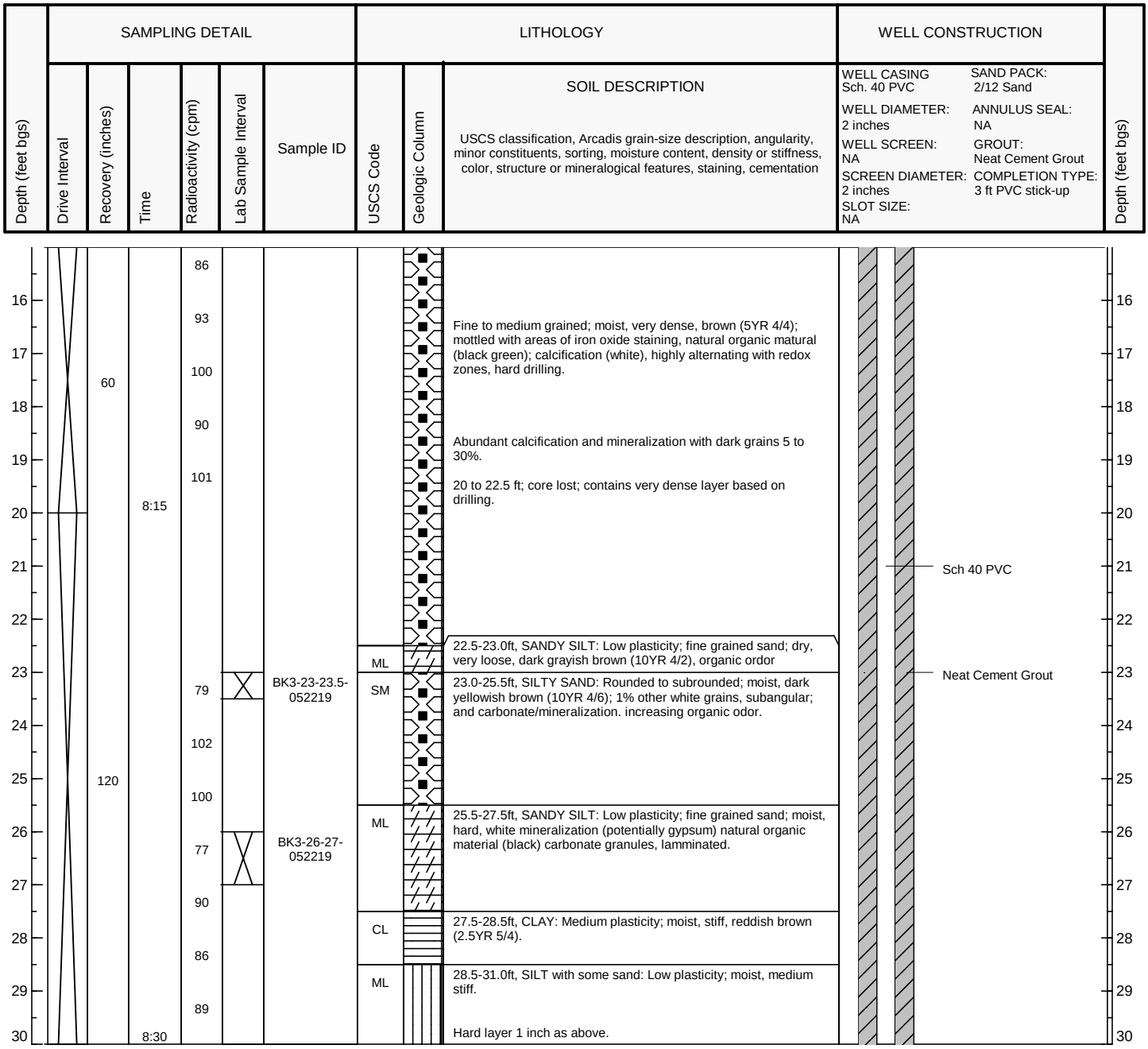
Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/17/2019	**Latitude:** 35.24930 **Longitude:** 107.85216		**ID: BK3**	
Date Drilling Finished:	5/17/2019	**Surface Elevation:** 6595			
Date Well Complete:	5/18/2019	**Total Borehole Depth:** 73.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Discrete			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376



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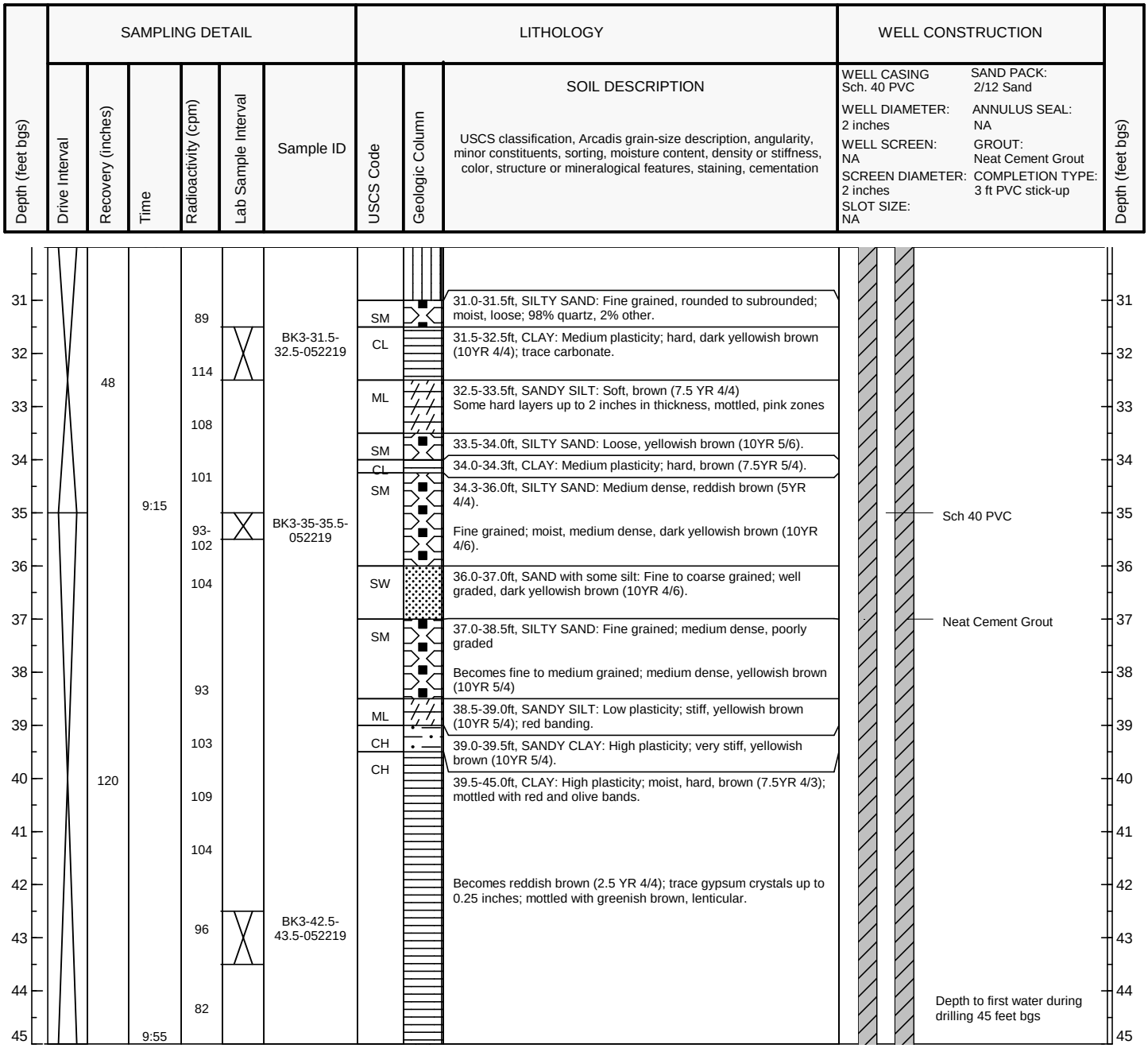
Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/17/2019	**Latitude:** 35.24930 **Longitude:** 107.85216		**ID: BK3**	
Date Drilling Finished:	5/17/2019	**Surface Elevation:** 6595			
Date Well Complete:	5/18/2019	**Total Borehole Depth:** 73.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Discrete			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376



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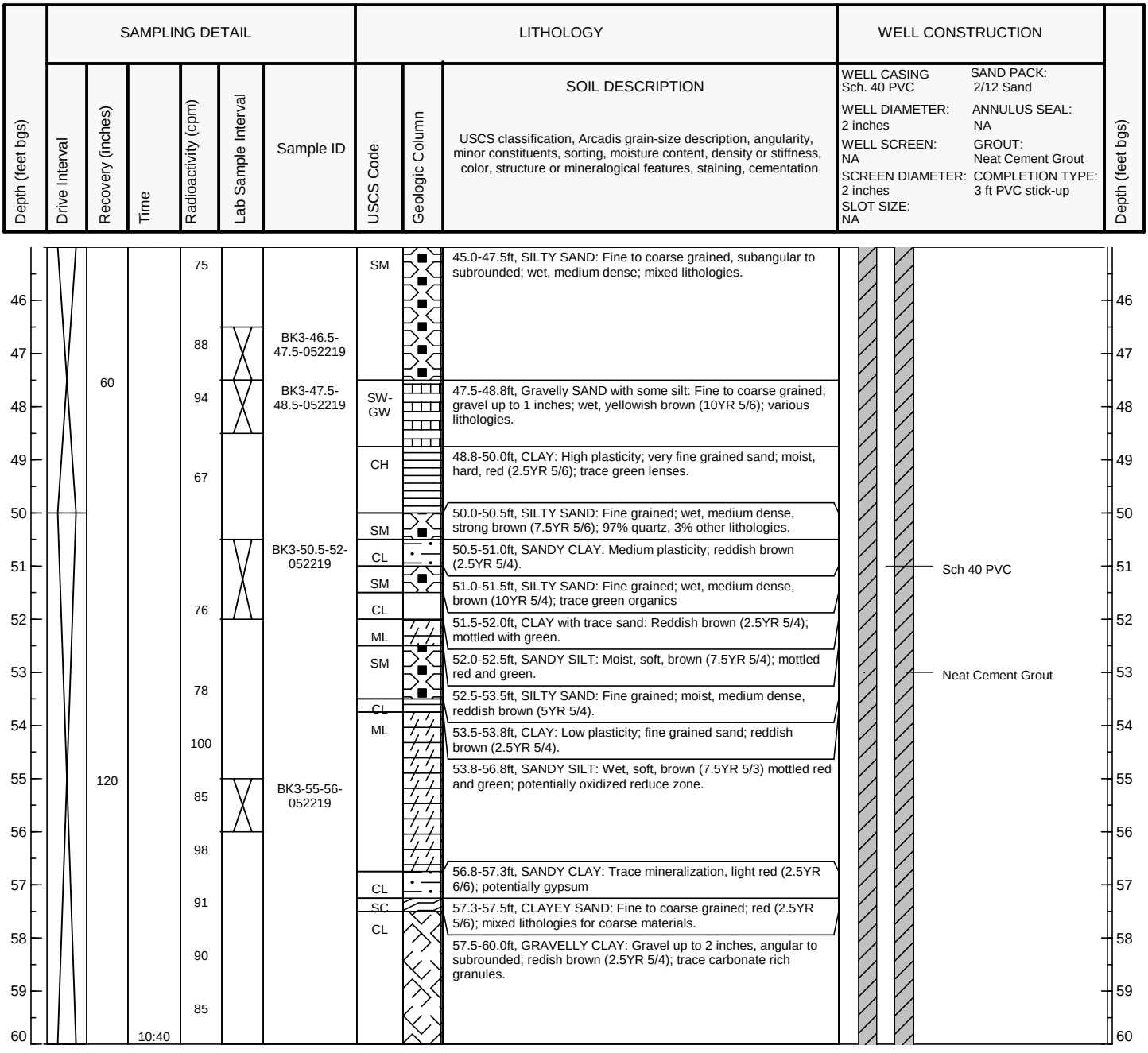
Boring and Well Construction Log

Date Drilling Started:	5/17/2019	**Latitude:** 35.24930 **Longitude:** 107.85216		**ID: BK3**	
Date Drilling Finished:	5/17/2019	**Surface Elevation:** 6595			
Date Well Complete:	5/18/2019	**Total Borehole Depth:** 73.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Discrete			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376



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Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/17/2019	**Latitude:** 35.24930 **Longitude:** 107.85216		**ID: BK3**	
Date Drilling Finished:	5/17/2019	**Surface Elevation:** 6595			
Date Well Complete:	5/18/2019	**Total Borehole Depth:** 73.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Discrete			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	SAMPLING DETAIL: Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	LITHOLOGY: USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
									USCS classification, Arcadis grain-size description, angularity, minor constituents, sorting, moisture content, density or stiffness, color, structure or mineralogical features, staining, cementation	WELL CASING: Sch. 40 PVC; SAND PACK: 2/12 Sand; WELL DIAMETER: 2 inches; ANNULUS SEAL: NA; WELL SCREEN: NA; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: NA	
61							Rx		60.0-73.0ft, SHALE: Weathered, dry, hard, red (2.5YR 4/6); mottled with white carbonate rich zones.		61
62									Becomes weak, dry.		62
63											63
64									As above.		64
65		120								Sch 40 PVC	65
66											66
67			11:45						As above, weak when dry.	Neat Cement Grout	67
68									As above		68
69									70 to 73 feet; drilled as rat hole		69
70			12:15								70
71											71
72											72
73			12:30								73

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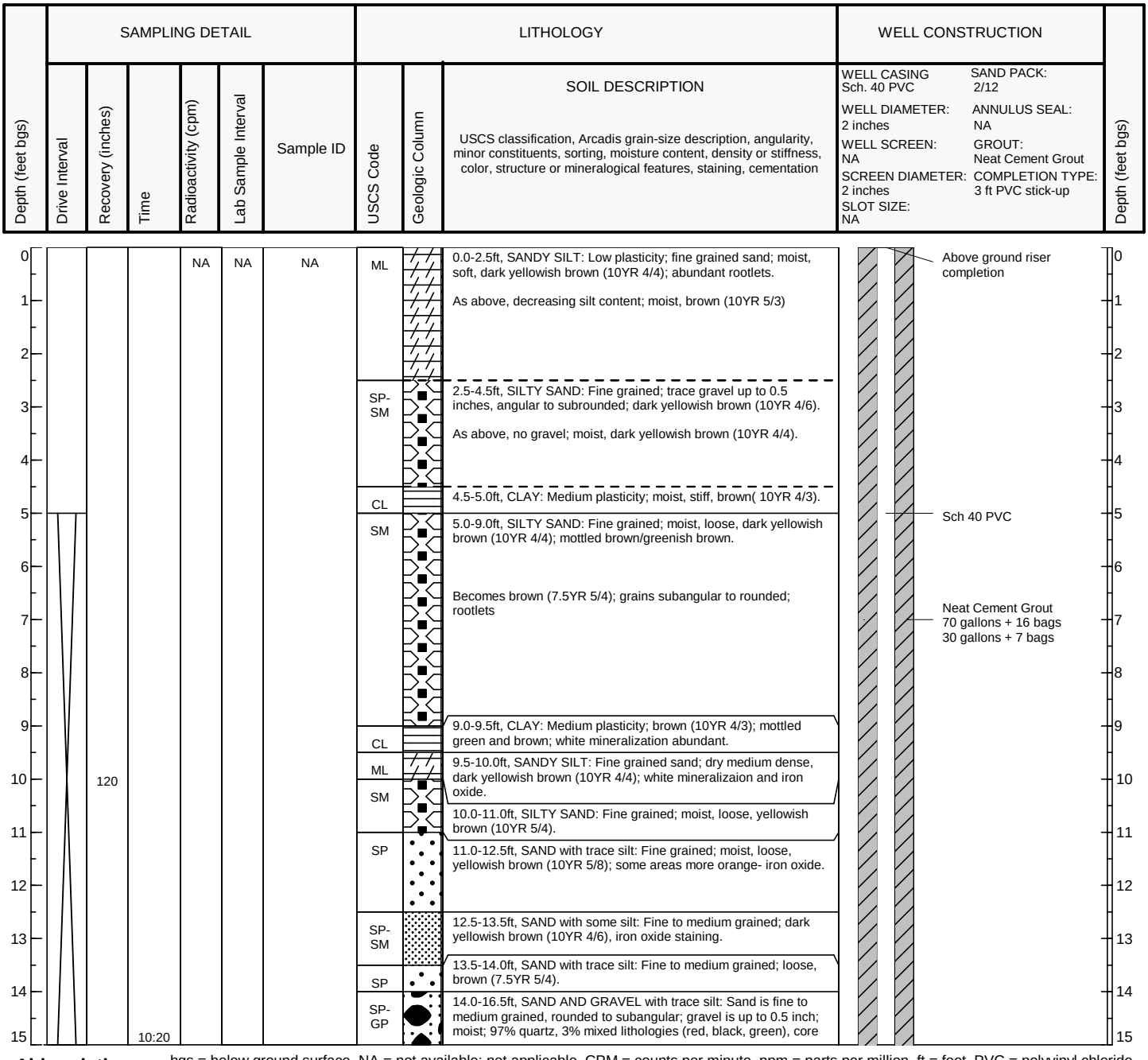
Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/23/2019	**Latitude:** 35.24740	**Longitude:** 107.87075	**ID: BK4**	
Date Drilling Finished:	5/23/2019	**Surface Elevation:**	NA		
Date Well Complete:	5/23/2019	**Total Borehole Depth:**	61.0 feet bgs		
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:**	6 inches	**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:**	Sonic	**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:**	Discrete		Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:**	NA	**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:**	None	**Reviewed By:**	Shawn Roberts, PG #8376



Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/23/2019	**Latitude:** 35.24740	**Longitude:** 107.87075	**ID: BK4**	
Date Drilling Finished:	5/23/2019	**Surface Elevation:**	NA		
Date Well Complete:	5/23/2019	**Total Borehole Depth:**	61.0 feet bgs		
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:**	6 inches	**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:**	Sonic	**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:**	Discrete		Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:**	NA	**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:**	None	**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	SAMPLING DETAIL: Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	LITHOLOGY: USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
									USCS classification, Arcadis grain-size description, angularity, minor constituents, sorting, moisture content, density or stiffness, color, structure or mineralogical features, staining, cementation	WELL CASING: Sch. 40 PVC; SAND PACK: 2/12; WELL DIAMETER: 2 inches; ANNULUS SEAL: NA; WELL SCREEN: NA; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: NA	
16				NA	NA	NA			hot.		16
17		60					SP-SM		16.5-19.0ft, SAND with some silt and trace gravel: Sand is fine to coarse grained; gravel is up to 0.75 inches; dry, core hot.		17
18											18
19							SM		19.0-25.0ft, SILTY SAND with some gravel: Fine grained, subrounded; gravel is up to 1 inches; stiff clasts with mineralization. Increased silt content, dark yellowish brown (10YR 4/6), core hot.		19
20			10:30						20 to 22.5 feet core lost.		20
21											21
22		60									22
23									Increasing silt content; wet, loose brown (10YR 4/3) Some areas mottled with green and brown	Depth to first water during drilling 23 feet bgs	23
24										Sch 40 PVC	24
25							SP-SM		25.0-26.5ft, SAND with some silt and trace gravel: Fine grained; gravel is up to 0.25 inches, rounded; loose dark yellowish brown (10YR 4/4)		25
26									26.5-27.5ft, SILTY SAND with trace gravel: Gravel is up to 0.5 inches; loose, dark yellowish brown (10YR 4/4). Increase silt content; moist, dark greenish brown (10YR 4/2); mottled with green/orange; granules of natural organic matter up to 0.25 inch in diameter, core warm.	Neat Cement Grout	26
27							SM				27
28							ML		27.5-28.5ft, SANDY SILT: No plasticity; fine grained; dry, loose, dark greenish brown (10YR 4/2); contains harder clasts, mixture of fine and coarse materials, mottled greens/oranges, iron oxide staining, core warm		28
29		120					SM		28.5-29.5ft, SILTY SAND: Moist, medium dense, dark yellowish brown (10YR 4/4); contains harder clasts, mixture of finer and coarser materials, mottled greens/oranges, iron oxide staining, core warm.		29
30							ML				30

Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/23/2019	**Latitude:** 35.24740 **Longitude:** 107.87075		**ID: BK4**	
Date Drilling Finished:	5/23/2019	**Surface Elevation:** NA			
Date Well Complete:	5/23/2019	**Total Borehole Depth:** 61.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Discrete			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	SAMPLING DETAIL: Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	LITHOLOGY: USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
									USCS classification, Arcadis grain-size description, angularity, minor constituents, sorting, moisture content, density or stiffness, color, structure or mineralogical features, staining, cementation	WELL CASING: Sch. 40 PVC; SAND PACK: 2/12; WELL DIAMETER: 2 inches; ANNULUS SEAL: NA; WELL SCREEN: NA; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: NA	
31				NA	NA	NA			(10YR 5/4); stiff clasts are a mixture of finer and coarser materials, mottled greens and oranges and iron oxide staining. Clasts contain trace white mineralizations/precipitation, mixture of finer and coarser materials, core warm.		31
32							SM		31.5-32.5ft, SILTY SAND: Moist, medium dense, yellowish brown (10YR 5/4). 2 inch layer of fine grained sand; some silt, core warm		32
33							SM		32.5-35.0ft, SILTY SAND: Moist, loose, dark yellowish brown (10YR 3/4); with harder clasts that are mottled green/orange when separated; some with laminations.		33
34											34
35			10:50				Rx SST		35.0-39.5ft, SANDSTONE: Weathered, moist, hard, weak, dark reddish brown (5YR 3/2); abundant white precipitation/mineralization interlayered with whiter layers; areas laminated interbedded with layers of sandstone coarser and finer grained material; sand stone layers up to 1 inch in thickness. Permeable as water on dry rocks; sand fine grained.	Sch 40 PVC	35
36											36
37										Neat Cement Grout	37
38											38
39											39
40		120					Rx SST		39.5-53.5ft, SANDSTONE: Interlayered moderately weathered standstone and finer grained unit; finer unit breaks down to sandy clay; laminated, often truncated.		40
41											41
42											42
43									Layered/laminated sandstone/finer grained, moist to wet, materials, clasts of fine materials up to 0.5 inch in diameter; fine grained sand.		43
44											44
45			11:00						As above, increasing fine fraction softer material becomes chips and sandstone; hard, several 0.5 to 1 inch sand stone layers with fine grained matrix		45

Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/23/2019	**Latitude:** 35.24740 **Longitude:** 107.87075		**ID: BK4**	
Date Drilling Finished:	5/23/2019	**Surface Elevation:** NA			
Date Well Complete:	5/23/2019	**Total Borehole Depth:** 61.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Discrete			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	SAMPLING DETAIL: Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	LITHOLOGY: USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
46				NA	NA	NA			As above moist to wet; moderately weathered.		46
47											47
48											48
49									Sandstone, slightly weathered, wet, hard, some area laminated while others indicate bedding up to 1 inch thickness		49
50		120									50
51									Sandstone, highly weathered, some areas with iron oxide staining, greenish, weak.		51
52											52
53											53
54							Rx Sh		53.5-55.0ft, SHALE: Transition zone, highly weathered; very weak; shale grayish brown (10YR 5/2); with water becomes clay; medium plasticity.	Sch 40 PVC	54
55			11:40				Rx Sh		55.0-56.5ft, SHALE: Moderately weathered; moist, weak, red (7.5R 4/2) mottled, black and green; with areas with grey materials.		55
56										Neat Cement Grout	56
57							Rx Sh		56.5-60.0ft, SHALE: Slightly weathered, weak, dry, hard, weak red (2.5YR 4/2);		57
58		60							As Above.		58
59											59
60			13:30								60

WELL CASING: Sch. 40 PVC; SAND PACK: 2/12; WELL DIAMETER: 2 inches; ANNULUS SEAL: NA; WELL SCREEN: NA; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: NA

Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

Boring and Well Construction Log

Date Drilling Started:	5/23/2019	**Latitude:** 35.24740 **Longitude:** 107.87075		**ID: BK4**	
Date Drilling Finished:	5/23/2019	**Surface Elevation:** NA			
Date Well Complete:	5/23/2019	**Total Borehole Depth:** 61.0 feet bgs			
Drilling Company:	Cascade Drilling, LLC	**Borehole Diameter:** 6 inches		**Client:**	Homestake Mining Company
Drilling Rig:	Pro Sonic 600 Series	**Drilling Method:** Sonic		**Location:**	Grants Reclamation Project
Driller's Name:	Sop Lorn	**Sampling Interval:** Discrete			Grants, NM
Driller's Assistant(s):	NA	**Sampling Device:** NA		**Project #:**	CO000120.1901
Logged By:	Shawn Roberts	**Drilling Fluid Used:** None		**Reviewed By:**	Shawn Roberts, PG #8376

Depth (feet bgs)	SAMPLING DETAIL: Drive Interval	Recovery (inches)	Time	Radioactivity (cpm)	Lab Sample Interval	Sample ID	LITHOLOGY: USCS Code	Geologic Column	SOIL DESCRIPTION	WELL CONSTRUCTION	Depth (feet bgs)
61	X	0		NA	NA	NA	NR		60.0-61.0ft, NR: Not recovered. One foot overdrill, core not recovered. End of Boring.	WELL CASING: Sch. 40 PVC; SAND PACK: 2/12; WELL DIAMETER: 2 inches; ANNULUS SEAL: NA; WELL SCREEN: NA; GROUT: Neat Cement Grout; SCREEN DIAMETER: 2 inches; COMPLETION TYPE: 3 ft PVC stick-up; SLOT SIZE: NA	61

USCS classification, Arcadis grain-size description, angularity, minor constituents, sorting, moisture content, density or stiffness, color, structure or mineralogical features, staining, cementation

Abbreviations: bgs = below ground surface, NA = not available; not applicable, CPM = counts per minute, ppm = parts per million, ft = feet, PVC = polyvinyl chloride, USCS = Unified Soil Classification System, in = inches, mm = millimeters, < = less than, % = percent

Notes: Survery data collected with Iphone Tomstrails GPS app. Measuring point was top of casing.

APPENDIX F

Analytical Reports

DATA VALIDATION REPORTS

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #s C19050766, C19050916 and C19050918

Analyses Performed By:
Energy Lab Services
Casper, WY

Report #33716R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) #s C19050766, C19050916 and C19050918 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	MET	MISC
C19050766	BK2-12-13	C19010453-1	Soil	05/15/19					X	X
	BK2-20-21	C19010453-2	Soil	05/15/19					X	X
	BK2-35-36	C19010453-3	Soil	05/15/19					X	X
	BK2-38-39	C19010453-4	Soil	05/15/19					X	X
	BK2-41.5-42.5	C19010453-5	Soil	05/15/19					X	X
	BK2-44-44.5	C19010453-6	Soil	05/16/19					X	X
	BK2-59-60	C19010453-7	Soil	05/16/19					X	X
	BK2-63.5-64	C19010453-8	Soil	05/16/19					X	X
	BK2-72.5-73.5	C19010453-9	Soil	05/16/19					X	X
	BK2-77-77.5	C19010453-10	Soil	05/16/19					X	X
C19050916	BK3-14.5-15	C19050916-1	Soil	05/22/19					X	X
	BK3-23-23.5	C19050916-2	Soil	05/22/19					X	X
	BK3-26-27	C19050916-3	Soil	05/22/19					X	X
	BK3-31.5-32.5	C19050916-4	Soil	05/22/19					X	X
	BK3-35-35.5	C19050916-5	Soil	05/22/19					X	X
	BK3-46.5-47.5	C19050916-6	Soil	05/22/19					X	X
	BK3-47.5-48.5	C19050916-7	Soil	05/22/19					X	X
	BK3-50.5-52	C19050916-8	Soil	05/22/19					X	X
	BK3-55-56	C19050916-9	Soil	05/22/19					X	X
	BK3-42.5-43.5	C19050916-10	Soil	05/22/19					X	X
C19050918	BK1-11.5-12.5	C19050918-1	Soil	05/21/19					X	X
	BK1-15-15.5	C19050918-2	Soil	05/21/19					X	X
	BK1-33.5-34	C19050918-3	Soil	05/21/19					X	X
	BK1-39-40	C19050918-4	Soil	05/21/19					X	X

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	MET	MISC
C19050918	BK1-41-41.5	C19050918-5	Soil	05/21/19					X	X
	BK1-47-48	C19050918-6	Soil	05/21/19					X	X
	BK1-48.5-49.5	C19050918-7	Soil	05/21/19					X	X
	BK1-51.5-52.5	C19050918-8	Soil	05/21/19					X	X
	BK1-52-53	C19050918-9	Soil	05/21/19					X	X
	BK1-55.5-56.5	C19050918-10	Soil	05/22/19					X	X
	DUP (05-23-2019)	C19050918-11	Soil	05/16/19	BK2-59-60				X	X
	DUP-2 (05-23-2019)	C19050918-12	Soil	05/21/19	BK1-41-41.5				X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020 and methods ASTM A 10, E3.2.6, Leco and ASTM 2580 BIM. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 6020	Soil	180 days from collection to analysis	Cool to <6 °C
EPA 6010	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No other qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a

factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MSRecovery	MSDRecovery
BK2-77-77.5	Potassium	127%	127%
	Silica	134%	46%
BK3-35-35.5	Calcium	71%	AC
	Silica	151%	37%
BK3-26-27	Silica	<30%	<30%
	Manganese	50%	AC
	Selenium	128%	AC
	Uranium	66%	AC
BK1-15-15.5	Silica	39%	<30%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

A post spike (PS) was performed as required when MS and/or MSD recoveries are outside control limits. The post spike results were evaluated as presented in the table below.

Sample Location	Analyte	MS Recovery	PS Recovery	MSD Recovery
BK3-26-27	Silica	<30%	90%	<30%
BK1-15-15.5	Silica	39%	91%	<30%

The sample results will be qualified as presented in the following table. The qualifications are applied to all sample results associated with this SDG.

Control limit	Post Spike	Sample Result	Qualification
MS/MSD percent recovery <30%	PS/PSD percent recovery >75%	Non-detect	UJ
		Detect	J
	PS percent recovery <75%	Non-detect	R
		Detect	J

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
BK2-77-77.5	Silica
BK3-26-27	Manganese
	Selenium
	Uranium

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

All serial dilutions were within control limits, with the exception of the analytes presented in the following table. The sample locations associated with the deviant %D are also presented in the following table.

Sample Locations	Analytes	Serial Dilution (%D)
BK3-26-27	Aluminum	16%

The criteria used to evaluate the serial dilution are presented in the following table. In the case of a serial dilution deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> 10%	Non-detect	UJ
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
BK2-59-60 / DUP (05-23-2019)	Aluminum	1670	1720	2.9%
	Calcium	19800	10100	NC
	Iron	6480	7590	15.8%
	Magnesium	723	672	7.3%
	Manganse	152	144	5.4%
	Potassium	338	331	2.1%
	Silica	387	889	NC
	Sodium	104	118	12.6%
	Vanadium	6	7	15.4%
BK1-41-41.5 / DUP-2 (05-23-2019)	Aluminum	1730	1680	2.9%
	Calcium	4560	6470	34.6%
	Iron	4480	3950	12.6%
	Magnesium	518	521	0.6%
	Manganse	80	87	8.4%
	Potassium	452	386	15.8%
	Silica	765	601	24.0%

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
BK1-41-41.5 / DUP-2 (05-23-2019)	Sodium	119	115	3.4%
	Vanadium	5	5 U	AC
	Silica	765	601	24.0%
	Sodium	119	115	3.4%
	Vanadium	5	5 U	AC

Notes:

AC = Acceptable

NC = Non-compliant

The analyte(s) calcium and silica associated with samples locations BK2-59-60 and DUP (05-23-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X		X	
B. Method Blanks		X	X		
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X	X		
ICP Serial Dilution %D		X	X		
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
pH by ASTM A10	Soil	20 days	Cool to <6 °C.
Total Sulfur by E3.2.6	Soil	30 days	Cool to <6 °C.
Total Carbon by Leco	Soil	30 days	Cool to <6 °C.
ORP by ASTM 2580 BIM	Soil	20 days	Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's

concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A site-specific MS/MSD was not included in the data package.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate performed on sample BK2-44-44.5 exhibited an RPD within the control limit.

The laboratory duplicate performed on sample BK3-14.5-15 exhibited RPDs within the control limit.

The laboratory duplicates performed on samples BK1-11.5-12.5 and DUP (05-23-2019) exhibited RPDs within the control limit.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
BK2-59-60 / DUP (05-23-2019)	Total Sulfur	0.01 U	0.02%	AC
	Total Carbon	0.4%	0.4%	0.0%
	ORP	252	288	13.3%
	Vanadium	6	7	15.4%
BK1-41-41.5 / DUP-2 (05-23-2019)	Total Sulfur	0.02%	0.02%	0%
	Total Carbon	0.2%	0.2%	0%
	ORP	186	237	24.1%

Notes:

AC = Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

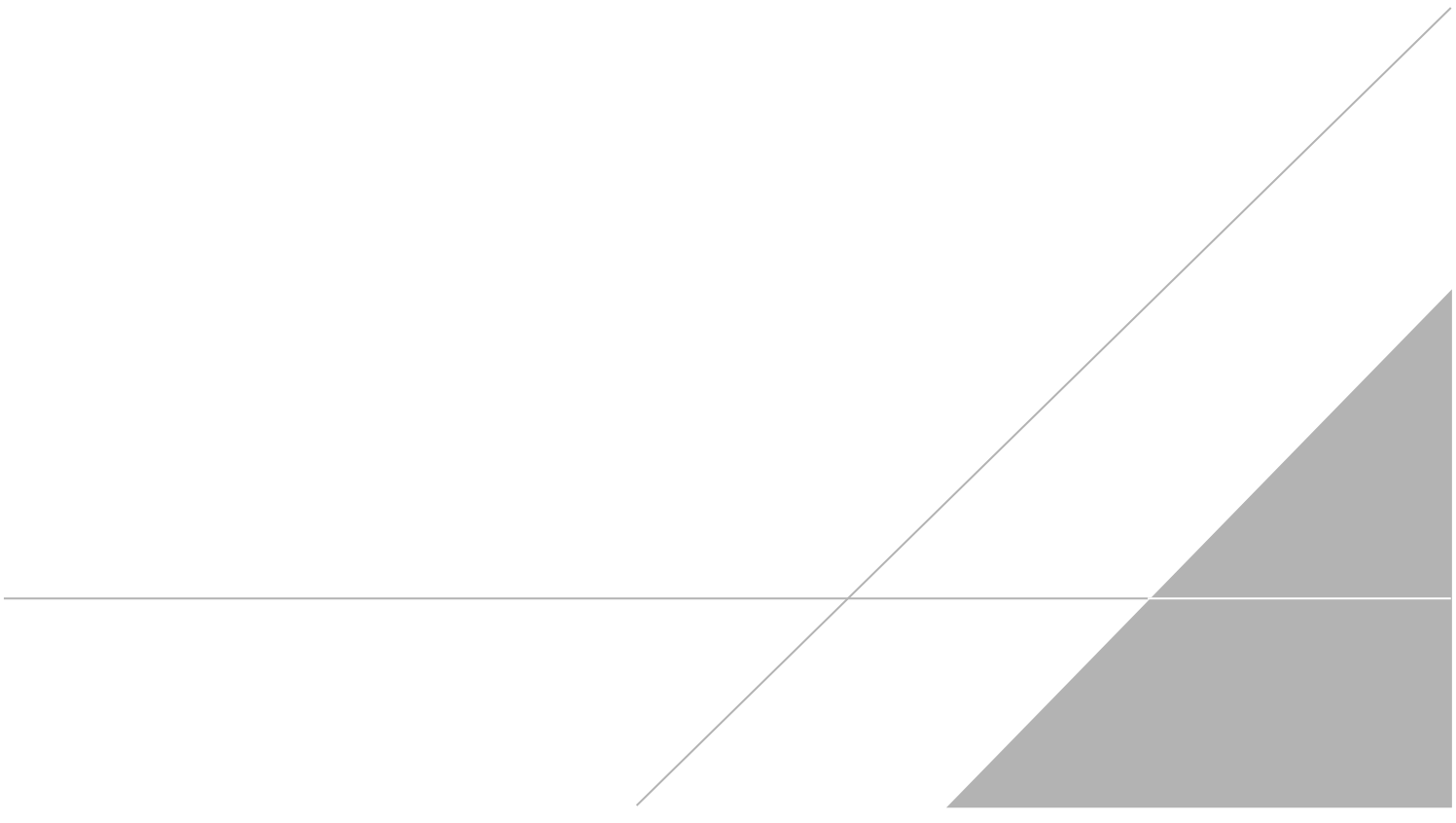
DATE: August 6, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 7, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	Homestake Mining Company
Contact	Adam Arguello
Phone	505 287 4456 x31
Mailing Address	560 Anaconda Road, Route 605
City, State, Zip	Milan, NM 87021
Email	aarguello@barrick.com
Receive Invoice	☐Hard Copy ☑Email
Receive Report	☐Hard Copy ☑Email
Purchase Order	
Quote	C5566
Bottle Order	58233

Report Information (if different than Account Information)

Company/Name	Adam Arguello at HMC and Arcadis
Contact	Shannon Ulrich
Phone	303 471 3465
Mailing Address	630 Plaza Drive, Ste 200
City, State, Zip	Highlands Ranch, CO 80129
Email	shannon.ulrich@arcadis.com
Receive Report	☐Hard Copy ☑Email PDF + excel
Special Report/Formats:	EQuIS
☐ LEVEL IV ☐ NELAC	☑EDD/EDT (contact laboratory) ☐ Other

Comments

Holding samples and subbing select samples to Huffman Hazen Labs (HHL), DCM Science lab, IT² isotope lab. Contact Tracey Archer

2 COOLERS

Project Information

Project Name, PWSID, Permit, etc.	Grants Reclamation Project
Sampler Name	Shannon Ulrich
Sampler Phone	303 471 3465
Sample Origin State	NM
EPA/State Compliance	☐ Yes ☑ No

URANIUM MINING CLIENTS MUST indicate sample type.

☒ NOT Source or Byproduct Material

☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING

☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes

A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.

Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Paste pH	DRP on Solids A2580 BM	TOC + Total Sulfur	Total Metals	For DCM: XRD, Petrographic Microscopy For HHL: QEMSCAN	For IT²: 345 on Solids	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1 BK2-12-13-051519	5/15/19	1620	4	S	X	X	X	X	HOLD	HOLD	HOLD		C19050766
2 BK2-20-21-051519	5/15/19	1650	4	S	X	X	X	X	HOLD	HOLD	HOLD		
3 BK2-35-36-051519	5/15/19	1740	4	S	X	X	X	X	HOLD	HOLD	HOLD		
4 BK2-38-39-051519	5/15/19	1825	4	S	X	X	X	X	HOLD	HOLD	HOLD		
5 BK2-41.5-42.5-051519	5/15/19	1920	4	S	X	X	X	X	HOLD	HOLD	HOLD		
6 BK2-44-44.5-051619	5/16/19	0930	4	S	X	X	X	X	HOLD	HOLD	HOLD		
7 BK2-59-60-051619	5/16/19	1055	4	S	X	X	X	X	HOLD	HOLD	HOLD		
8 BK2-63.5-64-051619	5/16/19	1135	4	S	X	X	X	X	HOLD	HOLD	HOLD		
9 BK2-72.5-73.5-051619	5/16/19	1205	4	S	X	X	X	X	HOLD	HOLD	HOLD		
10 BK2-77-77.5-051619	5/16/19	1345	4	S	X	X	X	X	HOLD	HOLD	HOLD		

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Shannon Ulrich	5/16/19/1630		UPS		
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
					5-20-19 8:15	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-001
Client Sample ID: BK2-12-13-051519

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/15/19 16:20
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	2.5	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	<0.01	wt%		0.01		E3.2.6	05/23/19 18:01 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.9	wt%		0.1		Leco	05/23/19 18:01 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	325	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	5620	mg/kg-dry		10		SW6010B	05/29/19 04:43 / eli-b
Calcium	19600	mg/kg-dry		30		SW6010B	05/29/19 04:43 / eli-b
Iron	6950	mg/kg-dry		5		SW6020	05/28/19 21:30 / eli-b
Magnesium	1880	mg/kg-dry		5		SW6010B	05/29/19 04:43 / eli-b
Manganese	185	mg/kg-dry		1		SW6020	05/28/19 21:30 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 21:30 / eli-b
Potassium	935	mg/kg-dry	J	6		SW6010B	05/29/19 04:43 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 21:30 / eli-b
Silica	397	mg/kg-dry	J	10		SW6010B	05/29/19 04:43 / eli-b
Sodium	167	mg/kg-dry		10		SW6010B	05/29/19 04:43 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	05/28/19 21:30 / eli-b
Vanadium	9	mg/kg-dry		5		SW6010B	05/29/19 04:43 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-002
Client Sample ID: BK2-20-21-051519

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/15/19 16:50
Date Received: 05/20/19
Matrix: Soil

Analyses	Result		Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS								
Moisture	8.2		wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE								
pH, sat. paste	8.1		s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS								
Sulfur, Total	0.01		wt%		0.01		E3.2.6	05/23/19 18:05 / eli-b
CHEMICAL CHARACTERISTICS								
Carbon, Total	0.2		wt%		0.1		Leco	05/23/19 18:05 / eli-b
PHYSICAL PROPERTIES								
Oxidation-Reduction Potential	229		mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL								
Aluminum	2110		mg/kg-dry		10		SW6010B	05/29/19 04:47 / eli-b
Calcium	3150		mg/kg-dry		40		SW6010B	05/29/19 04:47 / eli-b
Iron	6870		mg/kg-dry		20		SW6010B	05/29/19 04:47 / eli-b
Magnesium	699		mg/kg-dry		5		SW6010B	05/29/19 04:47 / eli-b
Manganese	105		mg/kg-dry		1		SW6020	05/28/19 21:34 / eli-b
Molybdenum	<1		mg/kg-dry		1		SW6020	05/28/19 21:34 / eli-b
Potassium	504	J	mg/kg-dry		7		SW6010B	05/29/19 04:47 / eli-b
Selenium	<1		mg/kg-dry		1		SW6020	05/28/19 21:34 / eli-b
Silica	437	J	mg/kg-dry		10		SW6010B	05/29/19 04:47 / eli-b
Sodium	147		mg/kg-dry		10		SW6010B	05/29/19 04:47 / eli-b
Uranium	<1		mg/kg-dry		1		SW6020	06/01/19 05:02 / eli-b
Vanadium	9		mg/kg-dry		5		SW6010B	05/29/19 04:47 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-003
Client Sample ID: BK2-35-36-051519

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/15/19 17:40
Date Received: 05/20/19
Matrix: Soil

Analyses	Result		Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS								
Moisture	3.1		wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE								
pH, sat. paste	8.3		s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS								
Sulfur, Total	0.01		wt%		0.01		E3.2.6	05/23/19 18:09 / eli-b
CHEMICAL CHARACTERISTICS								
Carbon, Total	0.2		wt%		0.1		Leco	05/23/19 18:09 / eli-b
PHYSICAL PROPERTIES								
Oxidation-Reduction Potential	179		mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL								
Aluminum	1620		mg/kg-dry		10		SW6010B	05/29/19 04:59 / eli-b
Calcium	5630		mg/kg-dry		30		SW6010B	05/29/19 04:59 / eli-b
Iron	4750		mg/kg-dry		5		SW6020	05/28/19 21:38 / eli-b
Magnesium	510		mg/kg-dry		5		SW6010B	05/29/19 04:59 / eli-b
Manganese	92		mg/kg-dry		1		SW6020	05/28/19 21:38 / eli-b
Molybdenum	<1		mg/kg-dry		1		SW6020	05/28/19 21:38 / eli-b
Potassium	433	J	mg/kg-dry		6		SW6010B	05/29/19 04:59 / eli-b
Selenium	<1		mg/kg-dry		1		SW6020	05/28/19 21:38 / eli-b
Silica	320	J	mg/kg-dry		10		SW6010B	05/29/19 04:59 / eli-b
Sodium	130		mg/kg-dry		10		SW6010B	05/29/19 04:59 / eli-b
Uranium	<1		mg/kg-dry		1		SW6020	06/01/19 05:06 / eli-b
Vanadium	6		mg/kg-dry		5		SW6010B	05/29/19 04:59 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-004
Client Sample ID: BK2-38-39-051519

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/15/19 18:25
Date Received: 05/20/19
Matrix: Soil

Analyses	Result		Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS								
Moisture	0.3		wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE								
pH, sat. paste	8.4		s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS								
Sulfur, Total	0.01		wt%		0.01		E3.2.6	05/23/19 18:12 / eli-b
CHEMICAL CHARACTERISTICS								
Carbon, Total	0.2		wt%		0.1		Leco	05/23/19 18:12 / eli-b
PHYSICAL PROPERTIES								
Oxidation-Reduction Potential	274		mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL								
Aluminum	2200		mg/kg-dry		10		SW6010B	05/29/19 05:03 / eli-b
Calcium	5000		mg/kg-dry		30		SW6010B	05/29/19 05:03 / eli-b
Iron	5850		mg/kg-dry		20		SW6010B	05/29/19 05:03 / eli-b
Magnesium	627		mg/kg-dry		5		SW6010B	05/29/19 05:03 / eli-b
Manganese	105		mg/kg-dry		1		SW6020	05/28/19 21:42 / eli-b
Molybdenum	<1		mg/kg-dry		1		SW6020	05/28/19 21:42 / eli-b
Potassium	625	J	mg/kg-dry		6		SW6010B	05/29/19 05:03 / eli-b
Selenium	<1		mg/kg-dry		1		SW6020	05/28/19 21:42 / eli-b
Silica	462	J	mg/kg-dry		10		SW6010B	05/29/19 05:03 / eli-b
Sodium	180		mg/kg-dry		10		SW6010B	05/29/19 05:03 / eli-b
Uranium	<1		mg/kg-dry		1		SW6020	05/28/19 21:42 / eli-b
Vanadium	6		mg/kg-dry		5		SW6010B	05/29/19 05:03 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-005
Client Sample ID: BK2-41.5-42.5-051519

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/15/19 19:20
Date Received: 05/20/19
Matrix: Soil

Analyses	Result		Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS								
Moisture	6.1		wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE								
pH, sat. paste	8.0		s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS								
Sulfur, Total	<0.01		wt%		0.01		E3.2.6	05/23/19 18:15 / eli-b
CHEMICAL CHARACTERISTICS								
Carbon, Total	0.9		wt%		0.1		Leco	05/23/19 18:15 / eli-b
PHYSICAL PROPERTIES								
Oxidation-Reduction Potential	258		mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL								
Aluminum	6150		mg/kg-dry		10		SW6010B	05/29/19 05:07 / eli-b
Calcium	15600		mg/kg-dry		30		SW6010B	05/29/19 05:07 / eli-b
Iron	8700		mg/kg-dry		5		SW6020	05/28/19 21:47 / eli-b
Magnesium	3190		mg/kg-dry		5		SW6010B	05/29/19 05:07 / eli-b
Manganese	165		mg/kg-dry		1		SW6020	05/28/19 21:47 / eli-b
Molybdenum	<1		mg/kg-dry		1		SW6020	05/28/19 21:47 / eli-b
Potassium	1120	J	mg/kg-dry		6		SW6010B	05/29/19 05:07 / eli-b
Selenium	<1		mg/kg-dry		1		SW6020	05/28/19 21:47 / eli-b
Silica	345	J	mg/kg-dry		10		SW6010B	05/29/19 05:07 / eli-b
Sodium	259		mg/kg-dry		10		SW6010B	05/29/19 05:07 / eli-b
Uranium	<1		mg/kg-dry		1		SW6020	06/01/19 05:15 / eli-b
Vanadium	11		mg/kg-dry		5		SW6010B	05/29/19 05:07 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-006
Client Sample ID: BK2-44-44.5-051619

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/16/19 09:30
Date Received: 05/20/19
Matrix: Soil

Analyses	Result		Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS								
Moisture	7.3		wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE								
pH, sat. paste	7.9		s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS								
Sulfur, Total	<0.01		wt%		0.01		E3.2.6	05/23/19 18:26 / eli-b
CHEMICAL CHARACTERISTICS								
Carbon, Total	0.6		wt%		0.1		Leco	05/23/19 18:26 / eli-b
PHYSICAL PROPERTIES								
Oxidation-Reduction Potential	247		mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL								
Aluminum	5260		mg/kg-dry		10		SW6010B	05/29/19 05:12 / eli-b
Calcium	13900		mg/kg-dry		40		SW6010B	05/29/19 05:12 / eli-b
Iron	8930		mg/kg-dry		20		SW6010B	05/29/19 05:12 / eli-b
Magnesium	2740		mg/kg-dry		5		SW6010B	05/29/19 05:12 / eli-b
Manganese	138		mg/kg-dry		1		SW6010B	05/29/19 05:12 / eli-b
Molybdenum	<1		mg/kg-dry		1		SW6020	05/28/19 21:51 / eli-b
Potassium	927	J	mg/kg-dry		7		SW6010B	05/29/19 05:12 / eli-b
Selenium	<1		mg/kg-dry		1		SW6020	05/28/19 21:51 / eli-b
Silica	335	J	mg/kg-dry		10		SW6010B	05/29/19 05:12 / eli-b
Sodium	210		mg/kg-dry		10		SW6010B	05/29/19 05:12 / eli-b
Uranium	<1		mg/kg-dry		1		SW6020	06/01/19 05:19 / eli-b
Vanadium	10		mg/kg-dry		5		SW6010B	05/29/19 05:12 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-007
Client Sample ID: BK2-59-60-051619

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/16/19 10:55
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	8.7	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	<0.01	wt%		0.01		E3.2.6	05/23/19 18:33 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.4	wt%		0.1		Leco	05/23/19 18:33 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	252	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	1670	mg/kg-dry		10		SW6010B	05/29/19 05:16 / eli-b
Calcium	19800	mg/kg-dry	J	30		SW6010B	05/29/19 05:16 / eli-b
Iron	6480	mg/kg-dry		5		SW6020	05/28/19 21:55 / eli-b
Magnesium	723	mg/kg-dry		5		SW6010B	05/29/19 05:16 / eli-b
Manganese	152	mg/kg-dry		1		SW6010B	05/29/19 05:16 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 21:55 / eli-b
Potassium	338	mg/kg-dry	J	6		SW6010B	05/29/19 05:16 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 21:55 / eli-b
Silica	387	mg/kg-dry	J	10		SW6010B	05/29/19 05:16 / eli-b
Sodium	104	mg/kg-dry		10		SW6010B	05/29/19 05:16 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 05:23 / eli-b
Vanadium	6	mg/kg-dry		5		SW6010B	05/29/19 05:16 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-008
Client Sample ID: BK2-63.5-64-051619

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/16/19 11:35
Date Received: 05/20/19
Matrix: Soil

Analyses	Result		Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS								
Moisture	4.5		wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE								
pH, sat. paste	8.0		s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS								
Sulfur, Total	<0.01		wt%		0.01		E3.2.6	05/23/19 18:36 / eli-b
CHEMICAL CHARACTERISTICS								
Carbon, Total	1.0		wt%		0.1		Leco	05/23/19 18:36 / eli-b
PHYSICAL PROPERTIES								
Oxidation-Reduction Potential	272		mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL								
Aluminum	3010		mg/kg-dry		10		SW6010B	05/29/19 05:20 / eli-b
Calcium	40100		mg/kg-dry		30		SW6010B	05/29/19 05:20 / eli-b
Iron	8840		mg/kg-dry		5		SW6020	05/28/19 21:59 / eli-b
Magnesium	1300		mg/kg-dry		5		SW6010B	05/29/19 05:20 / eli-b
Manganese	317		mg/kg-dry		1		SW6020	05/28/19 21:59 / eli-b
Molybdenum	<1		mg/kg-dry		1		SW6020	05/28/19 21:59 / eli-b
Potassium	547	J	mg/kg-dry		6		SW6010B	05/29/19 05:20 / eli-b
Selenium	<1		mg/kg-dry		1		SW6020	05/28/19 21:59 / eli-b
Silica	332	J	mg/kg-dry		10		SW6010B	05/29/19 05:20 / eli-b
Sodium	144		mg/kg-dry		10		SW6010B	05/29/19 05:20 / eli-b
Uranium	<1		mg/kg-dry		1		SW6020	05/28/19 21:59 / eli-b
Vanadium	10		mg/kg-dry		5		SW6010B	05/29/19 05:20 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-009
Client Sample ID: BK2-72.5-73.5-051619

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/16/19 12:05
Date Received: 05/20/19
Matrix: Soil

Analyses	Result		Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS								
Moisture	6.0		wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE								
pH, sat. paste	8.0		s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS								
Sulfur, Total	<0.01		wt%		0.01		E3.2.6	05/23/19 18:40 / eli-b
CHEMICAL CHARACTERISTICS								
Carbon, Total	0.8		wt%		0.1		Leco	05/23/19 18:40 / eli-b
PHYSICAL PROPERTIES								
Oxidation-Reduction Potential	267		mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL								
Aluminum	3130		mg/kg-dry		10		SW6010B	05/29/19 05:24 / eli-b
Calcium	11000		mg/kg-dry		30		SW6010B	05/29/19 05:24 / eli-b
Iron	4290		mg/kg-dry		5		SW6020	05/28/19 22:03 / eli-b
Magnesium	1900		mg/kg-dry		5		SW6010B	05/29/19 05:24 / eli-b
Manganese	113		mg/kg-dry		1		SW6020	05/28/19 22:03 / eli-b
Molybdenum	<1		mg/kg-dry		1		SW6020	05/28/19 22:03 / eli-b
Potassium	642	J	mg/kg-dry		6		SW6010B	05/29/19 05:24 / eli-b
Selenium	<1		mg/kg-dry		1		SW6020	05/28/19 22:03 / eli-b
Silica	326	J	mg/kg-dry		10		SW6010B	05/29/19 05:24 / eli-b
Sodium	120		mg/kg-dry		10		SW6010B	05/29/19 05:24 / eli-b
Uranium	<1		mg/kg-dry		1		SW6020	05/28/19 22:03 / eli-b
Vanadium	7		mg/kg-dry		5		SW6010B	05/29/19 05:24 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-010
Client Sample ID: BK2-77-77.5-051619

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/16/19 13:45
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	7.7	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	<0.01	wt%		0.01		E3.2.6	05/23/19 18:43 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.6	wt%		0.1		Leco	05/23/19 18:43 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	274	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	3910	mg/kg-dry		10		SW6010B	05/29/19 05:29 / eli-b
Calcium	10800	mg/kg-dry		30		SW6010B	05/29/19 05:29 / eli-b
Iron	5780	mg/kg-dry		5		SW6020	05/28/19 20:44 / eli-b
Magnesium	1980	mg/kg-dry		5		SW6010B	05/29/19 05:29 / eli-b
Manganese	112	mg/kg-dry		1		SW6020	05/28/19 20:44 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 20:44 / eli-b
Potassium	772	mg/kg-dry	J	20		SW6010B	05/29/19 05:29 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 20:44 / eli-b
Silica	373	mg/kg-dry	J	10		SW6020	05/28/19 20:44 / eli-b
Sodium	144	mg/kg-dry		10		SW6010B	05/29/19 05:29 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 05:52 / eli-b
Vanadium	8	mg/kg-dry		5		SW6010B	05/29/19 05:29 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information *(Billing information)*

Company/Name	Homestake Mining Company
Contact	Adam Arguello
Phone	505 287 4456 x 31
Mailing Address	560 Anaconda Road, Rte 605
City, State, Zip	Milan, NM 87021
Email	aarguello@barrick.com
Receive Invoice	☐Hard Copy ☑Email
Receive Report	☐Hard Copy ☑Email
Purchase Order	
Quote	C5566
Bottle Order	58233

Report Information *(if different than Account Information)*

Company/Name	Adam Arguello at HHC and Arcadis
Contact	Shannon Ulrich
Phone	303 471 3465
Mailing Address	630 Plaza Drive Ste 200
City, State, Zip	Highlands Ranch, CO 80129
Email	shannon.ulrich@arcadis.com
Receive Report	☐Hard Copy ☑Email PDF + excel
Special Report/Formats:	EQuIS
	☐ LEVEL IV ☐ NELAC ☑ EDD/EDT *(contact laboratory)* ☐ Other

Comments

Holding samples and subbing select samples to: Huffman Hazen Lab (HHL), DCM Science Lab, IT2 Isotope Lab

MS/MSD on: BK3-35-35.5-052219

Project Information

Project Name, PWSID, Permit, etc.	Grants Reclamation Project
Sampler Name	Shannon Ulrich
Sampler Phone	3034713465
Sample Origin State	NM
EPA/State Compliance	☐ Yes ☑ No

URANIUM MINING CLIENTS MUST indicate sample type.
☒ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes

A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Paste pH	ORP on solids	A2580 BM TOC + total sulfur	total metals	For DCM: XRD, petrographic microscopy	For HHL: QEMSCAN	For IT2: 34S	See Attached	RUSH TAT	ELI Lab ID (Laboratory Use Only)
1	BK3-14.5-15-052219	5.22.19	1035	4	S	X	X	X	X	HOLD	HOLD	HOLD			C19050916
2	BK3-23-23.5-052219	5.22.19	1055	4	S	X	X	X	X	HOLD	HOLD	HOLD			
3	BK3-26-27-052219	5.22.19	1115	4	S	X	X	X	X	HOLD	HOLD	HOLD			
4	BK3-31.5-32.5-052219	5.22.19	1130	4	S	X	X	X	X	HOLD	HOLD	HOLD			
5	BK3-35-35.5-052219	5.22.19	1200	4	S	X	X	X	X	HOLD	HOLD	HOLD			
6	BK3-46.5-47.5-052219	5.22.19	1230	4	S	X	X	X	X	HOLD	HOLD	HOLD			
7	BK3-47.5-48.5-052219	5.22.19	1300	4	S	X	X	X	X	HOLD	HOLD	HOLD			
8	BK3-50.5-52-052219	5.22.19	1320	4	S	X	X	X	X	HOLD	HOLD	HOLD			
9	BK3-55-56-052219	5.22.19	1400	4	S	X	X	X	X	HOLD	HOLD	HOLD			
10	BK3-42.5-43.5-052219	5.22.19	1505	4	S	X	X	X	X	HOLD	HOLD	HOLD			

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Shannon Ulrich	5/22/19 1600				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Josie Pepperseck	6/23/19 1040	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number *(cash/check only)*

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-001
Client Sample ID: BK3-14.5-15-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 10:35
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	4.1	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 17:47 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.3	wt%		0.1		Leco	06/03/19 17:47 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	209	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	2340	mg/kg-dry	J	9		SW6020	05/31/19 05:47 / eli-b
Calcium	7390	mg/kg-dry	J	30		SW6010B	05/30/19 19:51 / eli-b
Iron	4250	mg/kg-dry		10		SW6020	05/31/19 05:47 / eli-b
Magnesium	1170	mg/kg-dry		10		SW6020	05/31/19 05:47 / eli-b
Manganese	95	mg/kg-dry	J	1		SW6020	05/31/19 05:47 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/31/19 05:47 / eli-b
Potassium	617	mg/kg-dry		30		SW6020	05/31/19 05:47 / eli-b
Selenium	<1	mg/kg-dry	UJ	1		SW6020	06/01/19 01:54 / eli-b
Silica	312	mg/kg-dry	J	10		SW6010B	05/30/19 19:51 / eli-b
Sodium	107	mg/kg-dry		10		SW6010B	05/30/19 19:51 / eli-b
Uranium	<1	mg/kg-dry	UJ	1		SW6020	05/31/19 05:47 / eli-b
Vanadium	10	mg/kg-dry		5		SW6020	05/31/19 05:47 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-002
Client Sample ID: BK3-23-23.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 10:55
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	2.5	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 17:50 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.2	wt%		0.1		Leco	06/03/19 17:50 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	319	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	6340	mg/kg-dry	J	8		SW6020	05/31/19 05:51 / eli-b
Calcium	8300	mg/kg-dry	J	30		SW6010B	05/30/19 19:55 / eli-b
Iron	9600	mg/kg-dry		10		SW6020	05/31/19 05:51 / eli-b
Magnesium	2130	mg/kg-dry		10		SW6020	05/31/19 05:51 / eli-b
Manganese	187	mg/kg-dry	J	1		SW6020	05/31/19 05:51 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 01:58 / eli-b
Potassium	1620	mg/kg-dry		30		SW6020	05/31/19 05:51 / eli-b
Selenium	<1	mg/kg-dry	UJ	1		SW6020	06/01/19 01:58 / eli-b
Silica	420	mg/kg-dry	J	10		SW6010B	05/30/19 19:55 / eli-b
Sodium	382	mg/kg-dry		9		SW6010B	05/30/19 19:55 / eli-b
Uranium	<1	mg/kg-dry	UJ	1		SW6020	05/31/19 05:51 / eli-b
Vanadium	16	mg/kg-dry		5		SW6020	05/31/19 05:51 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-003
Client Sample ID: BK3-26-27-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 11:15
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	2.5	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 17:54 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	1.3	wt%		0.1		Leco	06/03/19 17:54 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	309	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	7920	mg/kg-dry	J	9		SW6020	05/31/19 05:55 / eli-b
Calcium	37500	mg/kg-dry	J	30		SW6010B	05/30/19 19:59 / eli-b
Iron	8300	mg/kg-dry		10		SW6020	05/31/19 05:55 / eli-b
Magnesium	3770	mg/kg-dry		10		SW6020	05/31/19 05:55 / eli-b
Manganese	220	mg/kg-dry	J	1		SW6020	05/31/19 05:55 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/31/19 05:55 / eli-b
Potassium	1910	mg/kg-dry		30		SW6020	05/31/19 05:55 / eli-b
Selenium	<1	mg/kg-dry	UJ	1		SW6020	06/01/19 02:03 / eli-b
Silica	671	mg/kg-dry	J	10		SW6010B	05/30/19 19:59 / eli-b
Sodium	456	mg/kg-dry		10		SW6010B	05/30/19 19:59 / eli-b
Uranium	<1	mg/kg-dry	UJ	1		SW6020	05/31/19 05:55 / eli-b
Vanadium	12	mg/kg-dry		5		SW6020	05/31/19 05:55 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-004
Client Sample ID: BK3-31.5-32.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 11:30
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	3.4	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 17:57 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.6	wt%		0.1		Leco	06/03/19 17:57 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	256	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	6680	mg/kg-dry	J	5		SW6010B	06/03/19 23:19 / eli-b
Calcium	15100	mg/kg-dry	J	30		SW6010B	06/03/19 23:19 / eli-b
Iron	9290	mg/kg-dry		20		SW6010B	06/03/19 23:19 / eli-b
Magnesium	3190	mg/kg-dry		5		SW6010B	06/03/19 23:19 / eli-b
Manganese	186	mg/kg-dry	J	1		SW6020	06/01/19 02:40 / eli-b
Molybdenum	1	mg/kg-dry		1		SW6020	06/01/19 02:40 / eli-b
Potassium	1250	mg/kg-dry		6		SW6010B	06/03/19 23:19 / eli-b
Selenium	<3	mg/kg-dry	UJ	3		SW6020	06/01/19 02:40 / eli-b
Silica	1140	mg/kg-dry	J	10		SW6010B	06/03/19 23:19 / eli-b
Sodium	436	mg/kg-dry		10		SW6010B	06/03/19 23:19 / eli-b
Uranium	<1	mg/kg-dry	UJ	1		SW6020	06/01/19 02:40 / eli-b
Vanadium	13	mg/kg-dry		5		SW6020	06/04/19 07:22 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-005
Client Sample ID: BK3-35-35.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 12:00
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	16.7	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.5	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:01 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.3	wt%		0.1		Leco	06/03/19 18:01 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	245	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	2760	mg/kg-dry	J	5		SW6010B	06/03/19 23:23 / eli-b
Calcium	9360	mg/kg-dry	J	40		SW6010B	06/03/19 23:23 / eli-b
Iron	6800	mg/kg-dry		30		SW6010B	06/03/19 23:23 / eli-b
Magnesium	1380	mg/kg-dry		5		SW6010B	06/03/19 23:23 / eli-b
Manganese	116	mg/kg-dry	J	1		SW6020	06/01/19 02:44 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 02:44 / eli-b
Potassium	575	mg/kg-dry		7		SW6010B	06/03/19 23:23 / eli-b
Selenium	<3	mg/kg-dry	UJ	3		SW6020	06/01/19 02:44 / eli-b
Silica	754	mg/kg-dry	J	10		SW6010B	06/03/19 23:23 / eli-b
Sodium	234	mg/kg-dry		10		SW6010B	06/03/19 23:23 / eli-b
Uranium	<1	mg/kg-dry	UJ	1		SW6020	06/01/19 02:44 / eli-b
Vanadium	10	mg/kg-dry		3		SW6020	06/07/19 00:50 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-006
Client Sample ID: BK3-46.5-47.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 12:30
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	10.9	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.5	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:04 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.4	wt%		0.1		Leco	06/03/19 18:04 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	228	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	2420	mg/kg-dry	J	5		SW6010B	06/03/19 23:52 / eli-b
Calcium	12800	mg/kg-dry	J	40		SW6010B	06/03/19 23:52 / eli-b
Iron	10800	mg/kg-dry		30		SW6010B	06/03/19 23:52 / eli-b
Magnesium	1190	mg/kg-dry		5		SW6010B	06/03/19 23:52 / eli-b
Manganese	205	mg/kg-dry	J	1		SW6010B	06/03/19 23:52 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:09 / eli-b
Potassium	476	mg/kg-dry		7		SW6010B	06/03/19 23:52 / eli-b
Selenium	<3	mg/kg-dry	UJ	3		SW6020	06/01/19 03:09 / eli-b
Silica	792	mg/kg-dry	J	10		SW6010B	06/03/19 23:52 / eli-b
Sodium	202	mg/kg-dry		10		SW6010B	06/03/19 23:52 / eli-b
Uranium	<1	mg/kg-dry	UJ	1		SW6020	06/01/19 03:09 / eli-b
Vanadium	13	mg/kg-dry		6		SW6020	06/04/19 07:31 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-007
Client Sample ID: BK3-47.5-48.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 13:00
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	10.1	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.5	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.01	wt%		0.01		E3.2.6	06/03/19 18:08 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.4	wt%		0.1		Leco	06/03/19 18:08 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	212	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	3010	mg/kg-dry	J	5		SW6010B	06/03/19 23:57 / eli-b
Calcium	10300	mg/kg-dry	J	40		SW6010B	06/03/19 23:57 / eli-b
Iron	11700	mg/kg-dry		20		SW6010B	06/03/19 23:57 / eli-b
Magnesium	1420	mg/kg-dry		5		SW6010B	06/03/19 23:57 / eli-b
Manganese	152	mg/kg-dry	J	1		SW6010B	06/03/19 23:57 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:13 / eli-b
Potassium	597	mg/kg-dry		7		SW6010B	06/03/19 23:57 / eli-b
Selenium	<3	mg/kg-dry	UJ	3		SW6020	06/01/19 03:13 / eli-b
Silica	1230	mg/kg-dry	J	10		SW6010B	06/03/19 23:57 / eli-b
Sodium	220	mg/kg-dry		10		SW6010B	06/03/19 23:57 / eli-b
Uranium	<1	mg/kg-dry	UJ	1		SW6020	06/01/19 03:13 / eli-b
Vanadium	14	mg/kg-dry		6		SW6020	06/04/19 07:35 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-008
Client Sample ID: BK3-50.5-52-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 13:20
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	10.8	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:11 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.4	wt%		0.1		Leco	06/03/19 18:11 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	256	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	7370	mg/kg-dry	J	5		SW6010B	06/04/19 00:01 / eli-b
Calcium	9570	mg/kg-dry	J	40		SW6010B	06/04/19 00:01 / eli-b
Iron	7910	mg/kg-dry		20		SW6010B	06/04/19 00:01 / eli-b
Magnesium	2370	mg/kg-dry		5		SW6010B	06/04/19 00:01 / eli-b
Manganese	123	mg/kg-dry	J	1		SW6020	06/01/19 03:18 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:18 / eli-b
Potassium	1490	mg/kg-dry		7		SW6010B	06/04/19 00:01 / eli-b
Selenium	<3	mg/kg-dry	UJ	3		SW6020	06/01/19 03:18 / eli-b
Silica	1520	mg/kg-dry	J	10		SW6010B	06/04/19 00:01 / eli-b
Sodium	341	mg/kg-dry		10		SW6010B	06/04/19 00:01 / eli-b
Uranium	<1	mg/kg-dry	UJ	1		SW6020	06/01/19 03:18 / eli-b
Vanadium	13	mg/kg-dry		6		SW6020	06/04/19 07:39 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-009
Client Sample ID: BK3-55-56-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 14:00
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	9.9	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.5	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:15 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	1.0	wt%		0.1		Leco	06/03/19 18:15 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	226	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	6250	mg/kg-dry	J	5		SW6010B	06/04/19 00:05 / eli-b
Calcium	24700	mg/kg-dry	J	30		SW6010B	06/04/19 00:05 / eli-b
Iron	6530	mg/kg-dry		20		SW6010B	06/04/19 00:05 / eli-b
Magnesium	2050	mg/kg-dry		5		SW6010B	06/04/19 00:05 / eli-b
Manganese	195	mg/kg-dry	J	1		SW6010B	06/04/19 00:05 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:22 / eli-b
Potassium	1160	mg/kg-dry		6		SW6010B	06/04/19 00:05 / eli-b
Selenium	<3	mg/kg-dry	UJ	3		SW6020	06/01/19 03:22 / eli-b
Silica	1330	mg/kg-dry	J	10		SW6010B	06/04/19 00:05 / eli-b
Sodium	358	mg/kg-dry		10		SW6010B	06/04/19 00:05 / eli-b
Uranium	<1	mg/kg-dry	UJ	1		SW6020	06/01/19 03:22 / eli-b
Vanadium	13	mg/kg-dry		5		SW6020	06/04/19 07:43 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-010
Client Sample ID: BK3-42.5-43.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 15:05
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	13.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.1	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:18 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	1.1	wt%		0.1		Leco	06/03/19 18:18 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	255	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	31900	mg/kg-dry	J	5		SW6010B	06/04/19 00:09 / eli-b
Calcium	33100	mg/kg-dry	J	40		SW6010B	06/04/19 00:09 / eli-b
Iron	21600	mg/kg-dry		30		SW6010B	06/04/19 00:09 / eli-b
Magnesium	10400	mg/kg-dry		5		SW6010B	06/04/19 00:09 / eli-b
Manganese	413	mg/kg-dry	J	1		SW6020	06/01/19 03:43 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:43 / eli-b
Potassium	6370	mg/kg-dry		7		SW6010B	06/04/19 00:09 / eli-b
Selenium	<3	mg/kg-dry	UJ	3		SW6020	06/01/19 03:43 / eli-b
Silica	1760	mg/kg-dry	J	10		SW6010B	06/04/19 00:09 / eli-b
Sodium	1150	mg/kg-dry		10		SW6010B	06/04/19 00:09 / eli-b
Uranium	1	mg/kg-dry	J	1		SW6020	06/01/19 03:43 / eli-b
Vanadium	36	mg/kg-dry		2		SW6020	06/07/19 00:58 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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Chain of Custody & Analytical Request Record

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Account Information (Billing information)

Company/Name: Homestake Mining Company
Contact: Adam Arguello
Phone: ~~303 471 3465~~ 505 287 4466 x31
Mailing Address: 560 Anaconda Road, Route 605
City, State, Zip: Milan, NM 87021
Email: aarguello@barrick.com
Receive Invoice: ☐Hard Copy ☑Email | Receive Report: ☐Hard Copy ☑Email
Purchase Order: | Quote: C5566 | Bottle Order: 58233

Report Information (if different than Account Information)

Company/Name: Adam Arguello at HMC and Arcadis
Contact: Shannon Ulrich
Phone: 303 471 3465
Mailing Address: 630 Plaza Drive ste 200
City, State, Zip: Highlands Ranch, CO 80129
Email: shannon.ulrich@arcadis.com
Receive Report: ☐Hard Copy ☑Email PDF & excel
Special Report/Formats: EQuIS
☐ LEVEL IV ☐ NELAC ☑ EDD/EDT (contact laboratory) ☐ Other

Comments

Holding samples and subbing select samples to: Huffman Hazen labs (HHL), DCM Science Labs, IT² isotope lab
MS/MSD on BK1-15-15.5-052119

Project Information

Project Name, PWSID, Permit, etc.: Grants Reclamation Project
Sampler Name: Shannon Ulrich | Sampler Phone: 303 471 3465
Sample Origin State: NM | EPA/State Compliance ☐ Yes ☑ No

URANIUM MINING CLIENTS MUST indicate sample type.
☒ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Paste pH	ORP on solids (ASTM D7869 BM)	TOC + total sulfur	total metals	For DCM: XRD, Petrographic microscopy	For HHL: QEMSCAN	For IT²: 34S on solids	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1 BK1-11.5-12.5-052119	5.21.19	1235	4	S	X	X	X	X	HOLD	HOLD	HOLD	SMU		C19050918
2 BK1-15-15.5-052119	5.21.19	1315	4	S	X	X	X	X	HOLD	HOLD	HOLD			
3 BK1-33.5-34-052119	5.21.19	1350	4	S	X	X	X	X	HOLD	HOLD	HOLD			
4 BK1-39-40-052119	5.21.19	1420	4	S	X	X	X	X	HOLD	HOLD	HOLD			
5 BK1-41-41.5-052119	5.21.19	1600	4	S	X	X	X	X	HOLD	HOLD	HOLD			
6 BK1-47-48-052119	5.21.19	1630	4	S	X	X	X	X	HOLD	HOLD	HOLD			
7 BK1-48.5-49.5-052119	5.21.19	1725	4	S	X	X	X	X	HOLD	HOLD	HOLD			
8 BK1-51-52-052119	5.21.19	1750	4	S	X	X	X	X	HOLD	HOLD	HOLD			
9 BK1-52-53-052119	5.21.19	1820	4	S	X	X	X	X	HOLD	HOLD	HOLD			
10 BK1-55.5-56.5-052219	5.22.19	0855	4	S	X	X	X	X	HOLD	HOLD	HOLD			

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Shannon Ulrich	5/22/19 1600				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Chase Pennington	5/23/19 1052	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

Chain of Custody & Analytical Request Record

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Account Information *(Billing information)*

Company/Name	Homestake Mining Company
Contact	Adam Arguello
Phone	505-287-4456 x31
Mailing Address	560 Anaconda Road, Route 605
City, State, Zip	Milan, NM 87021
Email	aarguello@barrick.com
Receive Invoice	☐Hard Copy ☑Email
Receive Report	☐Hard Copy ☑Email
Purchase Order	
Quote	C5566
Bottle Order	58233

Report Information *(if different than Account Information)*

Company/Name	Adam Arguello at HMC and Arcadis
Contact	Shannon Ulrich
Phone	303 471 3465
Mailing Address	630 Plaza Drive Ste 200
City, State, Zip	Highlands Ranch, CO 80129
Email	shannon.ulrich@arcadis.com
Receive Report	☐Hard Copy ☒Email PDF & excel
Special Report/Formats:	EQuIS
	☐ LEVEL IV ☐ NELAC ☒EDD/EDT *(contact laboratory)* ☐ Other

Comments

Holding samples and subbing select samples to: Huffman Hazen Lab (HHL), DCM science lab, IT2 isotope lab

Project Information

Project Name, PWSID, Permit, etc.	Grants Reclamation Project
Sampler Name	Shannon Ulrich
Sampler Phone	303-471-3465
Sample Origin State	NM
EPA/State Compliance	☐ Yes ☑ No

URANIUM MINING CLIENTS MUST indicate sample type.
☒ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes

A - Air; W - Water; S - Soils/Solids; V - Vegetation; B - Bioassay; O - Other; DW - Drinking Water

All turnaround times are standard unless marked as RUSH.

Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Paste pH	ORP on solids A2580 BM	TOC + total sulfur	total metals	For DCM: XRD, Petrographic mineralogy	For HHL: QEMSCAN SMU	For IT2: 34S on solids	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	DUP	—	—	1	S	x	x	x	x	HOLD	HOLD	HOLD			C19050918
2	DUP-2	—	—	1	S	x	x	x	x	HOLD	HOLD	HOLD			
3										HOLD	HOLD	HOLD			
4										HOLD	HOLD	HOLD			
5										HOLD	HOLD	HOLD			
6										HOLD	HOLD	HOLD			
7										HOLD	HOLD	HOLD			
8										HOLD	HOLD	HOLD			
9										HOLD	HOLD	HOLD			
10										HOLD	HOLD	HOLD			

SMU

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Shannon Ulrich	5/22/19/1600				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Josie Pennebaker	5/23/19 1052	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number *(cash/check only)*

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-001
Client Sample ID: BK1-11.5-12.5-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 12:35
Date Received: 05/23/19
Matrix: Solid

Analyses	Result		Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS								
Moisture	1.6		wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE								
pH, sat. paste	8.2		s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS								
Sulfur, Total	0.02		wt%		0.01		E3.2.6	06/03/19 18:21 / eli-b
CHEMICAL CHARACTERISTICS								
Carbon, Total	0.1		wt%		0.1		Leco	06/03/19 18:21 / eli-b
PHYSICAL PROPERTIES								
Oxidation-Reduction Potential	276		mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL								
Aluminum	2290		mg/kg-dry		5		SW6010B	06/04/19 00:14 / eli-b
Calcium	2770		mg/kg-dry		30		SW6010B	06/04/19 00:14 / eli-b
Iron	3860		mg/kg-dry		20		SW6010B	06/04/19 00:14 / eli-b
Magnesium	787		mg/kg-dry		5		SW6010B	06/04/19 00:14 / eli-b
Manganese	59		mg/kg-dry		1		SW6020	06/01/19 03:47 / eli-b
Molybdenum	<1		mg/kg-dry		1		SW6020	06/01/19 03:47 / eli-b
Potassium	409		mg/kg-dry		6		SW6010B	06/04/19 00:14 / eli-b
Selenium	<3		mg/kg-dry		3		SW6020	06/01/19 03:47 / eli-b
Silica	648	J	mg/kg-dry		10		SW6010B	06/04/19 00:14 / eli-b
Sodium	43		mg/kg-dry		10		SW6010B	06/04/19 00:14 / eli-b
Uranium	<1		mg/kg-dry		1		SW6020	06/01/19 03:47 / eli-b
Vanadium	5		mg/kg-dry		2		SW6020	06/07/19 01:02 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-002
Client Sample ID: BK1-15-15.5-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 13:15
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	0.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.5	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:25 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.1	wt%		0.1		Leco	06/03/19 18:25 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	232	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	1350	mg/kg-dry		5		SW6010B	06/04/19 01:54 / eli-b
Calcium	2460	mg/kg-dry		30		SW6010B	06/04/19 01:54 / eli-b
Iron	2680	mg/kg-dry		10		SW6020	06/04/19 04:51 / eli-b
Magnesium	459	mg/kg-dry		10		SW6020	06/04/19 04:51 / eli-b
Manganese	28	mg/kg-dry		1		SW6020	06/01/19 06:13 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 06:13 / eli-b
Potassium	286	mg/kg-dry		30		SW6020	06/04/19 04:51 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 06:13 / eli-b
Silica	726	mg/kg-dry	J	10		SW6010B	06/04/19 01:54 / eli-b
Sodium	<40	mg/kg-dry		40		SW6020	06/04/19 04:51 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 06:13 / eli-b
Vanadium	<5	mg/kg-dry		5		SW6020	06/04/19 04:51 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-003
Client Sample ID: BK1-33.5-34-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 13:50
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	2.7	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.1	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:28 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.3	wt%		0.1		Leco	06/03/19 18:28 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	254	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	3350	mg/kg-dry		5		SW6010B	06/04/19 00:55 / eli-b
Calcium	5840	mg/kg-dry		30		SW6010B	06/04/19 00:55 / eli-b
Iron	7210	mg/kg-dry		20		SW6010B	06/04/19 00:55 / eli-b
Magnesium	1120	mg/kg-dry		5		SW6010B	06/04/19 00:55 / eli-b
Manganese	96	mg/kg-dry		1		SW6010B	06/04/19 00:55 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:51 / eli-b
Potassium	678	mg/kg-dry		6		SW6010B	06/04/19 00:55 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 03:51 / eli-b
Silica	825	mg/kg-dry	J	10		SW6010B	06/04/19 00:55 / eli-b
Sodium	111	mg/kg-dry		10		SW6010B	06/04/19 00:55 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 03:51 / eli-b
Vanadium	9	mg/kg-dry		2		SW6020	06/07/19 01:06 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-004
Client Sample ID: BK1-39-40-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 14:20
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	6.8	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:32 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.4	wt%		0.1		Leco	06/03/19 18:32 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	218	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	3390	mg/kg-dry		5		SW6010B	06/04/19 00:59 / eli-b
Calcium	8760	mg/kg-dry		30		SW6010B	06/04/19 00:59 / eli-b
Iron	8320	mg/kg-dry		20		SW6010B	06/04/19 00:59 / eli-b
Magnesium	1060	mg/kg-dry		5		SW6010B	06/04/19 00:59 / eli-b
Manganese	148	mg/kg-dry		1		SW6010B	06/04/19 00:59 / eli-b
Molybdenum	1	mg/kg-dry		1		SW6020	06/01/19 03:55 / eli-b
Potassium	844	mg/kg-dry		6		SW6010B	06/04/19 00:59 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 03:55 / eli-b
Silica	878	mg/kg-dry	J	10		SW6010B	06/04/19 00:59 / eli-b
Sodium	228	mg/kg-dry		10		SW6010B	06/04/19 00:59 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 03:55 / eli-b
Vanadium	9	mg/kg-dry		2		SW6020	06/07/19 01:10 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-005
Client Sample ID: BK1-41-41.5-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 16:00
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	1.8	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.4	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:35 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.2	wt%		0.1		Leco	06/03/19 18:35 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	186	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	1730	mg/kg-dry		5		SW6010B	06/04/19 01:03 / eli-b
Calcium	4560	mg/kg-dry		30		SW6010B	06/04/19 01:03 / eli-b
Iron	4480	mg/kg-dry		20		SW6010B	06/04/19 01:03 / eli-b
Magnesium	518	mg/kg-dry		5		SW6010B	06/04/19 01:03 / eli-b
Manganese	80	mg/kg-dry		1		SW6010B	06/04/19 01:03 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:59 / eli-b
Potassium	452	mg/kg-dry		6		SW6010B	06/04/19 01:03 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 03:59 / eli-b
Silica	765	mg/kg-dry	J	10		SW6010B	06/04/19 01:03 / eli-b
Sodium	119	mg/kg-dry		10		SW6010B	06/04/19 01:03 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 03:59 / eli-b
Vanadium	5	mg/kg-dry		2		SW6020	06/07/19 01:14 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-006
Client Sample ID: BK1-47-48-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 16:30
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	13.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.03	wt%		0.01		E3.2.6	06/03/19 18:39 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.7	wt%		0.1		Leco	06/03/19 18:39 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	267	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	7810	mg/kg-dry		5		SW6010B	06/04/19 01:07 / eli-b
Calcium	22400	mg/kg-dry		40		SW6010B	06/04/19 01:07 / eli-b
Iron	14200	mg/kg-dry		30		SW6010B	06/04/19 01:07 / eli-b
Magnesium	3500	mg/kg-dry		5		SW6010B	06/04/19 01:07 / eli-b
Manganese	325	mg/kg-dry		1		SW6020	06/01/19 04:04 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 04:04 / eli-b
Potassium	1260	mg/kg-dry		7		SW6010B	06/04/19 01:07 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:04 / eli-b
Silica	1920	mg/kg-dry	J	10		SW6010B	06/04/19 01:07 / eli-b
Sodium	235	mg/kg-dry		10		SW6010B	06/04/19 01:07 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 04:04 / eli-b
Vanadium	13	mg/kg-dry		2		SW6020	06/07/19 01:19 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-007
Client Sample ID: BK1-48.5-49.5-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 17:25
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	11.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:42 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.3	wt%		0.1		Leco	06/03/19 18:42 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	275	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	1640	mg/kg-dry		5		SW6010B	06/04/19 01:11 / eli-b
Calcium	18500	mg/kg-dry		40		SW6010B	06/04/19 01:11 / eli-b
Iron	7740	mg/kg-dry		30		SW6010B	06/04/19 01:11 / eli-b
Magnesium	748	mg/kg-dry		5		SW6010B	06/04/19 01:11 / eli-b
Manganese	272	mg/kg-dry		1		SW6020	06/01/19 04:08 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 04:08 / eli-b
Potassium	317	mg/kg-dry		7		SW6010B	06/04/19 01:11 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:08 / eli-b
Silica	942	mg/kg-dry	J	10		SW6010B	06/04/19 01:11 / eli-b
Sodium	100	mg/kg-dry		10		SW6010B	06/04/19 01:11 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 04:08 / eli-b
Vanadium	8	mg/kg-dry		2		SW6020	06/07/19 01:23 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-008
Client Sample ID: ~~BK1-51-52-052119~~ BK1-51.5-52.5-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 17:50
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	7.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:45 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	1.2	wt%		0.1		Leco	06/03/19 18:45 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	262	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	2500	mg/kg-dry		5		SW6010B	06/04/19 01:16 / eli-b
Calcium	21200	mg/kg-dry		30		SW6010B	06/04/19 01:16 / eli-b
Iron	46300	mg/kg-dry		20		SW6010B	06/04/19 01:16 / eli-b
Magnesium	1090	mg/kg-dry		5		SW6010B	06/04/19 01:16 / eli-b
Manganese	1520	mg/kg-dry		1		SW6020	06/01/19 04:12 / eli-b
Molybdenum	2	mg/kg-dry		1		SW6020	06/01/19 04:12 / eli-b
Potassium	317	mg/kg-dry		6		SW6010B	06/04/19 01:16 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:12 / eli-b
Silica	769	mg/kg-dry	J	10		SW6010B	06/04/19 01:16 / eli-b
Sodium	211	mg/kg-dry		10		SW6010B	06/04/19 01:16 / eli-b
Uranium	2	mg/kg-dry		1		SW6020	06/01/19 04:12 / eli-b
Vanadium	21	mg/kg-dry		2		SW6020	06/07/19 01:27 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-009
Client Sample ID: BK1-52-53-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 18:20
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	18.3	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:49 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	1.0	wt%		0.1		Leco	06/03/19 18:49 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	294	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	10800	mg/kg-dry		5		SW6010B	06/04/19 01:20 / eli-b
Calcium	32700	mg/kg-dry		40		SW6010B	06/04/19 01:20 / eli-b
Iron	17500	mg/kg-dry		30		SW6010B	06/04/19 01:20 / eli-b
Magnesium	4010	mg/kg-dry		5		SW6010B	06/04/19 01:20 / eli-b
Manganese	406	mg/kg-dry		1		SW6020	06/01/19 04:16 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 04:16 / eli-b
Potassium	1780	mg/kg-dry		7		SW6010B	06/04/19 01:20 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:16 / eli-b
Silica	2170	mg/kg-dry	J	10		SW6010B	06/04/19 01:20 / eli-b
Sodium	347	mg/kg-dry		10		SW6010B	06/04/19 01:20 / eli-b
Uranium	2	mg/kg-dry		1		SW6020	06/01/19 04:16 / eli-b
Vanadium	18	mg/kg-dry		2		SW6020	06/07/19 01:47 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-010
Client Sample ID: BK1-55.5-56.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 08:55
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	13.8	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.01	wt%		0.01		E3.2.6	06/03/19 18:52 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.8	wt%		0.1		Leco	06/03/19 18:52 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	268	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	20000	mg/kg-dry		5		SW6010B	06/04/19 01:25 / eli-b
Calcium	24100	mg/kg-dry		40		SW6010B	06/04/19 01:25 / eli-b
Iron	14100	mg/kg-dry		20		SW6010B	06/04/19 01:25 / eli-b
Magnesium	8750	mg/kg-dry		5		SW6010B	06/04/19 01:25 / eli-b
Manganese	550	mg/kg-dry		1		SW6020	06/01/19 04:20 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 04:20 / eli-b
Potassium	1810	mg/kg-dry		7		SW6010B	06/04/19 01:25 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:20 / eli-b
Silica	2110	mg/kg-dry	J	10		SW6010B	06/04/19 01:25 / eli-b
Sodium	328	mg/kg-dry		10		SW6010B	06/04/19 01:25 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 04:20 / eli-b
Vanadium	22	mg/kg-dry		2		SW6020	06/07/19 01:51 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-011
Client Sample ID: DUP

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: Not Provided
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	8.5	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 17:36 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.4	wt%		0.1		Leco	06/03/19 17:36 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	288	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	1720	mg/kg-dry		5		SW6010B	06/04/19 01:29 / eli-b
Calcium	10100	mg/kg-dry	J	30		SW6010B	06/04/19 01:29 / eli-b
Iron	7390	mg/kg-dry		10		SW6020	06/01/19 04:41 / eli-b
Magnesium	672	mg/kg-dry		5		SW6010B	06/04/19 01:29 / eli-b
Manganese	144	mg/kg-dry		1		SW6020	06/01/19 04:41 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 04:41 / eli-b
Potassium	331	mg/kg-dry		6		SW6010B	06/04/19 01:29 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:41 / eli-b
Silica	889	mg/kg-dry	J	10		SW6010B	06/04/19 01:29 / eli-b
Sodium	118	mg/kg-dry		10		SW6010B	06/04/19 01:29 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 04:41 / eli-b
Vanadium	7	mg/kg-dry		5		SW6020	06/01/19 04:41 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-012
Client Sample ID: DUP-2

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: Not Provided
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	1.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.6	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 17:40 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.2	wt%		0.1		Leco	06/03/19 17:40 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	237	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	1680	mg/kg-dry		5		SW6010B	06/04/19 01:34 / eli-b
Calcium	6470	mg/kg-dry		30		SW6010B	06/04/19 01:34 / eli-b
Iron	3950	mg/kg-dry		10		SW6020	06/01/19 04:45 / eli-b
Magnesium	521	mg/kg-dry		10		SW6020	06/01/19 04:45 / eli-b
Manganese	87	mg/kg-dry		1		SW6020	06/01/19 04:45 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 04:45 / eli-b
Potassium	386	mg/kg-dry		30		SW6020	06/01/19 04:45 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:45 / eli-b
Silica	601	mg/kg-dry	J	30		SW6020	06/01/19 04:45 / eli-b
Sodium	115	mg/kg-dry		10		SW6010B	06/04/19 01:34 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 04:45 / eli-b
Vanadium	<5	mg/kg-dry		5		SW6020	06/01/19 04:45 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

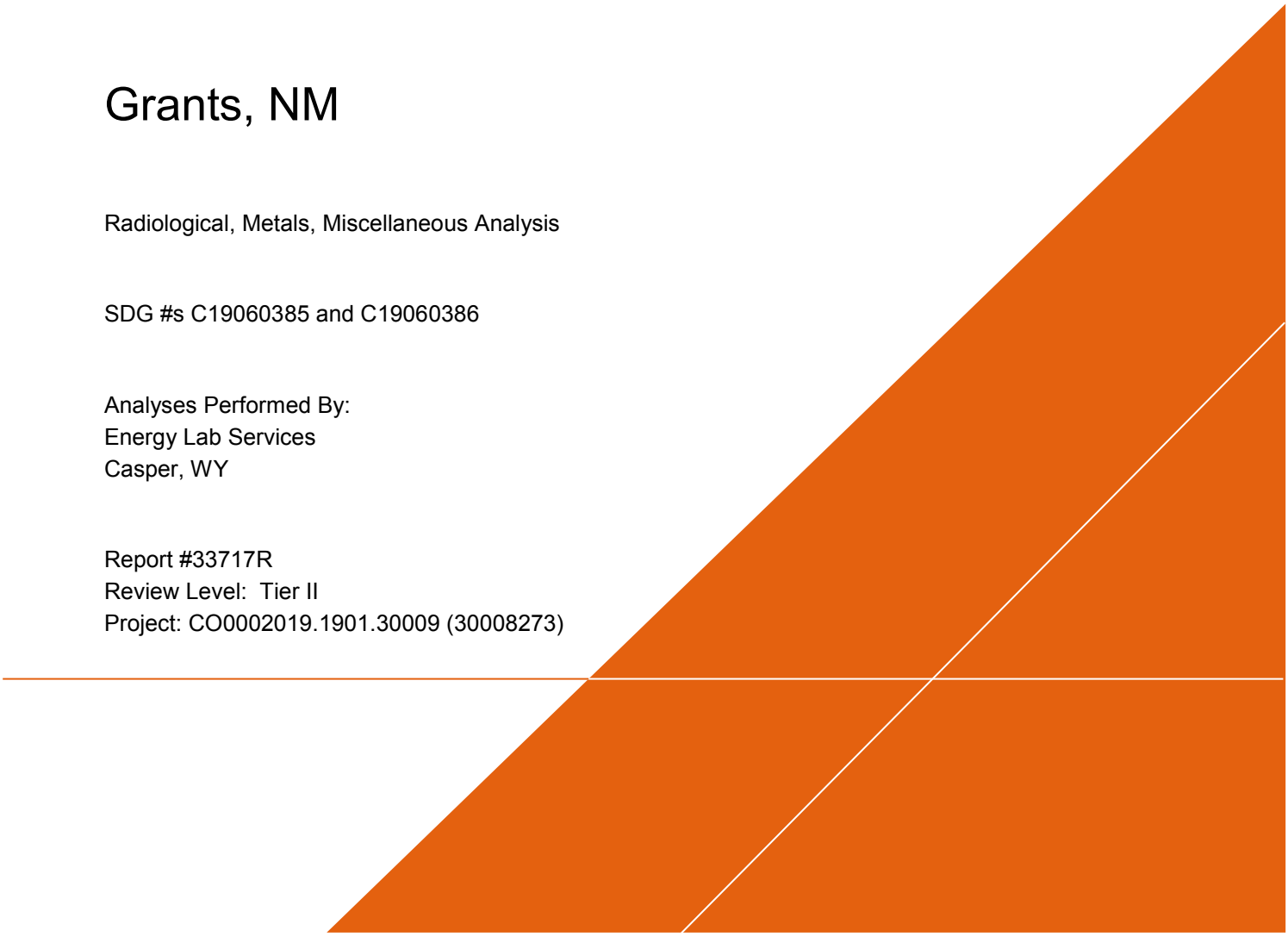
Grants, NM

Radiological, Metals, Miscellaneous Analysis

SDG #s C19060385 and C19060386

Analyses Performed By:
Energy Lab Services
Casper, WY

Report #33717R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) #s C19060385 and C19060386 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						RAD	SVOC	PCB	MET	MISC
C19060385	BK1f	C19060385-1	Water	06/10/19		X			X	X
	BK1c	C19060385-2	Water	06/10/19		X			X	X
C19060386	BK2F	C19060386-1	Water	06/10/19					X	X
	BK2C	C19060386-2	Water	06/10/19					X	X
	GW-DUP	C19060386-3	Water	06/10/19	BK2C				X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

RADIONUCLIDE ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method EPA 908. Data were reviewed in accordance with the methods, as well as in accordance with United States Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Method Data Review (NFGI [EPA, 2016]) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the Radiological review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the MARLAP and USACE Guidelines:

- Validation Qualifiers

U	A normal, not detected (<critical value) result. JAn unusually uncertain or estimated result. Indicates the analyte is present, but the reported value may not be accurate or precise because the associated quality assurance was unacceptable.
J	The analyte was detected above the detection limit and below the reporting limit. The reported concentration is an estimated value.
UJ	The associated minimum detectable concentration (MDC) or minimum detectable activity (MDA) is estimated.
R	A rejected result; the data are unacceptable. The problems (quantitative or qualitative) are major, that the data cannot be used.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the isotope is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no isotope concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains an undefined error.

RADIOLOGICAL ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA Method 908	Water	180 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and field/rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field/rinse blanks measure contamination of samples during field operations.

Blank results should be verified to be accurately reported and that tolerance limits (+/- 2 sigma or standard deviation) were not exceeded; and, blank results verified to be less than the reporting limit (RL) of 1 pCi/L.

For blanks to be considered not applicable, verify net blank results are less than the associated uncertainty by evaluating the blank results based on the following three criteria. If either of these criteria is true, the blank is considered not suspect of contamination (or non-detect).

1. Blank result is less than the uncertainty and less than the minimum detectable concentration (MDC) [Or minimum detectable activity (MDA)]; or,
2. Blank has an uncertainty greater than the result (or indistinguishable from background) or blank result falls between its uncertainty and its MDC; or,
3. Blank result is greater than the uncertainty, and also greater than the MDC. If this is the case, verify that the net blank result is less than 1.65 times the associated uncertainty. (Contamination shall be suspected when the net blank result is larger than the 1.65 times the associated uncertainty.)

If the blank QC results fall outside the appropriate tolerance limits or if the net blank results are not less than the associated uncertainty, the following equation for normalized absolute difference (NAD) should be used in determining the effect of possible blank contamination on the sample results:

$$Normalized\ absolute\ difference_{MethodBlank} = \frac{|\ Sample - Blank\ |}{\sqrt{(U_{Sample})^2 + (U_{Blank})^2}}$$

Where:

U_{Sample} = uncertainty of the sample

U_{Blank} = uncertainty of the blank

Sample = concentration of isotope in sample

Blank = concentration of isotope in blank

Normalized Absolute Difference	Qualification
> 2.58	None
1.96 > x < 2.58	J
x < 1.96	J*

* = Minimally the result should be qualified as estimated, J; however, if other quality indicators are deficient the validator may determine the result should be qualified as rejected, R

Utilization of a +/- 2 sigma combined standard uncertainty (CSU) is the tolerance limit. The blank results were < the uncertainty and the MDC, and the tolerance limits were not exceeded in the blank.

3. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

MS samples are not typically analyzed for gamma spectral content due to the inability of the laboratory to homogenize spike material with the sample.

If performed, the spike analysis must exhibit a percent recovery within the control limits of 70% to 130%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits.

In the event the recovery is outside of this limit, a numerical indicator to make assessments is calculated, with a limit of < +/- 3 sigma for either.

The numerical performance indicator for a matrix spike sample is calculated by:

$$Z_{MS} = \frac{x - x_0 - c}{\sqrt{u^2(x) + u^2(x_0) + u^2(c)}}$$

Where:
x = measured concentration of the spiked sample.
x_0 = measured concentration of the unspiked sample.
c = spike concentration added.
$u^2(x)$, $u^2(x0)$, $u^2(c)$ = the squares of the respective standard uncertainties of these values.

MS performance for all matrices is acceptable when the numerical performance indicator calculation yields a value between +/-3 sigma. Warning limits have been established as +/- 2 sigma.

The MS/MSD performed on sample BK1f exhibited recoveries and RPD within the laboratory control limits.

3.2 Laboratory Duplicate Analysis

Duplicate analyses are indicators of laboratory precision based on each sample matrix. For replicate analysis results to be considered in agreement the duplicate error ratio (DER) must be less than 2.13. In

the event the DER is outside of the limit of 2.13, a numerical indicator to make assessments is calculated, with a limit of +/- 3 sigma or standard deviation.

The numerical performance indicator for laboratory duplicates is calculated by:

$$Z_{Dup} = \frac{x_1 - x_2}{\sqrt{u^2(x_1) + u^2(x_2)}}$$

Where:
x_1, x_2 = two measured activity concentrations.
$u^2(x_1)$, $u^2(x_2)$ = the combined standard uncertainty of each measurement squared.

Duplicate sample performance is acceptable when the numerical performance indicator calculation yields a value between +/- 3 sigma. Warning limits have been established as +/- 2 sigma.

A MS/MSD analysis was performed in place of the laboratory duplicate.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. There are no specific review criteria for radiological field replicate analyses comparability. The degree of agreement between these replicates is to be used in conjunction with all of the remaining quality control results as an aid in the decision as to the overall quality of the data. Data are not to be qualified due to field replicates alone. To determine the level of agreement between the replicates, the following guidelines have been established:

For all analyses in soil matrices, data should be considered in agreement if results are within a factor of four of each other. Data between a factor of four and five of each other should be considered as a minor discrepancy and data greater than a factor of five should be considered a major discrepancy.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
BK2C / GW-DUP	Uranium 234	10.2	10.7	AC
	Uranium 235	0.4	0.3	AC
	Uranium 238	7.1	7.0	AC

Notes:

AC = Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

5. Tracer or Carrier (Surrogate)

Tracers and carriers are not used in radiological gamma spectroscopy analysis.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery

between the control limits of 85% to 115%. In the event the recovery is outside of this limit, a numerical indicator to make assessments is calculated, with a limit of +/- 3 sigma.

The numerical performance indicator for a laboratory control sample is calculated

by:

$$Z_{LCS} = \frac{x - c}{\sqrt{u^2(x) + u^2(c)}}$$

Where:
x = Analytical result of the LCS
c = Known concentration of the LCS
$u^2(x)$ = combined standard uncertainty of the result squared.
$u^2(c)$ = combined standard uncertainty of the LCS value squared.

LCS performance is acceptable when the numerical performance indicator calculation yields a value between +/- 3 sigma. Warning limits have been established as +/- 2 sigma.

The LCS analysis exhibited a recovery within the control limits.

7. Isotope Identification

For sample results to be considered “non-detect”, evaluate data based on the following two criteria. If either one of these criteria is true, the sample result is considered “non-detect”.

1. Sample result is less than the uncertainty and less than the MDC/MDA; or
2. Sample has an uncertainty greater than the result (or indistinguishable from background) or result falls between its uncertainty and its MDC/MDA.

Based on the above criteria none of the sample results were determined as non-detect.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR RADIOLOGICALS

RADIOLOGICALS; EPA 908.0	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Gamma Spectroscopy					
Tier II Validation					
Holding Times		X		X	
Activity, +/- uncertainty, MDC/MDA		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Carrier (Surrogate) %R	X				X
Tracer (Surrogate) %R	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate (LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 300.0, ASTM 5310, 353.2, ASTM 4500, 350.1 and 365.1 Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW846-6010	Water	180 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.
SW846-6020	Water	180 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were non-detect. No other qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a

factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MSRecovery	MSDRecovery
BK2F	Selenium	119%	210%
GW-DUP	Selenium (D)	56%	61%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
BK2F	Iron

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the

parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in place of the laboratory duplicate.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

All serial dilutions were within control limits, with the exception of the analytes presented in the following table. The sample locations associated with the deviant %D are also presented in the following table.

Sample Locations	Analytes	Serial Dilution (%D)
GW-DUP	Selenium (D)	12%

The criteria used to evaluate the serial dilution are presented in the following table. In the case of a serial dilution deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> 10%	Non-detect	UJ
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
BK2C / GW-DUP	Calcium	248	248	0.0%
	Magnesium	42	42	0.0%
	Potassium	5	5	0.0%
	Silica	17.4	17.4	0.0%
	Manganese (D)	0.26	0.25	3.9%
	Molybdenum (D)	0.008	0.007	13.3%
	Selenium (D)	0.318	0.365	13.8%
	Uranium (D)	0.0212	0.0210	0.9%

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
BK2C / GW-DUP	Calcium	259	260	0.4%
	Iron	0.05	0.03 U	AC
	Magnesium	43	44	2.3%
	Manganese	0.27	0.27	0.0%
	Molybdenum	0.008	0.008	0.0%
	Potassium	5	5	0.0%
	Selenium	0.323	0.324	0.3%
	Silica	19.1	19.2	0.5%
	Sodium	290	294	1.4%
	Uranium	0.0219	0.0218	0.5%

Notes:

AC = Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. General Assessment – Total vs. Dissolved

When the dissolved concentration exceeded the associated total concentration, and both results were five times greater than the LOQ, then the %D between the total and dissolved concentrations must be less than 10%.

The calculated %D between the total and the dissolved sample results were within the control limit, with the exception of the analytes presented in the following table.

Sample Location	Analytes	%D
BK1f	Selenium	19.35%
	Uranium	23.4%

The criteria used to evaluate total and dissolved %D are presented in the following table. In the case of a total and dissolved %D deviation, the sample results are qualified. The qualifications are applied to the associated total and dissolved sample results associated with the sample location referenced above.

Sample Concentration	Control Limit	Sample Result	Qualification
Dissolved sample concentration > total sample concentration and > 5x RL	>10%	Non-detect	UJ
		Detect	J
Dissolved sample concentration > total sample concentration and > 5x RL	>50%	Non-detect	R
		Detect	R

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW-846 6010/6020	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Atomic Absorption – Manual Cold Vapor (CV)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X		X	
B. Method Blanks		X	X		
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X		X	
ICP Serial Dilution %D		X	X		
Total vs. Dissolved		X	X		
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Ammonia by EPA 350.1	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.
Nitrite by SM4500	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.
Alkalinity by SM 2320B	Water	14 days from collection to analysis	Cool to <6 °C.
Chloride/Fluoride/Sulfate by EPA 300.0	Water	28 days from collection to analysis	Cool to <6 °C
Nitrate-N by EPA 353.2	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.
DOC/TOC by SM5310C	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.
Phosphorous by EPA 365.1	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD performed on sample BK1f for TOC exhibited recoveries and RPD within the control limits.

The MS/MSD performed on samples GW-DUP and BK2F exhibited recoveries and RPDs within the control limits.

5. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate sample results exhibited RPD within the control limit.

The calculated RPDs between the parent sample and field duplicate were acceptable

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
BK2C / GW-DUP	Alkalinity	155	152	2.0%
	Chloride	53	53	0.0%
	Fluoride	0.5	0.5	AC
	Sulfate	1130	1120	0.9%
	DOC	1.6	1.5	AC
	TOC	1.4	1.4	AC
	Nitrate	10.8	10.8	0.0%
	Nitrite	0.04	0.02	AC
	Nitrate/Nitrite	10.8	10.8	0.0%
	Ammonia	0.06	0.06	AC
	Ammonium	0.07	0.07	AC
	Phosphorous	0.008	0.007	AC

Notes:

AC = Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and SM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content	X				X
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

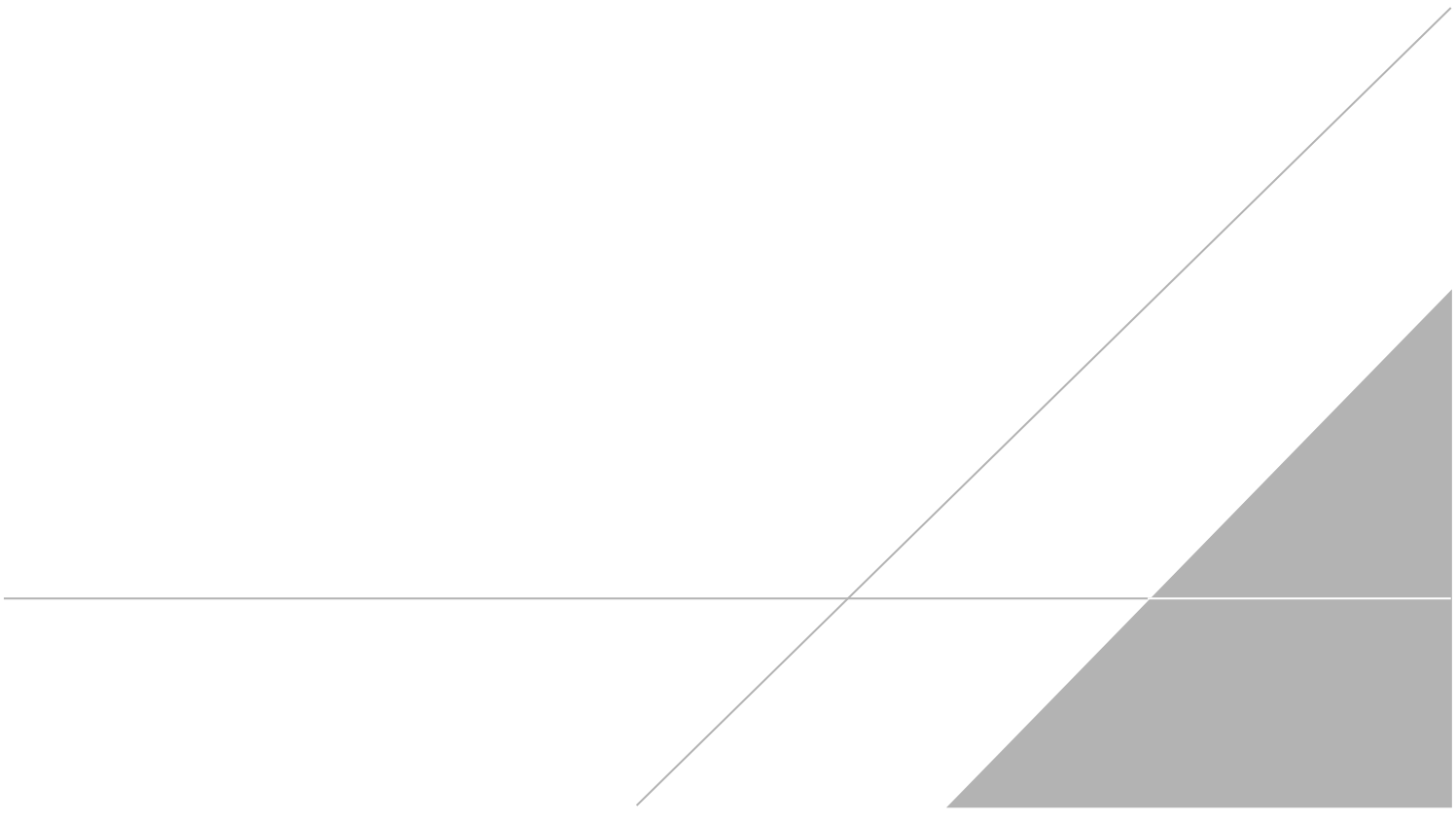
DATE: August 7, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 7, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



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Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

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Page _____ of _____

Account Information (Billing information)

Company/Name	Honeywell Mining Company of California
Contact	Adam Arguello
Phone	505 285 1041
Mailing Address	PO Box 98
City, State, Zip	Grants, NM 87020
Email	aarguello@bmrc.com
Receive Invoice	☒ Hard Copy ☒ Email
Receive Report	☒ Hard Copy ☒ Email
Purchase Order	
Quote	5573
Bottle Order	58275

Report Information (if different than Account Information)

Company/Name	Shannon Ulrich
Contact	Arcadis
Phone	865 771 2347
Mailing Address	11001 W. 120th Ave Suite 200
City, State, Zip	Broomfield, CO 80021
Email	shannon.ulrich@arcadis.com
Receive Report	☐ Hard Copy ☒ Email
Special Report/Formats:	☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

Comments

Project Information

Project Name, PWSID, Permit, etc.	Grants
Sampler Name	Adam Arguello
Sampler Phone	5052851041
Sample Origin State	NM
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type.
☒ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

Analysis Requested

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Field pH	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	BKIf	6/10/19	922	8	W	7.88	X		C19060385
2	BKIc	6/10/19	1148	8	W	7.83	X		
3									
4									
5									
6									
7									
8									
9									
10									

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Adam Arguello	6/10/19 1700				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Mario Martinez	6/11/19 1500	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060385-001
Client Sample ID: BK1f

Revised Date: 06/27/19
Report Date: 06/26/19
Collection Date: 06/10/19 09:22
Date Received: 06/11/19
Matrix: Aqueous

Analyses		Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS								
175	Alkalinity, Total as CaCO3	253	mg/L		5		A2320 B	06/12/19 18:12 / dmb
206	Carbonate as CO3	<5	mg/L		5		A2320 B	06/12/19 18:12 / dmb
505	Bicarbonate as HCO3	309	mg/L		5		A2320 B	06/12/19 18:12 / dmb
007	Chloride	70	mg/L		1		E300.0	06/17/19 18:42 / ljl
031	Fluoride	0.3	mg/L		0.1		E300.0	06/17/19 18:42 / ljl
108	Sulfate	1380	mg/L	D	4		E300.0	06/13/19 17:18 / ljl
	Calcium	330	mg/L		1		SW6010B	06/13/19 16:59 / eli-b
	Magnesium	82	mg/L		1		SW6010B	06/13/19 16:59 / eli-b
003	Potassium	5	mg/L		1		SW6010B	06/13/19 16:59 / eli-b
	Silica	21.5	mg/L	D	0.7		SW6010B	06/13/19 16:59 / eli-b
004	Sodium	276	mg/L		1		SW6010B	06/13/19 16:59 / eli-b
NON-METALS								
072	Organic Carbon, Dissolved (DOC)	1.9	mg/L		0.5		A5310 C	06/18/19 04:51 / kjp
172	Organic Carbon, Total (TOC)	1.8	mg/L		0.5		A5310 C	06/17/19 13:33 / kjp
NUTRIENTS								
139	Nitrogen, Nitrate as N	11.1	mg/L	D	0.1		E353.2	06/14/19 11:42 / tjp
150	Nitrogen, Nitrite as N	0.3	mg/L	D	0.1		A4500-NO2 B	06/11/19 16:15 / kjp
310	Nitrogen, Nitrate+Nitrite as N	11.4	mg/L	D	0.05		E353.2	06/12/19 15:02 / dmb
	Nitrogen, Ammonia as N	<0.05	mg/L		0.05		E350.1	06/14/19 13:32 / dmb
	Nitrogen, Ammonium	<0.06	mg/L		0.06		E350.1	06/14/19 13:32 / dmb
152	Phosphate, Total	0.05	mg/L		0.03		Calculation	06/21/19 14:47 / sec
146	Phosphorus, Total as P	0.016	mg/L		0.005		E365.1	06/18/19 09:40 / dmb
METALS, DISSOLVED								
022	Aluminum	<0.03	mg/L		0.03		SW6020	06/15/19 00:08 / eli-b
	Iron	0.03	mg/L		0.02		SW6020	06/19/19 00:32 / eli-b
	Manganese	0.024	mg/L		0.001		SW6020	06/15/19 00:08 / eli-b
	Molybdenum	0.001	mg/L		0.001		SW6020	06/15/19 00:08 / eli-b
040	Selenium	0.251	mg/L	J D	0.004		SW6020	06/21/19 19:03 / eli-b
015	Uranium	0.0402	mg/L	J	0.0003		SW6020	06/19/19 00:32 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/15/19 00:08 / eli-b
METALS, TOTAL								
	Aluminum	0.04	mg/L		0.03		SW6020	06/21/19 19:12 / eli-b
	Calcium	339	mg/L		1		SW6010B	06/17/19 23:43 / eli-b
	Iron	<0.03	mg/L	D	0.03		SW6020	06/18/19 05:53 / eli-b
	Magnesium	84	mg/L		1		SW6010B	06/17/19 23:43 / eli-b
	Manganese	0.022	mg/L		0.001		SW6020	06/18/19 05:53 / eli-b
	Molybdenum	0.030	mg/L		0.001		SW6020	06/21/19 19:12 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060385-001
Client Sample ID: BK1f

Revised Date: 06/27/19
Report Date: 06/26/19
Collection Date: 06/10/19 09:22
Date Received: 06/11/19
Matrix: Aqueous

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL							
103 Potassium	5	mg/L		1		SW6010B	06/17/19 23:43 / eli-b
140 Selenium	0.207	mg/L	J D	0.005		SW6020	06/21/19 19:12 / eli-b
Silica	23.1	mg/L	D	0.4		SW6010B	06/17/19 23:43 / eli-b
104 Sodium	308	mg/L	D	2		SW6010B	06/17/19 23:43 / eli-b
115 Uranium	0.0366	mg/L	J D	0.0004		SW6020	06/18/19 05:53 / eli-b
Vanadium	<0.01	mg/L		0.01		SW6020	06/18/19 05:53 / eli-b
RADIONUCLIDES, TOTAL							
Uranium 234	16.5	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 234 precision (±)	3.2	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 234 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235	0.5	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235 precision (±)	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238	13.0	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238 precision (±)	2.5	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
109 Field pH	7.88	s.u.				FIELD	06/10/19 09:22 / ***

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Revised Date: 06/27/19
Report Date: 06/26/19
Collection Date: 06/10/19 11:48
Date Received: 06/11/19
Matrix: Aqueous

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060385-002
Client Sample ID: BK1c

	Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS								
175	Alkalinity, Total as CaCO3	246	mg/L		5		A2320 B	06/12/19 18:20 / dmb
206	Carbonate as CO3	<5	mg/L		5		A2320 B	06/12/19 18:20 / dmb
505	Bicarbonate as HCO3	300	mg/L		5		A2320 B	06/12/19 18:20 / dmb
007	Chloride	69	mg/L		1		E300.0	06/17/19 19:02 / ljl
031	Fluoride	0.3	mg/L		0.1		E300.0	06/17/19 19:02 / ljl
108	Sulfate	1410	mg/L	D	4		E300.0	06/13/19 17:37 / ljl
	Calcium	345	mg/L		1		SW6010B	06/13/19 17:03 / eli-b
	Magnesium	85	mg/L		1		SW6010B	06/13/19 17:03 / eli-b
003	Potassium	5	mg/L		1		SW6010B	06/13/19 17:03 / eli-b
	Silica	20.5	mg/L	D	0.7		SW6010B	06/13/19 17:03 / eli-b
004	Sodium	272	mg/L		1		SW6010B	06/13/19 17:03 / eli-b
NON-METALS								
072	Organic Carbon, Dissolved (DOC)	1.9	mg/L		0.5		A5310 C	06/18/19 05:42 / kjp
172	Organic Carbon, Total (TOC)	1.9	mg/L		0.5		A5310 C	06/17/19 14:25 / kjp
NUTRIENTS								
139	Nitrogen, Nitrate as N	11.0	mg/L	D	0.05		E353.2	06/14/19 11:42 / tjp
150	Nitrogen, Nitrite as N	0.13	mg/L	D	0.05		A4500-NO2 B	06/11/19 16:15 / kjp
310	Nitrogen, Nitrate+Nitrite as N	11.2	mg/L	D	0.05		E353.2	06/12/19 15:03 / dmb
	Nitrogen, Ammonia as N	0.06	mg/L		0.05		E350.1	06/14/19 13:33 / dmb
	Nitrogen, Ammonium	0.08	mg/L		0.06		E350.1	06/14/19 13:33 / dmb
152	Phosphate, Total	0.04	mg/L		0.03		Calculation	06/21/19 14:47 / sec
146	Phosphorus, Total as P	0.012	mg/L		0.005		E365.1	06/18/19 09:42 / dmb
METALS, DISSOLVED								
022	Aluminum	<0.03	mg/L		0.03		SW6020	06/15/19 00:12 / eli-b
	Iron	<0.02	mg/L		0.02		SW6020	06/19/19 00:36 / eli-b
	Manganese	0.56	mg/L	D	0.01		SW6010B	06/13/19 17:03 / eli-b
	Molybdenum	0.004	mg/L		0.001		SW6020	06/15/19 00:12 / eli-b
040	Selenium	0.245	mg/L	D	0.004		SW6020	06/21/19 19:07 / eli-b
015	Uranium	0.0353	mg/L		0.0003		SW6020	06/19/19 00:36 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/15/19 00:12 / eli-b
METALS, TOTAL								
	Aluminum	0.09	mg/L		0.03		SW6020	06/21/19 19:17 / eli-b
	Calcium	349	mg/L		1		SW6010B	06/17/19 23:47 / eli-b
	Iron	0.04	mg/L	D	0.03		SW6020	06/18/19 05:57 / eli-b
	Magnesium	87	mg/L		1		SW6010B	06/17/19 23:47 / eli-b
	Manganese	0.55	mg/L	D	0.01		SW6010B	06/17/19 23:47 / eli-b
	Molybdenum	0.034	mg/L		0.001		SW6020	06/21/19 19:17 / eli-b

Report Definitions:
RL - Analyte reporting limit.
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ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060385-002
Client Sample ID: BK1c

Revised Date: 06/27/19
Report Date: 06/26/19
Collection Date: 06/10/19 11:48
Date Received: 06/11/19
Matrix: Aqueous

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL							
103 Potassium	5	mg/L		1		SW6010B	06/17/19 23:47 / eli-b
140 Selenium	0.225	mg/L	D	0.005		SW6020	06/21/19 19:17 / eli-b
Silica	22.3	mg/L	D	0.4		SW6010B	06/17/19 23:47 / eli-b
104 Sodium	300	mg/L	D	2		SW6010B	06/17/19 23:47 / eli-b
115 Uranium	0.0319	mg/L	D	0.0004		SW6020	06/18/19 05:57 / eli-b
Vanadium	<0.01	mg/L		0.01		SW6020	06/18/19 05:57 / eli-b
RADIONUCLIDES, TOTAL							
Uranium 234	14.9	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 234 precision (±)	2.9	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 234 MDC	0.4	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235	0.7	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235 precision (±)	0.3	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235 MDC	0.3	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238	11.4	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238 precision (±)	2.2	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
109 Field pH	7.83	s.u.				FIELD	06/10/19 11:48 / ***

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

ENERGY
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Page _____ of _____

Account Information (Billing information)

Company/Name	Homestake Mining Company of California
Contact	Adam Arguello
Phone	505 285 1041
Mailing Address	PO Box 90
City, State, Zip	Grants NM 87020
Email	arguello@bamick.com
Receive Invoice	☒ Hard Copy ☒ Email
Receive Report	☒ Hard Copy ☒ Email
Purchase Order	
Quote	5573
Bottle Order	58275

Report Information (if different than Account Information)

Company/Name	Arcadis
Contact	Shannon Ulrich
Phone	303 471 3465
Mailing Address	11001 W. 120th Ave. Suite 200
City, State, Zip	Broomfield CO 80021
Email	shannon.ulrich@arcadis.com
Receive Report	☐ Hard Copy ☒ Email

Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	Grants
Sampler Name	Adam Arguello
Sampler Phone	505 285 1041
Sample Origin State	NM
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type.
☒ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Field pH	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	BK2f	6/10/19	1335	8	W	8.13	X		C19061038-6
2	BK2c	6/10/19	1520	8	W	8.12	X		
3	GW-DUP	6/10/19	1530	8	W	8.12	X		
4									
5									
6									
7									
8									
9									
10									

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Adam Arguello	6/10/19 1700				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print) MARK TRAVER	Date/Time 6/11/19 1130	Signature

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060386-001
Client Sample ID: BK2F

Report Date: 07/02/19
Collection Date: 06/10/19 13:35
Date Received: 06/11/19
Matrix: Aqueous

Analyses		Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS								
175	Alkalinity, Total as CaCO3	191	mg/L		5		A2320 B	06/12/19 18:28 / dmb
206	Carbonate as CO3	<5	mg/L		5		A2320 B	06/12/19 18:28 / dmb
505	Bicarbonate as HCO3	233	mg/L		5		A2320 B	06/12/19 18:28 / dmb
007	Chloride	47	mg/L		1		E300.0	06/13/19 17:56 / ljl
031	Fluoride	0.5	mg/L	D	0.2		E300.0	06/13/19 17:56 / ljl
108	Sulfate	878	mg/L	D	2		E300.0	06/13/19 17:56 / ljl
	Calcium	174	mg/L		1		SW6010B	06/13/19 16:27 / eli-b
	Magnesium	33	mg/L		1		SW6010B	06/13/19 16:27 / eli-b
003	Potassium	4	mg/L		1		SW6010B	06/13/19 16:27 / eli-b
	Silica	16.6	mg/L	D	0.7		SW6010B	06/13/19 16:27 / eli-b
004	Sodium	242	mg/L		1		SW6010B	06/13/19 16:27 / eli-b
NON-METALS								
072	Organic Carbon, Dissolved (DOC)	1.3	mg/L		0.5		A5310 C	06/18/19 06:02 / kjp
NUTRIENTS								
139	Nitrogen, Nitrate as N	1.36	mg/L		0.01		E353.2	06/14/19 11:42 / tjp
150	Nitrogen, Nitrite as N	0.02	mg/L		0.01		A4500-NO2 B	06/11/19 16:15 / kjp
310	Nitrogen, Nitrate+Nitrite as N	1.38	mg/L		0.01		E353.2	06/12/19 15:07 / dmb
	Nitrogen, Ammonia as N	0.06	mg/L		0.05		E350.1	06/14/19 13:35 / dmb
	Nitrogen, Ammonium	0.08	mg/L		0.06		E350.1	06/14/19 13:35 / dmb
152	Phosphate, Total	0.04	mg/L		0.03		Calculation	06/21/19 14:47 / sec
146	Phosphorus, Total as P	0.014	mg/L		0.005		E365.1	06/18/19 09:43 / dmb
METALS, DISSOLVED								
022	Aluminum	<0.03	mg/L		0.03		SW6020	06/18/19 23:40 / eli-b
	Iron	<0.02	mg/L		0.02		SW6020	06/14/19 23:54 / eli-b
	Manganese	0.38	mg/L	D	0.01		SW6010B	06/13/19 16:27 / eli-b
	Molybdenum	0.006	mg/L		0.001		SW6020	06/14/19 23:54 / eli-b
040	Selenium	0.039	mg/L	J	0.001		SW6020	06/18/19 23:40 / eli-b
015	Uranium	0.0155	mg/L		0.0003		SW6020	06/18/19 23:40 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/14/19 23:54 / eli-b
METALS, TOTAL								
	Aluminum	0.26	mg/L	D	0.06		SW6010B	06/17/19 23:31 / eli-b
	Calcium	182	mg/L		1		SW6010B	06/17/19 23:31 / eli-b
	Iron	0.2	mg/L	J D	0.1		SW6010B	06/17/19 23:31 / eli-b
	Magnesium	34	mg/L		1		SW6010B	06/17/19 23:31 / eli-b
	Manganese	0.41	mg/L	D	0.01		SW6010B	06/17/19 23:31 / eli-b
	Molybdenum	0.006	mg/L		0.001		SW6020	06/25/19 21:41 / eli-b
103	Potassium	4	mg/L		1		SW6010B	06/17/19 23:31 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060386-001
Client Sample ID: BK2F

Report Date: 07/02/19
Collection Date: 06/10/19 13:35
Date Received: 06/11/19
Matrix: Aqueous

Analyses		Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL								
140	Selenium	0.038	mg/L	J	0.001		SW6020	06/25/19 21:41 / eli-b
	Silica	19.0	mg/L	D	0.4		SW6010B	06/17/19 23:31 / eli-b
104	Sodium	265	mg/L	D	2		SW6010B	06/17/19 23:31 / eli-b
115	Uranium	0.0159	mg/L		0.0003		SW6020	06/25/19 21:41 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/18/19 05:40 / eli-b
RADIONUCLIDES, TOTAL								
	Uranium 234	8.7	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 234 precision (±)	1.7	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 234 MDC	0.3	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235	0.3	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235 precision (±)	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238	5.9	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238 precision (±)	1.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060386-002
Client Sample ID: BK2C

Report Date: 07/02/19
Collection Date: 06/10/19 15:20
Date Received: 06/11/19
Matrix: Aqueous

Analyses		Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS								
175	Alkalinity, Total as CaCO3	155	mg/L		5		A2320 B	06/12/19 18:36 / dmb
206	Carbonate as CO3	<5	mg/L		5		A2320 B	06/12/19 18:36 / dmb
505	Bicarbonate as HCO3	189	mg/L		5		A2320 B	06/12/19 18:36 / dmb
007	Chloride	53	mg/L		1		E300.0	06/13/19 18:15 / ljl
031	Fluoride	0.5	mg/L	D	0.2		E300.0	06/13/19 18:15 / ljl
108	Sulfate	1130	mg/L	D	2		E300.0	06/13/19 18:15 / ljl
	Calcium	248	mg/L		1		SW6010B	06/13/19 16:43 / eli-b
	Magnesium	42	mg/L		1		SW6010B	06/13/19 16:43 / eli-b
003	Potassium	5	mg/L		1		SW6010B	06/13/19 16:43 / eli-b
	Silica	17.4	mg/L	D	0.7		SW6010B	06/13/19 16:43 / eli-b
004	Sodium	263	mg/L		1		SW6010B	06/13/19 16:43 / eli-b
NON-METALS								
072	Organic Carbon, Dissolved (DOC)	1.6	mg/L		0.5		A5310 C	06/18/19 06:22 / kjp
172	Organic Carbon, Total (TOC)	1.4	mg/L		0.5		A5310 C	06/17/19 14:44 / kjp
NUTRIENTS								
139	Nitrogen, Nitrate as N	10.8	mg/L	D	0.05		E353.2	06/22/19 17:13 / sec
150	Nitrogen, Nitrite as N	0.04	mg/L		0.01		A4500-NO2 B	06/11/19 16:15 / kjp
310	Nitrogen, Nitrate+Nitrite as N	10.8	mg/L	D	0.05		E353.2	06/14/19 11:03 / dmb
	Nitrogen, Ammonia as N	0.06	mg/L		0.05		E350.1	06/14/19 13:36 / dmb
	Nitrogen, Ammonium	0.07	mg/L		0.06		E350.1	06/14/19 13:36 / dmb
152	Phosphate, Total	<0.03	mg/L		0.03		Calculation	06/21/19 14:47 / sec
146	Phosphorus, Total as P	0.008	mg/L		0.005		E365.1	06/18/19 09:44 / dmb
METALS, DISSOLVED								
022	Aluminum	<0.03	mg/L		0.03		SW6020	06/19/19 00:22 / eli-b
	Iron	<0.02	mg/L		0.02		SW6020	06/19/19 00:22 / eli-b
	Manganese	0.26	mg/L	D	0.01		SW6010B	06/13/19 16:43 / eli-b
	Molybdenum	0.008	mg/L		0.001		SW6020	06/14/19 23:58 / eli-b
040	Selenium	0.318	mg/L	J D	0.004		SW6020	06/21/19 19:26 / eli-b
015	Uranium	0.0212	mg/L		0.0003		SW6020	06/19/19 00:22 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/14/19 23:58 / eli-b
METALS, TOTAL								
	Aluminum	<0.03	mg/L		0.03		SW6020	06/18/19 05:44 / eli-b
	Calcium	259	mg/L		1		SW6010B	06/17/19 23:35 / eli-b
	Iron	0.05	mg/L	J D	0.03		SW6020	06/18/19 05:44 / eli-b
	Magnesium	43	mg/L		1		SW6010B	06/17/19 23:35 / eli-b
	Manganese	0.27	mg/L	D	0.01		SW6010B	06/17/19 23:35 / eli-b
	Molybdenum	0.008	mg/L		0.001		SW6020	06/25/19 21:45 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060386-002
Client Sample ID: BK2C

Report Date: 07/02/19
Collection Date: 06/10/19 15:20
Date Received: 06/11/19
Matrix: Aqueous

Analyses		Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL								
103	Potassium	5	mg/L		1		SW6010B	06/17/19 23:35 / eli-b
140	Selenium	0.323	mg/L	J	0.001		SW6020	06/25/19 21:45 / eli-b
	Silica	19.1	mg/L	D	0.4		SW6010B	06/17/19 23:35 / eli-b
104	Sodium	290	mg/L	D	2		SW6010B	06/17/19 23:35 / eli-b
115	Uranium	0.0219	mg/L		0.0003		SW6020	06/25/19 21:45 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/18/19 05:44 / eli-b
RADIONUCLIDES, TOTAL								
	Uranium 234	10.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 234 precision (±)	2.0	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 234 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235	0.4	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235 precision (±)	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238	7.1	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238 precision (±)	1.4	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060386-003
Client Sample ID: GW-DUP

Report Date: 07/02/19
Collection Date: 06/10/19 15:30
Date Received: 06/11/19
Matrix: Aqueous

Analyses		Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS								
175	Alkalinity, Total as CaCO3	152	mg/L		5		A2320 B	06/12/19 18:43 / dmb
206	Carbonate as CO3	<5	mg/L		5		A2320 B	06/12/19 18:43 / dmb
505	Bicarbonate as HCO3	186	mg/L		5		A2320 B	06/12/19 18:43 / dmb
007	Chloride	53	mg/L		1		E300.0	06/13/19 19:13 / ljl
031	Fluoride	0.5	mg/L	D	0.2		E300.0	06/13/19 19:13 / ljl
108	Sulfate	1120	mg/L	D	2		E300.0	06/13/19 19:13 / ljl
	Calcium	248	mg/L		1		SW6010B	06/13/19 16:47 / eli-b
	Magnesium	42	mg/L		1		SW6010B	06/13/19 16:47 / eli-b
003	Potassium	5	mg/L		1		SW6010B	06/13/19 16:47 / eli-b
	Silica	17.4	mg/L	D	0.7		SW6010B	06/13/19 16:47 / eli-b
004	Sodium	259	mg/L		1		SW6010B	06/13/19 16:47 / eli-b
NON-METALS								
072	Organic Carbon, Dissolved (DOC)	1.5	mg/L		0.5		A5310 C	06/18/19 06:43 / kjp
172	Organic Carbon, Total (TOC)	1.4	mg/L		0.5		A5310 C	06/17/19 15:05 / kjp
NUTRIENTS								
139	Nitrogen, Nitrate as N	10.8	mg/L	D	0.05		E353.2	06/14/19 11:42 / tjp
150	Nitrogen, Nitrite as N	0.02	mg/L		0.01		A4500-NO2 B	06/11/19 16:15 / kjp
310	Nitrogen, Nitrate+Nitrite as N	10.8	mg/L	D	0.05		E353.2	06/12/19 15:12 / dmb
	Nitrogen, Ammonia as N	0.06	mg/L		0.05		E350.1	06/14/19 13:37 / dmb
	Nitrogen, Ammonium	0.07	mg/L		0.06		E350.1	06/14/19 13:37 / dmb
152	Phosphate, Total	<0.03	mg/L		0.03		Calculation	06/21/19 14:47 / sec
146	Phosphorus, Total as P	0.007	mg/L		0.005		E365.1	06/18/19 09:45 / dmb
METALS, DISSOLVED								
022	Aluminum	<0.03	mg/L		0.03		SW6020	06/19/19 00:27 / eli-b
	Iron	<0.02	mg/L		0.02		SW6020	06/19/19 00:27 / eli-b
	Manganese	0.25	mg/L	D	0.01		SW6010B	06/13/19 16:47 / eli-b
	Molybdenum	0.007	mg/L		0.001		SW6020	06/15/19 00:03 / eli-b
040	Selenium	0.365	mg/L	J D	0.004		SW6020	06/21/19 19:31 / eli-b
015	Uranium	0.0210	mg/L		0.0003		SW6020	06/19/19 00:27 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/15/19 00:03 / eli-b
METALS, TOTAL								
	Aluminum	<0.03	mg/L		0.03		SW6020	06/18/19 05:48 / eli-b
	Calcium	260	mg/L		1		SW6010B	06/17/19 23:39 / eli-b
	Iron	<0.03	mg/L	UJ D	0.03		SW6020	06/18/19 05:48 / eli-b
	Magnesium	44	mg/L		1		SW6010B	06/17/19 23:39 / eli-b
	Manganese	0.27	mg/L	D	0.01		SW6010B	06/17/19 23:39 / eli-b
	Molybdenum	0.008	mg/L		0.001		SW6020	06/25/19 21:49 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060386-003
Client Sample ID: GW-DUP

Report Date: 07/02/19
Collection Date: 06/10/19 15:30
Date Received: 06/11/19
Matrix: Aqueous

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL							
103 Potassium	5	mg/L		1		SW6010B	06/17/19 23:39 / eli-b
140 Selenium	0.324	mg/L	J	0.001		SW6020	06/25/19 21:49 / eli-b
Silica	19.2	mg/L	D	0.4		SW6010B	06/17/19 23:39 / eli-b
104 Sodium	294	mg/L	D	2		SW6010B	06/17/19 23:39 / eli-b
115 Uranium	0.0218	mg/L		0.0003		SW6020	06/25/19 21:49 / eli-b
Vanadium	<0.01	mg/L		0.01		SW6020	06/18/19 05:48 / eli-b
RADIONUCLIDES, TOTAL							
Uranium 234	10.7	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 234 precision (±)	2.1	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 234 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235	0.3	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235 precision (±)	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235 MDC	0.1	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238	7.0	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238 precision (±)	1.4	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238 MDC	0.1	pCi/L				E908.0	06/20/19 12:54 / dmf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52539

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33833R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52539 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK1-11.5-12.5	L52539-1	Soil	05/21/19						X
BK1-11.5-12.5-DI	L52539-2	Leach	05/21/19				X		
BK1-11.5-12.5 Step 1	L52539-3	Leach	05/21/19				X		
BK1-11.5-12.5 Step 2	L52539-4	Leach	05/21/19				X		
BK1-11.5-12.5 Step 3	L52539-5	Leach	05/21/19				X		
BK1-11.5-12.5 Step 4	L52539-6	Leach	05/21/19				X		
BK1-11.5-12.5 Step 5	L52539-7	Soil	05/21/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysis	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No other qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations

where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD performed on sample BK1-11.5-12.5 exhibited recoveries and RPDs within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The "O" qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The "O" qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X	X		
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

5 All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

6

Sample Location	Analyte	MS Recovery	MSD Recovery
BK1-11.5-12.5	Alkalinity	AC	144%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to the parent sample result associated with this SDG.

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate performed on sample BK1-11.5-12.5 exhibited an RPD within the control limit.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 19, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L 52539

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts Payable
Company: Arcadis
E-mail: accountspayable.administration@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** Shannon Ulrich

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: custom SSE; contact Tim VanWyngarden
PO#: CO000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

	SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
1.	BK1-11.5-12.5-052119	5-21-19: 1235	SO	1	HOLD
	BK1-15-15.5-052119	5-21-19: 1315	SO	1	HOLD
	BK1-33.5-34-052119	5-21-19: 1350	SO	1	HOLD
	BK1-39-40-052119	5-21-19: 1420	SO	1	HOLD
	BK1-41-41.5-052119	5-21-19: 1600	SO	1	HOLD
	BK1-47-48-052119	5-21-19: 1630	SO	1	HOLD
	BK1-48.5-49.5-052119	5-21-19: 1725	SO	1	HOLD
	BK1-51-52-052119	5-21-19: 1750	SO	1	HOLD
	BK1-52-53-052119	5-21-19: 1820	SO	1	HOLD
	BK1-55.5-56.5-052219	5-22-19: 0855	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary.

Bottle order BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1430	FedEx	5/28/19:1430
			5/29/19 13:21

L52539 Chain of Custod

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK1-11.5-12.5-052119

ACZ Sample ID: ***L52539-01***
Date Sampled: *05/21/19 12:35*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	98.8		*	%	0.1	0.5	06/21/19 11:00	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 8:00	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK1-11.5-12.5-052119-DI

ACZ Sample ID: ***L52539-02***
Date Sampled: *05/21/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.2	J	*	mg/L	0.1	0.5	07/18/19 0:32	jlw
Calcium, dissolved	M200.7 ICP	2	5.0		*	mg/L	0.2	1	07/16/19 14:01	aeh
Iron, dissolved	M200.7 ICP	2	1.34		*	mg/L	0.06	0.2	07/16/19 14:01	aeh
Magnesium, dissolved	M200.7 ICP	2	0.9	J	*	mg/L	0.4	2	07/16/19 14:01	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 14:01	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0012		*	mg/L	0.0004	0.001	07/15/19 11:55	mfm
Potassium, dissolved	M200.7 ICP	2		U	*	mg/L	0.4	2	07/16/19 14:01	aeh
Selenium, dissolved	M200.8 ICP-MS	2		U	*	mg/L	0.0002	0.0005	07/15/19 11:55	mfm
Silicon, dissolved	M200.7 ICP	2	4.8		*	mg/L	0.2	1	07/16/19 14:01	aeh
Sodium, dissolved	M200.7 ICP	2		U	*	mg/L	0.4	2	07/16/19 14:01	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0003	J	*	mg/L	0.0002	0.001	07/15/19 11:55	mfm
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/16/19 14:01	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	20.0 J	~~H~~	*	mg/L	3	20	07/16/19 0:00	emk
~~Carbonate as CaCO3~~		1		R ~~UH~~	*	mg/L	3	20	07/16/19 0:00	emk
~~Hydroxide as CaCO3~~		1		R ~~UH~~	*	mg/L	3	20	07/16/19 0:00	emk
Total Alkalinity		1	20.0	J ~~H~~	*	mg/L	3	20	07/16/19 0:00	emk
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	J ~~BH~~	*	mg/L	0.01	0.05	07/16/19 21:19	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	1.3	J ~~BH~~	*	mg/L	1	5	07/17/19 10:07	ttg

ARCADIS
Project ID:
Sample ID: BK1-11.5-12.5-052119-STEP 1

ACZ Sample ID: ***L52539-03***
Date Sampled: *05/21/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5		U	*	mg/L	0.3	1	07/18/19 0:35	jlw
Calcium, dissolved	M200.7 ICP	5	2.2	J	*	mg/L	0.5	3	07/16/19 14:04	aeh
Iron, dissolved	M200.7 ICP	5	1.5		*	mg/L	0.2	0.4	07/16/19 14:04	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:04	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 14:04	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 11:57	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:04	aeh
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/15/19 11:57	mfm
Silicon, dissolved	M200.7 ICP	5	6.3		*	mg/L	0.5	3	07/16/19 14:04	aeh
Sodium, dissolved	M200.7 ICP	5	367		*	mg/L	1	5	07/16/19 14:04	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0014	J	*	mg/L	0.0005	0.003	07/15/19 11:57	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 14:04	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05 J	~~H~~	*	mg/L	0.01	0.05	07/16/19 21:21	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	1.1 J	~~BH~~	*	mg/L	1	5	07/17/19 10:07	ttg

ARCADIS
Project ID:
Sample ID: BK1-11.5-12.5-052119-STEP 2

ACZ Sample ID: ***L52539-04***
Date Sampled: *05/21/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	1	J	*	mg/L	1	6	07/18/19 0:44	jlw
Calcium, dissolved	M200.7 ICP	25	371		*	mg/L	3	10	07/16/19 14:14	aeh
Iron, dissolved	M200.7 ICP	25	1.6	J	*	mg/L	0.8	2	07/16/19 14:14	aeh
Magnesium, dissolved	M200.7 ICP	25	13	J	*	mg/L	5	30	07/16/19 14:14	aeh
Manganese, dissolved	M200.7 ICP	25	1.6		*	mg/L	0.3	1	07/16/19 14:14	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 13:21	bsu
Potassium, dissolved	M200.7 ICP	25		U	*	mg/L	5	30	07/16/19 14:14	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.002	J	*	mg/L	0.002	0.005	07/16/19 13:21	bsu
Silicon, dissolved	M200.7 ICP	25	5	J	*	mg/L	3	10	07/16/19 14:14	aeh
Sodium, dissolved	M200.7 ICP	25	21400		*	mg/L	5	30	07/16/19 14:14	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.007	J	*	mg/L	0.002	0.01	07/16/19 13:21	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 14:14	aeh

ARCADIS
Project ID:
Sample ID: BK1-11.5-12.5-052119-STEP 3

ACZ Sample ID: ***L52539-05***
Date Sampled: *05/21/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	13		*	mg/L	1	5	07/18/19 0:48	jlw
Calcium, dissolved	M200.7 ICP	20	18		*	mg/L	2	10	07/18/19 0:48	jlw
Iron, dissolved	M200.7 ICP	20	70.1		*	mg/L	0.6	2	07/18/19 0:48	jlw
Magnesium, dissolved	M200.7 ICP	20	11	J	*	mg/L	4	20	07/18/19 0:48	jlw
Manganese, dissolved	M200.7 ICP	20	1.6		*	mg/L	0.2	1	07/18/19 0:48	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.004		*	mg/L	0.001	0.003	07/15/19 12:04	mfm
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/18/19 0:48	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0012		*	mg/L	0.0005	0.001	07/15/19 12:04	mfm
Silicon, dissolved	M200.7 ICP	20	35		*	mg/L	2	10	07/18/19 0:48	jlw
Sodium, dissolved	M200.7 ICP	20	63		*	mg/L	4	20	07/18/19 0:48	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0031		*	mg/L	0.0005	0.003	07/15/19 12:04	mfm
Vanadium, dissolved	M200.7 ICP	20	0.1	J	*	mg/L	0.1	0.5	07/18/19 0:48	jlw

ARCADIS
Project ID:
Sample ID: BK1-11.5-12.5-052119-STEP 4

ACZ Sample ID: ***L52539-06***
Date Sampled: *05/21/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	11.8		*	mg/L	0.3	1	07/18/19 0:51	jlw
Calcium, dissolved	M200.7 ICP	5	2.5	J	*	mg/L	0.5	3	07/16/19 14:20	aeh
Iron, dissolved	M200.7 ICP	5	2.5		*	mg/L	0.2	0.4	07/16/19 14:20	aeh
Magnesium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 14:20	aeh
Manganese, dissolved	M200.7 ICP	5	0.12	J	*	mg/L	0.05	0.3	07/16/19 14:20	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.002	0.005	07/15/19 12:05	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:20	aeh
Selenium, dissolved	M200.8 ICP-MS	10	0.001	J	*	mg/L	0.001	0.003	07/15/19 12:05	mfm
Silicon, dissolved	M200.7 ICP	5	16.6		*	mg/L	0.5	3	07/16/19 14:20	aeh
Sodium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:20	aeh
Uranium, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.001	0.005	07/15/19 12:05	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 14:20	aeh

ARCADIS
Project ID:
Sample ID: BK1-11.5-12.5-052119-STEP 5

ACZ Sample ID: ***L52539-07***
Date Sampled: *05/21/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	19700			mg/Kg	300	1000	07/17/19 6:27	aeh
Calcium, total (3052)	M6010D ICP	5000	700	J		mg/Kg	500	3000	07/17/19 6:27	aeh
Iron, total (3052)	M6010D ICP	5000	3600			mg/Kg	200	400	07/17/19 6:27	aeh
Magnesium, total (3052)	M6010D ICP	5000		U	*	mg/Kg	1000	5000	07/17/19 6:27	aeh
Manganese, total (3052)	M6010D ICP	5000		U		mg/Kg	50	300	07/17/19 6:27	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:42	mfm
Potassium, total (3052)	M6010D ICP	5000	13000			mg/Kg	1000	5000	07/17/19 6:27	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:25	mfm
Silicon, total (3052)	M6010D ICP	5000	421000	J ~~U~~	*	mg/Kg	500	3000	07/17/19 6:27	aeh
Sodium, total (3052)	M6010D ICP	5000	5000		*	mg/Kg	1000	5000	07/17/19 6:27	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:25	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 6:27	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 9:46	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52540

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33834R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52540 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK1-39-40	L52540-1	Soil	05/21/19						X
BK1-39-40-DI	L52540-2	Leach	05/21/19				X		
BK1-39-40 Step 1	L52540-3	Leach	05/21/19				X		
BK1-39-40 Step 2	L52540-4	Leach	05/21/19				X		
BK1-39-40 Step 3	L52540-5	Leach	05/21/19				X		
BK1-39-40 Step 4	L52540-6	Leach	05/21/19				X		
BK1-39-40 Step 5	L52540-7	Soil	05/21/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

All compounds associated with the QA blanks exhibited a concentration less than the MDL, with the exception of the compounds listed in the following table. Sample results associated with QA blank contamination that were greater than the BAL resulted in the removal of the laboratory qualifier (B) of data. Sample results less than the BAL associated with the following sample locations were qualified as listed in the following table.

Sample Locations	Analytes	Sample Result	Qualification
BK1-39-40-DI	Selenium (D)	Detected sample results >RL and <BAL	"UB" at detected sample concentration

Note:

RL Reporting limit

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A site-specific MS/MSD was not included in the data package.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The "O" qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The "O" qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X	X		
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS was not included in the data package.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory was not included in the data package.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 19, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L 52540

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: shannon.ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts Payable
Company: Arcadis
E-mail: accountspayable.administration@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** [signature]

"I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: custom SSE; contact Tim VanWyngarden
PO#: CO0000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK1-11.5-12.5-052119	5-21-19: 1235	SO	1	HOLD
BK1-15-15.5-052119	5-21-19: 1315	SO	1	HOLD
BK1-33.5-34-052119	5-21-19: 1350	SO	1	HOLD
BK1-39-40-052119	5-21-19: 1420	SO	1	HOLD
BK1-41-41.5-052119	5-21-19: 1600	SO	1	HOLD
BK1-47-48-052119	5-21-19: 1630	SO	1	HOLD
BK1-48.5-49.5-052119	5-21-19: 1725	SO	1	HOLD
BK1-51-52-052119	5-21-19: 1750	SO	1	HOLD
BK1-52-53-052119	5-21-19: 1820	SO	1	HOLD
BK1-55.5-56.5-052219	5-22-19: 0855	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

SNW

COPY

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary.

Bottle order BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19: 1430	FedEx	5/28/19: 1430
			5/29/19 13:21

L52540-1907181346

L52540 Chain of Custod

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK1-39-40-052119

ACZ Sample ID: ***L52540-01***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.1		*	%	0.1	0.5	06/21/19 19:54	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 8:38	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK1-39-40-052119-DI

ACZ Sample ID: ***L52540-02***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	1.0		*	mg/L	0.1	0.5	07/18/19 0:54	jlw
Calcium, dissolved	M200.7 ICP	2	7.5		*	mg/L	0.2	1	07/16/19 14:23	aeh
Iron, dissolved	M200.7 ICP	2	1.54		*	mg/L	0.06	0.2	07/16/19 14:23	aeh
Magnesium, dissolved	M200.7 ICP	2	0.8	J	*	mg/L	0.4	2	07/16/19 14:23	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 14:23	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0037		*	mg/L	0.0004	0.001	07/15/19 12:07	mfm
Potassium, dissolved	M200.7 ICP	2	4.1		*	mg/L	0.4	2	07/16/19 14:23	aeh
Selenium, dissolved	M200.8 ICP-MS	2	0.0006	UB	*	mg/L	0.0002	0.0005	07/15/19 12:07	mfm
Silicon, dissolved	M200.7 ICP	2	5.5		*	mg/L	0.2	1	07/16/19 14:23	aeh
Sodium, dissolved	M200.7 ICP	2	4.5		*	mg/L	0.4	2	07/16/19 14:23	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0006	J	*	mg/L	0.0002	0.001	07/15/19 12:07	mfm
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/16/19 14:23	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	33.3	J ~~H~~	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		~~1~~		R ~~UH~~	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		~~1~~		R ~~UH~~	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	33.3	J ~~H~~	*	mg/L	3	20	07/15/19 0:00	enb
~~Phosphorus, ortho dissolved~~	~~M365.1 - Automated Ascorbic Acid~~	~~1~~		R ~~UH~~	*	mg/L	0.01	0.05	07/16/19 21:23	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	7.6	J ~~H~~	*	mg/L	1	5	07/17/19 10:07	ttg

ARCADIS
Project ID:
Sample ID: BK1-39-40-052119-STEP 1

ACZ Sample ID: ***L52540-03***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	1.1		*	mg/L	0.3	1	07/18/19 0:57	jlw
Calcium, dissolved	M200.7 ICP	5	1.6	J	*	mg/L	0.5	3	07/16/19 14:27	aeh
Iron, dissolved	M200.7 ICP	5	2.3		*	mg/L	0.2	0.4	07/16/19 14:27	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:27	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 14:27	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.005		*	mg/L	0.001	0.003	07/15/19 12:09	mfm
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/16/19 14:27	aeh
Selenium, dissolved	M200.8 ICP-MS	5	0.0008	J	*	mg/L	0.0005	0.001	07/15/19 12:09	mfm
Silicon, dissolved	M200.7 ICP	5	7.4		*	mg/L	0.5	3	07/16/19 14:27	aeh
Sodium, dissolved	M200.7 ICP	5	363		*	mg/L	1	5	07/16/19 14:27	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.003		*	mg/L	0.0005	0.003	07/15/19 12:09	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 14:27	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.11 J	~~H~~	*	mg/L	0.01	0.05	07/16/19 21:25	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	3.1 J	~~BH~~	*	mg/L	1	5	07/17/19 10:07	ttg

ARCADIS
Project ID:
Sample ID: BK1-39-40-052119-STEP 2

ACZ Sample ID: ***L52540-04***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	17		*	mg/L	1	6	07/18/19 1:06	jlw
Calcium, dissolved	M200.7 ICP	25	1200		*	mg/L	3	10	07/16/19 14:37	aeh
Iron, dissolved	M200.7 ICP	25	50.8		*	mg/L	0.8	2	07/16/19 14:37	aeh
Magnesium, dissolved	M200.7 ICP	25	24	J	*	mg/L	5	30	07/16/19 14:37	aeh
Manganese, dissolved	M200.7 ICP	25	11.6		*	mg/L	0.3	1	07/16/19 14:37	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20	0.005	J	*	mg/L	0.004	0.01	07/16/19 13:23	bsu
Potassium, dissolved	M200.7 ICP	25	11	J	*	mg/L	5	30	07/16/19 14:37	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/16/19 13:23	bsu
Silicon, dissolved	M200.7 ICP	25	22		*	mg/L	3	10	07/16/19 14:37	aeh
Sodium, dissolved	M200.7 ICP	25	22000		*	mg/L	5	30	07/16/19 14:37	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.015		*	mg/L	0.002	0.01	07/16/19 13:23	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 14:37	aeh

ARCADIS
Project ID:
Sample ID: BK1-39-40-052119-STEP 3

ACZ Sample ID: ***L52540-05***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	33		*	mg/L	1	5	07/18/19 1:09	jlw
Calcium, dissolved	M200.7 ICP	20	39		*	mg/L	2	10	07/18/19 1:09	jlw
Iron, dissolved	M200.7 ICP	20	142		*	mg/L	0.6	2	07/18/19 1:09	jlw
Magnesium, dissolved	M200.7 ICP	20	14	J	*	mg/L	4	20	07/18/19 1:09	jlw
Manganese, dissolved	M200.7 ICP	20	1.7		*	mg/L	0.2	1	07/18/19 1:09	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.025		*	mg/L	0.001	0.003	07/15/19 12:16	mfm
Potassium, dissolved	M200.7 ICP	20	7	J	*	mg/L	4	20	07/18/19 1:09	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0022		*	mg/L	0.0005	0.001	07/15/19 12:16	mfm
Silicon, dissolved	M200.7 ICP	20	38		*	mg/L	2	10	07/18/19 1:09	jlw
Sodium, dissolved	M200.7 ICP	20	68		*	mg/L	4	20	07/18/19 1:09	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0108		*	mg/L	0.0005	0.003	07/15/19 12:16	mfm
Vanadium, dissolved	M200.7 ICP	20		U	*	mg/L	0.1	0.5	07/18/19 1:09	jlw

ARCADIS
Project ID:
Sample ID: BK1-39-40-052119-STEP 4

ACZ Sample ID: ***L52540-06***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	14.8		*	mg/L	0.3	1	07/18/19 1:12	jlw
Calcium, dissolved	M200.7 ICP	5	4.4		*	mg/L	0.5	3	07/16/19 14:43	aeh
Iron, dissolved	M200.7 ICP	5	1.2		*	mg/L	0.2	0.4	07/16/19 14:43	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:43	aeh
Manganese, dissolved	M200.7 ICP	5	0.08	J	*	mg/L	0.05	0.3	07/16/19 14:43	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10	0.035		*	mg/L	0.002	0.005	07/15/19 12:18	mfm
Potassium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 14:43	aeh
Selenium, dissolved	M200.8 ICP-MS	10	0.006		*	mg/L	0.001	0.003	07/15/19 12:18	mfm
Silicon, dissolved	M200.7 ICP	5	23.3		*	mg/L	0.5	3	07/16/19 14:43	aeh
Sodium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/16/19 14:43	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.005	07/15/19 12:18	mfm
Vanadium, dissolved	M200.7 ICP	5	0.04	J	*	mg/L	0.03	0.1	07/16/19 14:43	aeh

ARCADIS
Project ID:
Sample ID: BK1-39-40-052119-STEP 5

ACZ Sample ID: ***L52540-07***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	24100			mg/Kg	300	1000	07/17/19 6:31	aeh
Calcium, total (3052)	M6010D ICP	5000	1800	J		mg/Kg	500	3000	07/17/19 6:31	aeh
Iron, total (3052)	M6010D ICP	5000	10500			mg/Kg	200	400	07/17/19 6:31	aeh
Magnesium, total (3052)	M6010D ICP	5000		U	*	mg/Kg	1000	5000	07/17/19 6:31	aeh
Manganese, total (3052)	M6010D ICP	5000	130	J		mg/Kg	50	300	07/17/19 6:31	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:44	mfm
Potassium, total (3052)	M6010D ICP	5000	15000			mg/Kg	1000	5000	07/17/19 6:31	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:27	mfm
Silicon, total (3052)	M6010D ICP	5000	421000	J ~~U~~	*	mg/Kg	500	3000	07/17/19 6:31	aeh
Sodium, total (3052)	M6010D ICP	5000	10000		*	mg/Kg	1000	5000	07/17/19 6:31	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:27	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 6:31	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 10:17	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52541

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33835R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52541 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK1-47-48	L52541-1	Soil	05/21/19						X
BK1-47-48-DI	L52541-2	Leach	05/21/19				X		
BK1-47-48 Step 1	L52541-3	Leach	05/21/19				X		
BK1-47-48 Step 2	L52541-4	Leach	05/21/19				X		
BK1-47-48 Step 3	L52541-5	Leach	05/21/19				X		
BK1-47-48 Step 4	L52541-6	Leach	05/21/19				X		
BK1-47-48 Step 5	L52541-7	Soil	05/21/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No other qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations

where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD performed on sample BK1-47-48 STEP 3 exhibited recoveries and RPDs within the control limtis.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
BK1-47-48 STEP 2	Selenium (D)	152%	AC
	Uranium (D)	136%	AC

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The “O” qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The “O” qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X	X		
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS was not included in the data package.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory was not included in the data package.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L 52541

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich	Address: 630 Plaza Drive, Ste 200
Company: Arcadis	Highlands Ranch, CO 80129
E-mail: shannon.ulrich@arcadis.com	Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello	E-mail: aarguello@barrick.com
Company: Homestake Mining Company	Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts Payable	Address: 630 Plaza Drive Ste 200
Company: Arcadis	Highlands Ranch, CO 80129
E-mail: accountspayable.administration@arcadis.com	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich Sampler's Site Information State NM Zip code 87021 Time Zone MST

*Sampler's Signature: [signature]

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: custom SSE; contact Tim VanWyngarden

PO#: CO0001120.1901.30007

Reporting state for compliance testing: NA

Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK1-11.5-12.5-052119	5-21-19: 1235	SO	1	HOLD
BK1-15-15.5-052119	5-21-19: 1315	SO	1	HOLD
BK1-33.5-34-052119	5-21-19: 1350	SO	1	HOLD
BK1-39-40-052119	5-21-19: 1420	SO	1	HOLD
BK1-41-41.5-052119	5-21-19: 1600	SO	1	HOLD
BK1-47-48-052119	5-21-19: 1630	SO	1	HOLD
BK1-48.5-49.5-052119	5-21-19: 1725	SO	1	HOLD
BK1-51-52-052119	5-21-19: 1750	SO	1	HOLD
BK1-52-53-052119	5-21-19: 1820	SO	1	HOLD
BK1-55.5-56.5-052219	5-22-19: 0855	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

custom selective sequential extraction; contact Tim VanWyngarden

Samples are background soil but are inside NRC licensed boundary.

Bottle order BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19: 1430	FedEx	5/28/19 · 1430
			5/29/19 13:21

L52541-1907181346

L52541 Chain of Custody

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK1-47-48-052119

ACZ Sample ID: ***L52541-01***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	86.7		*	%	0.1	0.5	06/22/19 0:21	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 9:17	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK1-47-48-052119-DI

ACZ Sample ID: ***L52541-02***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.2	J	*	mg/L	0.1	0.5	07/18/19 1:15	jlw
Calcium, dissolved	M200.7 ICP	2	6.7		*	mg/L	0.2	1	07/16/19 14:46	aeh
Iron, dissolved	M200.7 ICP	2	0.84		*	mg/L	0.06	0.2	07/16/19 14:46	aeh
Magnesium, dissolved	M200.7 ICP	2	1.3	J	*	mg/L	0.4	2	07/16/19 14:46	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 14:46	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0012		*	mg/L	0.0004	0.001	07/15/19 12:20	mfm
Potassium, dissolved	M200.7 ICP	2	1.4	J	*	mg/L	0.4	2	07/16/19 14:46	aeh
Selenium, dissolved	M200.8 ICP-MS	2	0.0024	J	*	mg/L	0.0002	0.0005	07/15/19 12:20	mfm
Silicon, dissolved	M200.7 ICP	2	5.9		*	mg/L	0.2	1	07/16/19 14:46	aeh
Sodium, dissolved	M200.7 ICP	2	9.8		*	mg/L	0.4	2	07/16/19 14:46	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0003	J	*	mg/L	0.0002	0.001	07/15/19 12:20	mfm
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/16/19 14:46	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26.7	J ~~H~~	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		1		R ~~UH~~	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		1		R ~~UH~~	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	26.7	J ~~H~~	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	J ~~H~~	*	mg/L	0.01	0.05	07/16/19 21:26	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	21.5	J ~~H~~	*	mg/L	1	5	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-47-48-052119-STEP 1

ACZ Sample ID: ***L52541-03***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5		U	*	mg/L	0.3	1	07/18/19 1:18	jlw
Calcium, dissolved	M200.7 ICP	5	4.8		*	mg/L	0.5	3	07/16/19 14:50	aeh
Iron, dissolved	M200.7 ICP	5	0.6		*	mg/L	0.2	0.4	07/16/19 14:50	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:50	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 14:50	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.001	J	*	mg/L	0.001	0.003	07/15/19 12:22	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:50	aeh
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/15/19 12:22	mfm
Silicon, dissolved	M200.7 ICP	5	5.1		*	mg/L	0.5	3	07/16/19 14:50	aeh
Sodium, dissolved	M200.7 ICP	5	290		*	mg/L	1	5	07/16/19 14:50	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0024	J	*	mg/L	0.0005	0.003	07/15/19 12:22	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 14:50	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.07	J H	*	mg/L	0.01	0.05	07/16/19 21:27	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	7.7	J H	*	mg/L	1	5	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-47-48-052119-STEP 2

ACZ Sample ID: ***L52541-04***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25		U	*	mg/L	1	6	07/18/19 1:22	jlw
Calcium, dissolved	M200.7 ICP	25	2240		*	mg/L	3	10	07/16/19 14:53	aeh
Iron, dissolved	M200.7 ICP	25	3.1		*	mg/L	0.8	2	07/16/19 14:53	aeh
Magnesium, dissolved	M200.7 ICP	25	63		*	mg/L	5	30	07/16/19 14:53	aeh
Manganese, dissolved	M200.7 ICP	25	14.4		*	mg/L	0.3	1	07/16/19 14:53	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 13:25	bsu
Potassium, dissolved	M200.7 ICP	25	6	J	*	mg/L	5	30	07/16/19 14:53	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/16/19 13:25	bsu
Silicon, dissolved	M200.7 ICP	25	6	J	*	mg/L	3	10	07/16/19 14:53	aeh
Sodium, dissolved	M200.7 ICP	25	20300		*	mg/L	5	30	07/16/19 14:53	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.018	J	*	mg/L	0.002	0.01	07/16/19 13:25	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 14:53	aeh

ARCADIS
Project ID:
Sample ID: BK1-47-48-052119-STEP 3

ACZ Sample ID: ***L52541-05***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	15		*	mg/L	1	5	07/18/19 1:25	jlw
Calcium, dissolved	M200.7 ICP	20	130		*	mg/L	2	10	07/18/19 1:25	jlw
Iron, dissolved	M200.7 ICP	20	68.6		*	mg/L	0.6	2	07/18/19 1:25	jlw
Magnesium, dissolved	M200.7 ICP	20	47		*	mg/L	4	20	07/18/19 1:25	jlw
Manganese, dissolved	M200.7 ICP	20	1.4		*	mg/L	0.2	1	07/18/19 1:25	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 12:29	mfm
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/18/19 1:25	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0026	J	*	mg/L	0.0005	0.001	07/15/19 12:29	mfm
Silicon, dissolved	M200.7 ICP	20	43		*	mg/L	2	10	07/18/19 1:25	jlw
Sodium, dissolved	M200.7 ICP	20	263		*	mg/L	4	20	07/18/19 1:25	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0099	J	*	mg/L	0.0005	0.003	07/15/19 12:29	mfm
Vanadium, dissolved	M200.7 ICP	20	0.1	J	*	mg/L	0.1	0.5	07/18/19 1:25	jlw

ARCADIS
Project ID:
Sample ID: BK1-47-48-052119-STEP 4

ACZ Sample ID: ***L52541-06***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	34.2		*	mg/L	0.3	1	07/18/19 1:34	jlw
Calcium, dissolved	M200.7 ICP	5	55.0		*	mg/L	0.5	3	07/16/19 15:06	aeh
Iron, dissolved	M200.7 ICP	5	6.4		*	mg/L	0.2	0.4	07/16/19 15:06	aeh
Magnesium, dissolved	M200.7 ICP	5	22		*	mg/L	1	5	07/16/19 15:06	aeh
Manganese, dissolved	M200.7 ICP	5	0.57		*	mg/L	0.05	0.3	07/16/19 15:06	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.002	0.005	07/15/19 12:31	mfm
Potassium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 15:06	aeh
Selenium, dissolved	M200.8 ICP-MS	10	0.005	J	*	mg/L	0.001	0.003	07/15/19 12:31	mfm
Silicon, dissolved	M200.7 ICP	5	26.1		*	mg/L	0.5	3	07/16/19 15:06	aeh
Sodium, dissolved	M200.7 ICP	5	6		*	mg/L	1	5	07/16/19 15:06	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.003	J	*	mg/L	0.001	0.005	07/15/19 12:31	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 15:06	aeh

ARCADIS
Project ID:
Sample ID: BK1-47-48-052119 STEP 5

ACZ Sample ID: ***L52541-07***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	55300			mg/Kg	300	1000	07/17/19 6:35	aeh
Calcium, total (3052)	M6010D ICP	5000	800	J		mg/Kg	500	3000	07/17/19 6:35	aeh
Iron, total (3052)	M6010D ICP	5000	19100			mg/Kg	200	400	07/17/19 6:35	aeh
Magnesium, total (3052)	M6010D ICP	5000	4000	J	*	mg/Kg	1000	5000	07/17/19 6:35	aeh
Manganese, total (3052)	M6010D ICP	5000	130	J		mg/Kg	50	300	07/17/19 6:35	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:46	mfm
Potassium, total (3052)	M6010D ICP	5000	21000			mg/Kg	1000	5000	07/17/19 6:35	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:29	mfm
Silicon, total (3052)	M6010D ICP	5000	363000	~~O~~ J	*	mg/Kg	500	3000	07/17/19 6:35	aeh
Sodium, total (3052)	M6010D ICP	5000	11000		*	mg/Kg	1000	5000	07/17/19 6:35	aeh
Uranium, total (3052)	M6020B ICP-MS	12500	2	J		mg/Kg	1	6	07/16/19 12:29	mfm
Vanadium, total (3052)	M6010D ICP	5000	60	J		mg/Kg	30	100	07/17/19 6:35	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 10:48	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52542

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33836R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52542 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK1-51-52	L52542-1	Soil	05/21/19						X
BK1-51-52-DI	L52542-2	Leach	05/21/19				X		
BK1-51-52 Step 1	L52542-3	Leach	05/21/19				X		
BK1-51-52 Step 2	L52542-4	Leach	05/21/19				X		
BK1-51-52 Step 3	L52542-5	Leach	05/21/19				X		
BK1-51-52 Step 4	L52542-6	Leach	05/21/19				X		
BK1-51-52 Step 5	L52542-7	Soil	05/21/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

All compounds associated with the QA blanks exhibited a concentration less than the MDL, with the exception of the compounds listed in the following table. Sample results associated with QA blank contamination that were greater than the BAL resulted in the removal of the laboratory qualifier (B) of data. Sample results less than the BAL associated with the following sample locations were qualified as listed in the following table.

Sample Locations	Analytes	Sample Result	Qualification
BK1-51-52 STEP 1	Selenium (D)	Detected sample results >RL and <BAL	"UB" at detected sample concentration

Note:

RL Reporting limit

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A site-specific MS/MSD was not included in the data package.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The "O" qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The "O" qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X	X		
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS was not included in the data package.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory was not included in the data package.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L 52542

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: shannon.ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts Payable
Company: Arcadis
E-mail: accountspayable.administration@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** [signature]

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: custom SSE; contact Tim VanWyngarden
PO#: CO0000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK1-11.5-12.5-052119	5-21-19: 1235	SO	1	HOLD
BK1-15-15.5-052119	5-21-19: 1315	SO	1	HOLD
BK1-33.5-34-052119	5-21-19: 1350	SO	1	HOLD
BK1-39-40-052119	5-21-19: 1420	SO	1	HOLD
BK1-41-41.5-052119	5-21-19: 1600	SO	1	HOLD
BK1-47-48-052119	5-21-19: 1630	SO	1	HOLD
BK1-48.5-49.5-052119	5-21-19: 1725	SO	1	HOLD
BK1-51-52-052119	5-21-19: 1750	SO	1	HOLD
BK1-52-53-052119	5-21-19: 1820	SO	1	HOLD
BK1-55.5-56.5-052219	5-22-19: 0855	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary.

Bottle order BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19: 1430	FedEx	5/28/19 · 1430
			5/29/19 13:21

L52542-1907181346

COPY

L52542 Chain of Custod

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK1-51-52-052119

ACZ Sample ID: ***L52542-01***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.1		*	%	0.1	0.5	06/22/19 4:48	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 9:55	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK1-51-52-052119-DI

ACZ Sample ID: ***L52542-02***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2		U	*	mg/L	0.1	0.5	07/18/19 1:43	jlw
Calcium, dissolved	M200.7 ICP	2	8.4		*	mg/L	0.2	1	07/16/19 15:16	aeh
Iron, dissolved	M200.7 ICP	2	0.11	J	*	mg/L	0.06	0.2	07/16/19 15:16	aeh
Magnesium, dissolved	M200.7 ICP	2	1.3	J	*	mg/L	0.4	2	07/16/19 15:16	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 15:16	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0019		*	mg/L	0.0004	0.001	07/15/19 12:36	mfm
Potassium, dissolved	M200.7 ICP	2	0.8	J	*	mg/L	0.4	2	07/16/19 15:16	aeh
Selenium, dissolved	M200.8 ICP-MS	2	0.0034		*	mg/L	0.0002	0.0005	07/15/19 12:36	mfm
Silicon, dissolved	M200.7 ICP	2	2.1		*	mg/L	0.2	1	07/16/19 15:16	aeh
Sodium, dissolved	M200.7 ICP	2	7.5		*	mg/L	0.4	2	07/16/19 15:16	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0004	J	*	mg/L	0.0002	0.001	07/15/19 12:36	mfm
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/16/19 15:16	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	20.0	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		1		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		1		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	20.0	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	~~BH~~ J	*	mg/L	0.01	0.05	07/16/19 21:28	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	26.4	~~H~~ J	*	mg/L	1	5	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-51-52-052119-STEP-1

ACZ Sample ID: ***L52542-03***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5		U	*	mg/L	0.3	1	07/18/19 1:46	jlw
Calcium, dissolved	M200.7 ICP	5	1.6	J	*	mg/L	0.5	3	07/16/19 15:19	aeh
Iron, dissolved	M200.7 ICP	5	0.5		*	mg/L	0.2	0.4	07/16/19 15:19	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 15:19	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 15:19	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 12:38	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 15:19	aeh
Selenium, dissolved	M200.8 ICP-MS	5	0.0005	UB ~~J~~	*	mg/L	0.0005	0.001	07/15/19 12:38	mfm
Silicon, dissolved	M200.7 ICP	5	2.6	J	*	mg/L	0.5	3	07/16/19 15:19	aeh
Sodium, dissolved	M200.7 ICP	5	343		*	mg/L	1	5	07/16/19 15:19	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0058		*	mg/L	0.0005	0.003	07/15/19 12:38	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 15:19	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.13	~~H~~ J	*	mg/L	0.01	0.05	07/16/19 21:31	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	6.1	~~H~~ J	*	mg/L	1	5	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-51-52-052119-STEP-2

ACZ Sample ID: ***L52542-04***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25		U	*	mg/L	1	6	07/18/19 1:49	jlw
Calcium, dissolved	M200.7 ICP	25	5700		*	mg/L	3	10	07/16/19 15:22	aeh
Iron, dissolved	M200.7 ICP	25	6.1		*	mg/L	0.8	2	07/16/19 15:22	aeh
Magnesium, dissolved	M200.7 ICP	25	51		*	mg/L	5	30	07/16/19 15:22	aeh
Manganese, dissolved	M200.7 ICP	25	34.0		*	mg/L	0.3	1	07/16/19 15:22	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 13:30	bsu
Potassium, dissolved	M200.7 ICP	25		U	*	mg/L	5	30	07/16/19 15:22	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.005		*	mg/L	0.002	0.005	07/16/19 13:30	bsu
Silicon, dissolved	M200.7 ICP	25	5	J	*	mg/L	3	10	07/16/19 15:22	aeh
Sodium, dissolved	M200.7 ICP	25	19200		*	mg/L	5	30	07/16/19 15:22	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.042		*	mg/L	0.002	0.01	07/16/19 13:30	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 15:22	aeh

ARCADIS
Project ID:
Sample ID: BK1-51-52-052119-STEP-3

ACZ Sample ID: ***L52542-05***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	17		*	mg/L	1	5	07/18/19 1:52	jlw
Calcium, dissolved	M200.7 ICP	20	171		*	mg/L	2	10	07/18/19 1:52	jlw
Iron, dissolved	M200.7 ICP	20	103		*	mg/L	0.6	2	07/18/19 1:52	jlw
Magnesium, dissolved	M200.7 ICP	20	31		*	mg/L	4	20	07/18/19 1:52	jlw
Manganese, dissolved	M200.7 ICP	20	15.4		*	mg/L	0.2	1	07/18/19 1:52	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.004		*	mg/L	0.001	0.003	07/15/19 12:41	mfm
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/18/19 1:52	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0026		*	mg/L	0.0005	0.001	07/15/19 12:41	mfm
Silicon, dissolved	M200.7 ICP	20	30		*	mg/L	2	10	07/18/19 1:52	jlw
Sodium, dissolved	M200.7 ICP	20	92		*	mg/L	4	20	07/18/19 1:52	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0128		*	mg/L	0.0005	0.003	07/15/19 12:41	mfm
Vanadium, dissolved	M200.7 ICP	20	0.2	J	*	mg/L	0.1	0.5	07/18/19 1:52	jlw

ARCADIS
Project ID:
Sample ID: BK1-51-52-052119-STEP-4

ACZ Sample ID: ***L52542-06***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	19.8		*	mg/L	0.3	1	07/18/19 1:55	jlw
Calcium, dissolved	M200.7 ICP	5	29.6		*	mg/L	0.5	3	07/16/19 15:29	aeh
Iron, dissolved	M200.7 ICP	5	2.0		*	mg/L	0.2	0.4	07/16/19 15:29	aeh
Magnesium, dissolved	M200.7 ICP	5	6		*	mg/L	1	5	07/16/19 15:29	aeh
Manganese, dissolved	M200.7 ICP	5	1.37		*	mg/L	0.05	0.3	07/16/19 15:29	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10	0.006		*	mg/L	0.002	0.005	07/15/19 12:43	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 15:29	aeh
Selenium, dissolved	M200.8 ICP-MS	10	0.004		*	mg/L	0.001	0.003	07/15/19 12:43	mfm
Silicon, dissolved	M200.7 ICP	5	19.0		*	mg/L	0.5	3	07/16/19 15:29	aeh
Sodium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/16/19 15:29	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.001	J	*	mg/L	0.001	0.005	07/15/19 12:43	mfm
Vanadium, dissolved	M200.7 ICP	5	0.09	J	*	mg/L	0.03	0.1	07/16/19 15:29	aeh

ARCADIS
Project ID:
Sample ID: BK1-51-52-052119 STEP 5

ACZ Sample ID: ***L52542-07***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	41200			mg/Kg	300	1000	07/17/19 6:39	aeh
Calcium, total (3052)	M6010D ICP	5000	2500	J		mg/Kg	500	3000	07/17/19 6:39	aeh
Iron, total (3052)	M6010D ICP	5000	29300			mg/Kg	200	400	07/17/19 6:39	aeh
Magnesium, total (3052)	M6010D ICP	5000	2000	J	*	mg/Kg	1000	5000	07/17/19 6:39	aeh
Manganese, total (3052)	M6010D ICP	5000	290	J		mg/Kg	50	300	07/17/19 6:39	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:47	mfm
Potassium, total (3052)	M6010D ICP	5000	19000			mg/Kg	1000	5000	07/17/19 6:39	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:32	mfm
Silicon, total (3052)	M6010D ICP	5000	374000	~~Q~~ J	*	mg/Kg	500	3000	07/17/19 6:39	aeh
Sodium, total (3052)	M6010D ICP	5000	14000		*	mg/Kg	1000	5000	07/17/19 6:39	aeh
Uranium, total (3052)	M6020B ICP-MS	12500	1	J		mg/Kg	1	6	07/16/19 12:32	mfm
Vanadium, total (3052)	M6010D ICP	5000	50	J		mg/Kg	30	100	07/17/19 6:39	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 11:19	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52543

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33837R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52543 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK1-52-53	L52543-1	Soil	05/21/19						X
BK1-52-53-DI	L52543-2	Leach	05/21/19				X		
BK1-52-53 Step 1	L52543-3	Leach	05/21/19				X		
BK1-52-53 Step 2	L52543-4	Leach	05/21/19				X		
BK1-52-53 Step 3	L52543-5	Leach	05/21/19				X		
BK1-52-53 Step 4	L52543-6	Leach	05/21/19				X		
BK1-52-53 Step 5	L52543-7	Soil	05/21/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations

where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
BK1-52-53 STEP 3	Selenium (D)	240%	232%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The “O” qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The “O” qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS performed on sample BK1-52-53 STEP 1 was used as the MS for sulfate exhibited recoveries within the control limits.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate performed on sample BK1-52-53 exhibited and RPD within the control limit.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L52543

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts Payable
Company: Arcadis
E-mail: accountspayable.administration@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** [signature]

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: custom SSE; contact Tim VanWyngarden
PO#: CO0000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK1-11.5-12.5-052119	5-21-19 : 1235	SO	1	HOLD
BK1-15-15.5-052119	5-21-19 : 1315	SO	1	HOLD
BK1-33.5-34-052119	5-21-19 : 1350	SO	1	HOLD
BK1-39-40-052119	5-21-19 : 1420	SO	1	HOLD
BK1-41-41.5-052119	5-21-19 : 1600	SO	1	HOLD
BK1-47-48-052119	5-21-19 : 1630	SO	1	HOLD
BK1-48.5-49.5-052119	5-21-19 : 1725	SO	1	HOLD
BK1-51-52-052119	5-21-19 : 1750	SO	1	HOLD
BK1-52-53-052119	5-21-19 : 1820	SO	1	HOLD
BK1-55.5-56.5-052219	5-22-19 : 0855	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary.

Bottle order BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1430	FedEx	5/28/19 :1430
			5/29/19 13:21

L52543-1907191123

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK1-52-53-052119

ACZ Sample ID: ***L52543-01***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	86.7		*	%	0.1	0.5	06/22/19 9:15	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 10:34	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK1-52-53-052119-DI

ACZ Sample ID: ***L52543-02***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.5		*	mg/L	0.1	0.5	07/18/19 16:34	jlw
Calcium, dissolved	M200.7 ICP	2	9.7		*	mg/L	0.2	1	07/16/19 22:16	dcm
Iron, dissolved	M200.7 ICP	2	0.35		*	mg/L	0.06	0.2	07/16/19 22:16	dcm
Magnesium, dissolved	M200.7 ICP	2	1.9	J	*	mg/L	0.4	2	07/16/19 22:16	dcm
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 22:16	dcm
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0018		*	mg/L	0.0004	0.001	07/15/19 14:53	mfm
Potassium, dissolved	M200.7 ICP	2	1.7	J	*	mg/L	0.4	2	07/16/19 22:16	dcm
Selenium, dissolved	M200.8 ICP-MS	2	0.0039 J		*	mg/L	0.0002	0.0005	07/15/19 14:53	mfm
Silicon, dissolved	M200.7 ICP	2	4.2		*	mg/L	0.2	1	07/16/19 22:16	dcm
Sodium, dissolved	M200.7 ICP	2	15.4		*	mg/L	0.4	2	07/16/19 22:16	dcm
Uranium, dissolved	M200.8 ICP-MS	2	0.0008	J	*	mg/L	0.0002	0.001	07/15/19 14:53	mfm
Vanadium, dissolved	M200.7 ICP	2	0.01	J	*	mg/L	0.01	0.05	07/16/19 22:16	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26.7	J H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH R	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH R	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	26.7	J H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	J H	*	mg/L	0.01	0.05	07/16/19 21:32	pjb
Sulfate	D516-02/-07 - Turbidimetric	20	38.7	J BH	*	mg/L	20	100	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-52-53-052119-STEP 1

ACZ Sample ID: ***L52543-03***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5		U	*	mg/L	0.3	1	07/18/19 16:37	jlw
Calcium, dissolved	M200.7 ICP	5	6.8		*	mg/L	0.5	3	07/16/19 22:19	dcm
Iron, dissolved	M200.7 ICP	5		U	*	mg/L	0.2	0.4	07/16/19 22:19	dcm
Magnesium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 22:19	dcm
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 22:19	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 14:55	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 22:19	dcm
Selenium, dissolved	M200.8 ICP-MS	5	0.0006	J	*	mg/L	0.0005	0.001	07/15/19 14:55	mfm
Silicon, dissolved	M200.7 ICP	5	3.1		*	mg/L	0.5	3	07/16/19 22:19	dcm
Sodium, dissolved	M200.7 ICP	5	282		*	mg/L	1	5	07/16/19 22:19	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.0079		*	mg/L	0.0005	0.003	07/15/19 14:55	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 22:19	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.08	~~H~~ J	*	mg/L	0.01	0.05	07/16/19 21:34	pjb
Sulfate	D516-02/-07 - Turbidimetric	10	12.3	~~BH~~ J	*	mg/L	10	50	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-52-53-052119-STEP 2

ACZ Sample ID: ***L52543-04***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	1	J	*	mg/L	1	6	07/18/19 16:40	jlw
Calcium, dissolved	M200.7 ICP	25	3170		*	mg/L	3	10	07/16/19 22:22	dcm
Iron, dissolved	M200.7 ICP	25	2.1		*	mg/L	0.8	2	07/16/19 22:22	dcm
Magnesium, dissolved	M200.7 ICP	25	88		*	mg/L	5	30	07/16/19 22:22	dcm
Manganese, dissolved	M200.7 ICP	25	19.2		*	mg/L	0.3	1	07/16/19 22:22	dcm
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 13:32	bsu
Potassium, dissolved	M200.7 ICP	25	5	J	*	mg/L	5	30	07/16/19 22:22	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.003	07/15/19 14:56	mfm
Silicon, dissolved	M200.7 ICP	25	7	J	*	mg/L	3	10	07/16/19 22:22	dcm
Sodium, dissolved	M200.7 ICP	25	20600		*	mg/L	5	30	07/16/19 22:22	dcm
Uranium, dissolved	M200.8 ICP-MS	20	0.041		*	mg/L	0.002	0.01	07/16/19 13:32	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 22:22	dcm

ARCADIS
Project ID:
Sample ID: BK1-52-53-052119-STEP 3

ACZ Sample ID: ***L52543-05***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	17.6		*	mg/L	0.3	1	07/18/19 16:43	jlw
Calcium, dissolved	M200.7 ICP	5	174		*	mg/L	0.5	3	07/16/19 22:26	dcm
Iron, dissolved	M200.7 ICP	5	77.0		*	mg/L	0.2	0.4	07/16/19 22:26	dcm
Magnesium, dissolved	M200.7 ICP	5	52		*	mg/L	1	5	07/16/19 22:26	dcm
Manganese, dissolved	M200.7 ICP	5	5.11		*	mg/L	0.05	0.3	07/16/19 22:26	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 14:58	mfm
Potassium, dissolved	M200.7 ICP	5	3	J	*	mg/L	1	5	07/16/19 22:26	dcm
Selenium, dissolved	M200.8 ICP-MS	5	0.0036	J	*	mg/L	0.0005	0.001	07/15/19 14:58	mfm
Silicon, dissolved	M200.7 ICP	5	49.8		*	mg/L	0.5	3	07/16/19 22:26	dcm
Sodium, dissolved	M200.7 ICP	5	290		*	mg/L	1	5	07/16/19 22:26	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.0162		*	mg/L	0.0005	0.003	07/15/19 14:58	mfm
Vanadium, dissolved	M200.7 ICP	5	0.24		*	mg/L	0.03	0.1	07/16/19 22:26	dcm

ARCADIS
Project ID:
Sample ID: BK1-52-53-052119-STEP 4

ACZ Sample ID: ***L52543-06***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	43.1		*	mg/L	0.3	1	07/18/19 16:52	jlw
Calcium, dissolved	M200.7 ICP	5	81.6		*	mg/L	0.5	3	07/16/19 22:35	dcm
Iron, dissolved	M200.7 ICP	5	10.2		*	mg/L	0.2	0.4	07/16/19 22:35	dcm
Magnesium, dissolved	M200.7 ICP	5	28		*	mg/L	1	5	07/16/19 22:35	dcm
Manganese, dissolved	M200.7 ICP	5	1.72		*	mg/L	0.05	0.3	07/16/19 22:35	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.002	0.005	07/15/19 15:03	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 22:35	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.013 J		*	mg/L	0.001	0.003	07/15/19 15:03	mfm
Silicon, dissolved	M200.7 ICP	5	32.0		*	mg/L	0.5	3	07/16/19 22:35	dcm
Sodium, dissolved	M200.7 ICP	5	7		*	mg/L	1	5	07/16/19 22:35	dcm
Uranium, dissolved	M200.8 ICP-MS	10	0.009		*	mg/L	0.001	0.005	07/15/19 15:03	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 22:35	dcm

ARCADIS
Project ID:
Sample ID: BK1-52-53-052119-STEP 5

ACZ Sample ID: ***L52543-07***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	68100			mg/Kg	300	1000	07/17/19 6:43	aeh
Calcium, total (3052)	M6010D ICP	5000	1800	J		mg/Kg	500	3000	07/17/19 6:43	aeh
Iron, total (3052)	M6010D ICP	5000	30300			mg/Kg	200	400	07/17/19 6:43	aeh
Magnesium, total (3052)	M6010D ICP	5000	6000		*	mg/Kg	1000	5000	07/17/19 6:43	aeh
Manganese, total (3052)	M6010D ICP	5000	200	J		mg/Kg	50	300	07/17/19 6:43	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:51	mfm
Potassium, total (3052)	M6010D ICP	5000	23000			mg/Kg	1000	5000	07/17/19 6:43	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:34	mfm
Silicon, total (3052)	M6010D ICP	5000	331000	Ø J	*	mg/Kg	500	3000	07/17/19 6:43	aeh
Sodium, total (3052)	M6010D ICP	5000	12000		*	mg/Kg	1000	5000	07/17/19 6:43	aeh
Uranium, total (3052)	M6020B ICP-MS	12500	2	J		mg/Kg	1	6	07/16/19 12:34	mfm
Vanadium, total (3052)	M6010D ICP	5000	70	J		mg/Kg	30	100	07/17/19 6:43	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 11:50	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52544

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33838R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52544 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK1-55.5-56.5	L52544-1	Soil	05/22/19						X
BK1-55.5-56.5-DI	L52544-2	Leach	05/22/19				X		
BK1-55.5-56.5 Step 1	L52544-3	Leach	05/22/19				X		
BK1-55.5-56.5 Step 2	L52544-4	Leach	05/22/19				X		
BK1-55.5-56.5 Step 3	L52544-5	Leach	05/22/19				X		
BK1-55.5-56.5 Step 4	L52544-6	Leach	05/22/19				X		
BK1-55.5-56.5 Step 5	L52544-7	Soil	05/22/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations

where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS/MSD was not included in the data package.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The "O" qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The "O" qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS performed on sample BK1-55.5-56.5 D1 for phosphorous exhibited recoveries within the control limits.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate performed on sample BK1-55.5-56.5 STEP 1 for phosphorous exhibited and RPD within the control limit.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L52544

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich	Address: 630 Plaza Drive, Ste 200
Company: Arcadis	Highlands Ranch, CO 80129
E-mail: shannon.ulrich@arcadis.com	Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello	E-mail: aarguello@barrick.com
Company: Homestake Mining Company	Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts Payable	Address: 630 Plaza Drive Ste 200
Company: Arcadis	Highlands Ranch, CO 80129
E-mail: accountspayable.administration@arcadis.com	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** **State** NM **Zip code** 87021 **Time Zone** MST

***Sampler's Signature:** [signature]

"I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: custom SSE; contact Tim VanWyngarden

PO#: CO0001200.1901.30007

Reporting state for compliance testing: NA

Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK1-11.5-12.5-052119	5-21-19: 1235	SO	1	HOLD
BK1-15-15.5-052119	5-21-19: 1315	SO	1	HOLD
BK1-33.5-34-052119	5-21-19: 1350	SO	1	HOLD
BK1-39-40-052119	5-21-19: 1420	SO	1	HOLD
BK1-41-41.5-052119	5-21-19: 1600	SO	1	HOLD
BK1-47-48-052119	5-21-19: 1630	SO	1	HOLD
BK1-48.5-49.5-052119	5-21-19: 1725	SO	1	HOLD
BK1-51-52-052119	5-21-19: 1750	SO	1	HOLD
BK1-52-53-052119	5-21-19: 1820	SO	1	HOLD
BK1-55.5-56.5-052219	5-22-19: 0855	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden

*Samples are background soil but are inside NRC licensed boundary.

Bottle order BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19: 1430	FedEx	5/28/19: 1430
			5/29/19 1321

L52544-1907191124

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L52544 Chain of Custody

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK1-55.5-56.5-052219

ACZ Sample ID: ***L52544-01***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	88.1		*	%	0.1	0.5	06/22/19 13:43	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 11:12	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK1-55.5-56.5-052219-DI

ACZ Sample ID: ***L52544-02***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	3.4		*	mg/L	0.1	0.5	07/18/19 16:55	jlw
Calcium, dissolved	M200.7 ICP	2	6.1		*	mg/L	0.2	1	07/16/19 22:39	dcm
Iron, dissolved	M200.7 ICP	2	0.46		*	mg/L	0.06	0.2	07/16/19 22:39	dcm
Magnesium, dissolved	M200.7 ICP	2	1.1	J	*	mg/L	0.4	2	07/16/19 22:39	dcm
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 22:39	dcm
Molybdenum, dissolved	M200.8 ICP-MS	2	0.001		*	mg/L	0.0004	0.001	07/15/19 15:05	mfm
Potassium, dissolved	M200.7 ICP	2	1.1	J	*	mg/L	0.4	2	07/16/19 22:39	dcm
Selenium, dissolved	M200.8 ICP-MS	2	0.0015		*	mg/L	0.0002	0.0005	07/15/19 15:05	mfm
Silicon, dissolved	M200.7 ICP	2	5.0		*	mg/L	0.2	1	07/16/19 22:39	dcm
Sodium, dissolved	M200.7 ICP	2	12.8		*	mg/L	0.4	2	07/16/19 22:39	dcm
Uranium, dissolved	M200.8 ICP-MS	2	0.0003	J	*	mg/L	0.0002	0.001	07/15/19 15:05	mfm
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/16/19 22:39	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26.7	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	26.7	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	~~BH~~ J	*	mg/L	0.01	0.05	07/16/19 21:35	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	19.0	~~H~~ J	*	mg/L	1	5	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-55.5-56.5-052219-STEP 1

ACZ Sample ID: ***L52544-03***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	0.9	J	*	mg/L	0.3	1	07/18/19 16:59	jlw
Calcium, dissolved	M200.7 ICP	5	5.0		*	mg/L	0.5	3	07/16/19 22:42	dcm
Iron, dissolved	M200.7 ICP	5	0.5		*	mg/L	0.2	0.4	07/16/19 22:42	dcm
Magnesium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 22:42	dcm
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 22:42	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.001	J	*	mg/L	0.001	0.003	07/15/19 15:07	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 22:42	dcm
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/15/19 15:07	mfm
Silicon, dissolved	M200.7 ICP	5	5.3		*	mg/L	0.5	3	07/16/19 22:42	dcm
Sodium, dissolved	M200.7 ICP	5	285		*	mg/L	1	5	07/16/19 22:42	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.0022	J	*	mg/L	0.0005	0.003	07/15/19 15:07	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 22:42	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	~~H~~ J	*	mg/L	0.01	0.05	07/16/19 21:37	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	5.6	~~H~~ J	*	mg/L	1	5	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-55.5-56.5-052219-STEP 2

ACZ Sample ID: ***L52544-04***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	2	J	*	mg/L	1	6	07/18/19 17:08	jlw
Calcium, dissolved	M200.7 ICP	25	2080		*	mg/L	3	10	07/16/19 22:52	dcm
Iron, dissolved	M200.7 ICP	25	1.5	J	*	mg/L	0.8	2	07/16/19 22:52	dcm
Magnesium, dissolved	M200.7 ICP	25	68		*	mg/L	5	30	07/16/19 22:52	dcm
Manganese, dissolved	M200.7 ICP	25	32.8		*	mg/L	0.3	1	07/16/19 22:52	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.002	0.005	07/15/19 15:12	mfm
Potassium, dissolved	M200.7 ICP	25		U	*	mg/L	5	30	07/16/19 22:52	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.003		*	mg/L	0.001	0.003	07/15/19 15:12	mfm
Silicon, dissolved	M200.7 ICP	25	8	J	*	mg/L	3	10	07/16/19 22:52	dcm
Sodium, dissolved	M200.7 ICP	25	17100		*	mg/L	5	30	07/16/19 22:52	dcm
Uranium, dissolved	M200.8 ICP-MS	20	0.016		*	mg/L	0.002	0.01	07/16/19 13:34	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 22:52	dcm

ARCADIS
Project ID:
Sample ID: BK1-55.5-56.5-052219-STEP 3

ACZ Sample ID: ***L52544-05***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	13.8		*	mg/L	0.3	1	07/18/19 17:11	jlw
Calcium, dissolved	M200.7 ICP	5	133		*	mg/L	0.5	3	07/16/19 22:55	dcm
Iron, dissolved	M200.7 ICP	5	36.6		*	mg/L	0.2	0.4	07/16/19 22:55	dcm
Magnesium, dissolved	M200.7 ICP	5	51		*	mg/L	1	5	07/16/19 22:55	dcm
Manganese, dissolved	M200.7 ICP	5	2.98		*	mg/L	0.05	0.3	07/16/19 22:55	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 15:14	mfm
Potassium, dissolved	M200.7 ICP	5	3	J	*	mg/L	1	5	07/16/19 22:55	dcm
Selenium, dissolved	M200.8 ICP-MS	5	0.002		*	mg/L	0.0005	0.001	07/15/19 15:14	mfm
Silicon, dissolved	M200.7 ICP	5	32.2		*	mg/L	0.5	3	07/16/19 22:55	dcm
Sodium, dissolved	M200.7 ICP	5	298		*	mg/L	1	5	07/16/19 22:55	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.0086		*	mg/L	0.0005	0.003	07/15/19 15:14	mfm
Vanadium, dissolved	M200.7 ICP	5	0.15		*	mg/L	0.03	0.1	07/16/19 22:55	dcm

ARCADIS
Project ID:
Sample ID: BK1-55.5-56.5-052219-STEP 4

ACZ Sample ID: ***L52544-06***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	38.7		*	mg/L	0.3	1	07/18/19 17:14	jlw
Calcium, dissolved	M200.7 ICP	5	80.7		*	mg/L	0.5	3	07/16/19 22:58	dcm
Iron, dissolved	M200.7 ICP	5	3.5		*	mg/L	0.2	0.4	07/16/19 22:58	dcm
Magnesium, dissolved	M200.7 ICP	5	34		*	mg/L	1	5	07/16/19 22:58	dcm
Manganese, dissolved	M200.7 ICP	5	1.27		*	mg/L	0.05	0.3	07/16/19 22:58	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.002	0.005	07/15/19 15:16	mfm
Potassium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 22:58	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.003		*	mg/L	0.001	0.003	07/15/19 15:16	mfm
Silicon, dissolved	M200.7 ICP	5	27.0		*	mg/L	0.5	3	07/16/19 22:58	dcm
Sodium, dissolved	M200.7 ICP	5	8		*	mg/L	1	5	07/16/19 22:58	dcm
Uranium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.005	07/15/19 15:16	mfm
Vanadium, dissolved	M200.7 ICP	5	0.10		*	mg/L	0.03	0.1	07/16/19 22:58	dcm

ARCADIS
Project ID:
Sample ID: BK1-55.5-56.5-052219-STEP 5

ACZ Sample ID: ***L52544-07***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	57800			mg/Kg	300	1000	07/17/19 6:47	aeh
Calcium, total (3052)	M6010D ICP	5000	900	J		mg/Kg	500	3000	07/17/19 6:47	aeh
Iron, total (3052)	M6010D ICP	5000	24900			mg/Kg	200	400	07/17/19 6:47	aeh
Magnesium, total (3052)	M6010D ICP	5000	10000		*	mg/Kg	1000	5000	07/17/19 6:47	aeh
Manganese, total (3052)	M6010D ICP	5000	150	J		mg/Kg	50	300	07/17/19 6:47	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:53	mfm
Potassium, total (3052)	M6010D ICP	5000	16000			mg/Kg	1000	5000	07/17/19 6:47	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:36	mfm
Silicon, total (3052)	M6010D ICP	5000	348000	Ø J	*	mg/Kg	500	3000	07/17/19 6:47	aeh
Sodium, total (3052)	M6010D ICP	5000	10000		*	mg/Kg	1000	5000	07/17/19 6:47	aeh
Uranium, total (3052)	M6020B ICP-MS	12500	2	J		mg/Kg	1	6	07/16/19 12:36	mfm
Vanadium, total (3052)	M6010D ICP	5000	70	J		mg/Kg	30	100	07/17/19 6:47	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 12:21	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

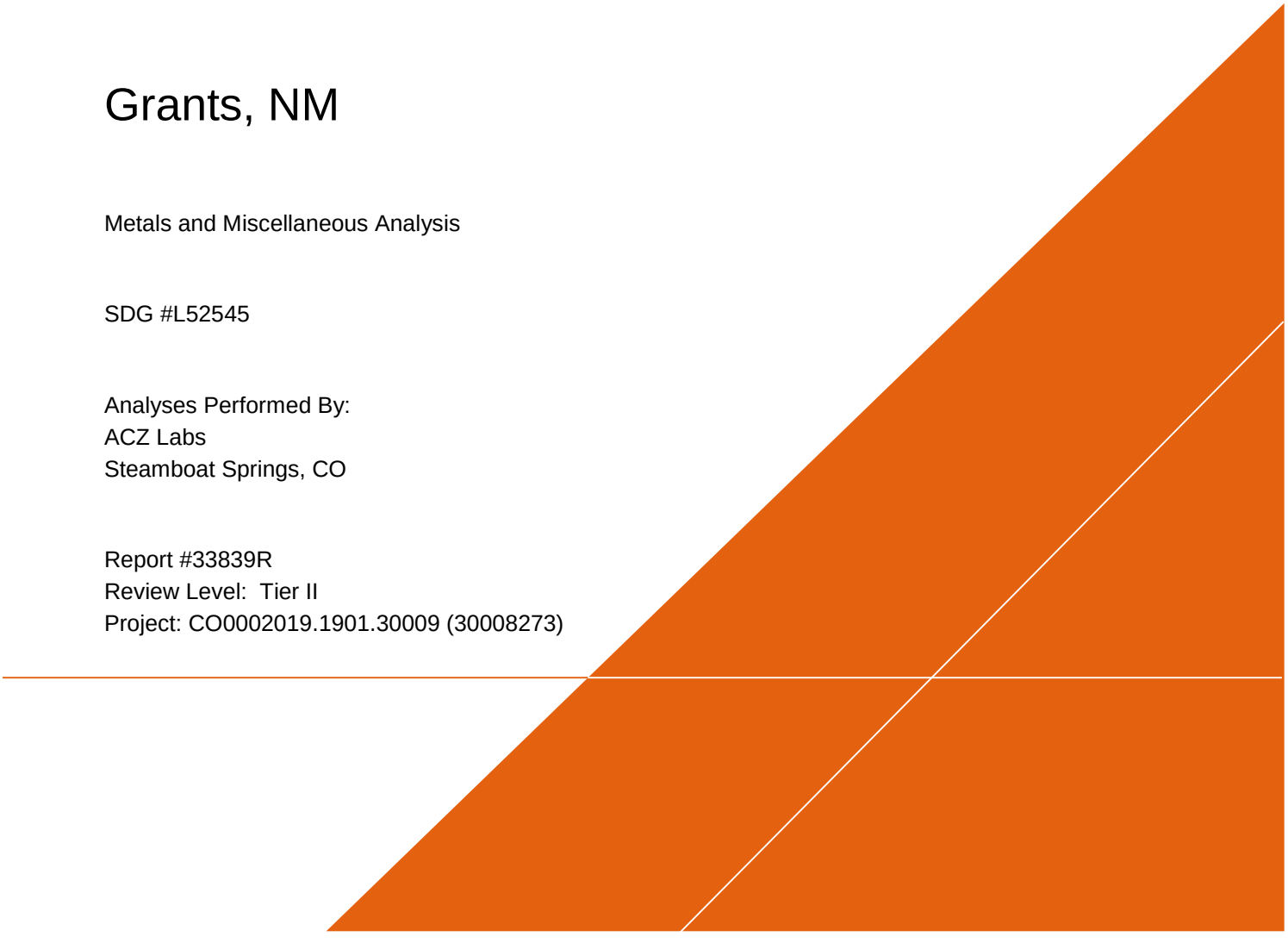
Grants, NM

Metals and Miscellaneous Analysis

SDG #L52545

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33839R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52545 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK2-35-36	L52545-1	Soil	05/15/19						X
BK2-35-36-DI	L52545-2	Leach	05/15/19				X		
BK2-35-36 Step 1	L52545-3	Leach	05/15/19				X		
BK2-35-36 Step 2	L52545-4	Leach	05/15/19				X		
BK2-35-36 Step 3	L52545-5	Leach	05/15/19				X		
BK2-35-36 Step 4	L52545-6	Leach	05/15/19				X		
BK2-35-36 Step 5	L52545-7	Soil	05/15/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations

where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS/MSD was not included in the data package.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The "O" qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The "O" qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS was not included in the data package.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L52545

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts payable
Company: Arcadis
E-mail: accountspayable.administration.arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** SW

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract
BK2-12-13-051519	5-15-19:1620	SO	1	HOLD
BK2-20-21-051519	5-15-19:1650	SO	1	HOLD
BK2-35-36-051519	5-15-19:1740	SO	1	HOLD
BK2-38-39-051519	5-15-19:1825	SO	1	HOLD
BK2-41.5-42.5-051519	5-15-19:1920	SO	1	HOLD
BK2-44-44.5-051619	5-16-19:0930	SO	1	HOLD
BK2-59-60-051619	5-16-19:1055	SO	1	HOLD
BK2-63.5-64-051619	5-16-19:1135	SO	1	HOLD
BK2-72.5-73.5-051619	5-16-19:1205	SO	1	HOLD
BK2-77-77.5-051619	5-16-19:1345	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

1.

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1430	FedEx	5/28/19:1430
			13:21 5/29/19

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK2-35-36-051519

ACZ Sample ID: ***L52545-01***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	96.8		*	%	0.1	0.5	06/22/19 18:10	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 11:51	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK2-35-36-051519-DI

ACZ Sample ID: ***L52545-02***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.9		*	mg/L	0.1	0.5	07/18/19 17:17	jlw
Calcium, dissolved	M200.7 ICP	2	6.0		*	mg/L	0.2	1	07/16/19 23:02	dcm
Iron, dissolved	M200.7 ICP	2	0.89		*	mg/L	0.06	0.2	07/16/19 23:02	dcm
Magnesium, dissolved	M200.7 ICP	2		U	*	mg/L	0.4	2	07/16/19 23:02	dcm
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 23:02	dcm
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0041		*	mg/L	0.0004	0.001	07/15/19 15:18	mfm
Potassium, dissolved	M200.7 ICP	2	2.6		*	mg/L	0.4	2	07/16/19 23:02	dcm
Selenium, dissolved	M200.8 ICP-MS	2	0.0002	J	*	mg/L	0.0002	0.0005	07/15/19 15:18	mfm
Silicon, dissolved	M200.7 ICP	2	3.6		*	mg/L	0.2	1	07/16/19 23:02	dcm
Sodium, dissolved	M200.7 ICP	2	3.7		*	mg/L	0.4	2	07/16/19 23:02	dcm
Uranium, dissolved	M200.8 ICP-MS	2	0.0004	J	*	mg/L	0.0002	0.001	07/15/19 15:18	mfm
Vanadium, dissolved	M200.7 ICP	2	0.01	J	*	mg/L	0.01	0.05	07/16/19 23:02	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26.7	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	26.7	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	~~BH~~ J	*	mg/L	0.01	0.05	07/16/19 21:39	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	3.6	~~BH~~ J	*	mg/L	1	5	07/17/19 10:10	ttg

ARCADIS
Project ID:
Sample ID: BK2-35-36-051519-STEP 1

ACZ Sample ID: ***L52545-03***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	3.2		*	mg/L	0.3	1	07/18/19 17:20	jlw
Calcium, dissolved	M200.7 ICP	5	1.1	J	*	mg/L	0.5	3	07/16/19 23:05	dcm
Iron, dissolved	M200.7 ICP	5	1.6		*	mg/L	0.2	0.4	07/16/19 23:05	dcm
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:05	dcm
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 23:05	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.005		*	mg/L	0.001	0.003	07/15/19 15:19	mfm
Potassium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 23:05	dcm
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/15/19 15:19	mfm
Silicon, dissolved	M200.7 ICP	5	4.7		*	mg/L	0.5	3	07/16/19 23:05	dcm
Sodium, dissolved	M200.7 ICP	5	394		*	mg/L	1	5	07/16/19 23:05	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.0016	J	*	mg/L	0.0005	0.003	07/15/19 15:19	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 23:05	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.09	~~H~~ J	*	mg/L	0.01	0.05	07/16/19 21:40	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	9.9	~~H~~ J	*	mg/L	1	5	07/17/19 10:10	ttg

ARCADIS
Project ID:
Sample ID: BK2-35-36-051519-STEP 2

ACZ Sample ID: ***L52545-04***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	7		*	mg/L	1	6	07/18/19 17:23	jlw
Calcium, dissolved	M200.7 ICP	25	719		*	mg/L	3	10	07/16/19 23:08	dcm
Iron, dissolved	M200.7 ICP	25	15.8		*	mg/L	0.8	2	07/16/19 23:08	dcm
Magnesium, dissolved	M200.7 ICP	25	7	J	*	mg/L	5	30	07/16/19 23:08	dcm
Manganese, dissolved	M200.7 ICP	25	6.5		*	mg/L	0.3	1	07/16/19 23:08	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.002	0.005	07/15/19 15:21	mfm
Potassium, dissolved	M200.7 ICP	25		U	*	mg/L	5	30	07/16/19 23:08	dcm
Selenium, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.001	0.003	07/15/19 15:21	mfm
Silicon, dissolved	M200.7 ICP	25	10		*	mg/L	3	10	07/16/19 23:08	dcm
Sodium, dissolved	M200.7 ICP	25	18900		*	mg/L	5	30	07/16/19 23:08	dcm
Uranium, dissolved	M200.8 ICP-MS	20	0.009	J	*	mg/L	0.002	0.01	07/16/19 17:34	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 23:08	dcm

ARCADIS
Project ID:
Sample ID: BK2-35-36-051519-STEP 3

ACZ Sample ID: ***L52545-05***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	21.3		*	mg/L	0.3	1	07/18/19 17:26	jlw
Calcium, dissolved	M200.7 ICP	5	21.2		*	mg/L	0.5	3	07/16/19 23:12	dcm
Iron, dissolved	M200.7 ICP	5	85.6		*	mg/L	0.2	0.4	07/16/19 23:12	dcm
Magnesium, dissolved	M200.7 ICP	5	6		*	mg/L	1	5	07/16/19 23:12	dcm
Manganese, dissolved	M200.7 ICP	5	1.37		*	mg/L	0.05	0.3	07/16/19 23:12	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.013		*	mg/L	0.001	0.003	07/15/19 15:23	mfm
Potassium, dissolved	M200.7 ICP	5	3	J	*	mg/L	1	5	07/16/19 23:12	dcm
Selenium, dissolved	M200.8 ICP-MS	5	0.0012		*	mg/L	0.0005	0.001	07/15/19 15:23	mfm
Silicon, dissolved	M200.7 ICP	5	28.4		*	mg/L	0.5	3	07/16/19 23:12	dcm
Sodium, dissolved	M200.7 ICP	5	29		*	mg/L	1	5	07/16/19 23:12	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.005		*	mg/L	0.0005	0.003	07/15/19 15:23	mfm
Vanadium, dissolved	M200.7 ICP	5	0.10		*	mg/L	0.03	0.1	07/16/19 23:12	dcm

ARCADIS
Project ID:
Sample ID: BK2-35-36-051519-STEP 4

ACZ Sample ID: ***L52545-06***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	8.4		*	mg/L	0.3	1	07/18/19 17:29	jlw
Calcium, dissolved	M200.7 ICP	5	1.7	J	*	mg/L	0.5	3	07/16/19 23:15	dcm
Iron, dissolved	M200.7 ICP	5	0.8		*	mg/L	0.2	0.4	07/16/19 23:15	dcm
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:15	dcm
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 23:15	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10	0.016		*	mg/L	0.002	0.005	07/15/19 15:25	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:15	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.001	J	*	mg/L	0.001	0.003	07/15/19 15:25	mfm
Silicon, dissolved	M200.7 ICP	5	14.1		*	mg/L	0.5	3	07/16/19 23:15	dcm
Sodium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 23:15	dcm
Uranium, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.001	0.005	07/15/19 15:25	mfm
Vanadium, dissolved	M200.7 ICP	5	0.04	J	*	mg/L	0.03	0.1	07/16/19 23:15	dcm

ARCADIS
Project ID:
Sample ID: BK2-35-36-051519-STEP 5

ACZ Sample ID: ***L52545-07***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	16200			mg/Kg	300	1000	07/17/19 6:55	aeh
Calcium, total (3052)	M6010D ICP	5000	900	J		mg/Kg	500	3000	07/17/19 6:55	aeh
Iron, total (3052)	M6010D ICP	5000	4800			mg/Kg	200	400	07/17/19 6:55	aeh
Magnesium, total (3052)	M6010D ICP	5000		U	*	mg/Kg	1000	5000	07/17/19 6:55	aeh
Manganese, total (3052)	M6010D ICP	5000	60	J		mg/Kg	50	300	07/17/19 6:55	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:54	mfm
Potassium, total (3052)	M6010D ICP	5000	11000			mg/Kg	1000	5000	07/17/19 6:55	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:37	mfm
Silicon, total (3052)	M6010D ICP	5000	418000	~~Ø~~ J	*	mg/Kg	500	3000	07/17/19 6:55	aeh
Sodium, total (3052)	M6010D ICP	5000	7000		*	mg/Kg	1000	5000	07/17/19 6:55	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:37	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 6:55	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 12:52	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52546

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33840R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52546 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK2-59-60	L52546-1	Soil	05/16/19						X
BK2-59-60-DI	L52546-2	Leach	05/16/19				X		
BK2-59-60 Step 1	L52546-3	Leach	05/16/19				X		
BK2-59-60 Step 2	L52546-4	Leach	05/16/19				X		
BK2-59-60 Step 3	L52546-5	Leach	05/16/19				X		
BK2-59-60 Step 4	L52546-6	Leach	05/16/19				X		
BK2-59-60 Step 5	L52546-7	Soil	05/16/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations

where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD performed on sample BK2-59-60 STEP1 exhibited recoveries and RPDs within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The "O" qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The "O" qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS was not included in the data package.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L52546

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts payable
Company: Arcadis
E-mail: accountspayable.administration.arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** **State** NM **Zip code** 87021 **Time Zone** MST

***Sampler's Signature:** SU

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Custom selective sequential extract
BK2-12-13-051519	5-15-19:1620	SO	1	HOLD
BK2-20-21-051519	5-15-19:1650	SO	1	HOLD
BK2-35-36-051519	5-15-19:1740	SO	1	HOLD
BK2-38-39-051519	5-15-19:1825	SO	1	HOLD
BK2-41.5-42.5-051519	5-15-19:1920	SO	1	HOLD
BK2-44-44.5-051619	5-16-19:0930	SO	1	HOLD
BK2-59-60-051619	5-16-19:1055	SO	1	HOLD
BK2-63.5-64-051619	5-16-19:1135	SO	1	HOLD
BK2-72.5-73.5-051619	5-16-19:1205	SO	1	HOLD
BK2-77-77.5-051619	5-16-19:1345	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

SW

COPY

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1430	FedEx	5/28/19:1430
			5/29/19 13:21

L52546 Chain of Custody

L52546 1007101125

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK2-59-60-051619

ACZ Sample ID: ***L52546-01***
Date Sampled: *05/16/19 10:55*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	91.5		*	%	0.1	0.5	06/22/19 22:37	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 12:29	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK2-59-60-051619-DI

ACZ Sample ID: ***L52546-02***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.4	J	*	mg/L	0.1	0.5	07/18/19 17:32	jlw
Calcium, dissolved	M200.7 ICP	2	6.7		*	mg/L	0.2	1	07/16/19 23:18	dcm
Iron, dissolved	M200.7 ICP	2	0.26		*	mg/L	0.06	0.2	07/16/19 23:18	dcm
Magnesium, dissolved	M200.7 ICP	2	0.5	J	*	mg/L	0.4	2	07/16/19 23:18	dcm
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 23:18	dcm
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0009	J	*	mg/L	0.0004	0.001	07/15/19 15:27	mfm
Potassium, dissolved	M200.7 ICP	2		U	*	mg/L	0.4	2	07/16/19 23:18	dcm
Selenium, dissolved	M200.8 ICP-MS	2	0.0044		*	mg/L	0.0002	0.0005	07/15/19 15:27	mfm
Silicon, dissolved	M200.7 ICP	2	1.9		*	mg/L	0.2	1	07/16/19 23:18	dcm
Sodium, dissolved	M200.7 ICP	2	5.1		*	mg/L	0.4	2	07/16/19 23:18	dcm
Uranium, dissolved	M200.8 ICP-MS	2		U	*	mg/L	0.0002	0.001	07/15/19 15:27	mfm
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/16/19 23:18	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	20.0	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	20.0	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.01	~~BH~~ J	*	mg/L	0.01	0.05	07/16/19 21:41	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	15.3	~~H~~ J	*	mg/L	1	5	07/17/19 10:10	ttg

ARCADIS
Project ID:
Sample ID: BK2-59-60-051619-STEP 1

ACZ Sample ID: ***L52546-03***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	1.5		*	mg/L	0.3	1	07/18/19 17:36	jlw
Calcium, dissolved	M200.7 ICP	5	0.7	J	*	mg/L	0.5	3	07/16/19 23:22	dcm
Iron, dissolved	M200.7 ICP	5	0.4		*	mg/L	0.2	0.4	07/16/19 23:22	dcm
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:22	dcm
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 23:22	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.001	J	*	mg/L	0.001	0.003	07/15/19 15:28	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:22	dcm
Selenium, dissolved	M200.8 ICP-MS	5	0.0007	J	*	mg/L	0.0005	0.001	07/15/19 15:28	mfm
Silicon, dissolved	M200.7 ICP	5	2.3	J	*	mg/L	0.5	3	07/16/19 23:22	dcm
Sodium, dissolved	M200.7 ICP	5	378		*	mg/L	1	5	07/16/19 23:22	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.0005	0.003	07/15/19 15:28	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 23:22	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH J	*	mg/L	0.01	0.05	07/16/19 21:45	pjb
~~Sulfate~~	~~D516-02/-07 - Turbidimetric~~	~~100~~		~~UH~~ R	*	mg/L	100	500	07/17/19 10:10	ttg

ARCADIS
Project ID:
Sample ID: BK2-59-60-051619-STEP 2

ACZ Sample ID: ***L52546-04***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25		U	*	mg/L	1	6	07/18/19 17:51	jlw
Calcium, dissolved	M200.7 ICP	25	1160		*	mg/L	3	10	07/16/19 23:38	dcm
Iron, dissolved	M200.7 ICP	25	4.6		*	mg/L	0.8	2	07/16/19 23:38	dcm
Magnesium, dissolved	M200.7 ICP	25	6	J	*	mg/L	5	30	07/16/19 23:38	dcm
Manganese, dissolved	M200.7 ICP	25	8.9		*	mg/L	0.3	1	07/16/19 23:38	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.002	0.005	07/15/19 15:37	mfm
Potassium, dissolved	M200.7 ICP	25		U	*	mg/L	5	30	07/16/19 23:38	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.003	07/15/19 15:37	mfm
Silicon, dissolved	M200.7 ICP	25		U	*	mg/L	3	10	07/16/19 23:38	dcm
Sodium, dissolved	M200.7 ICP	25	16800		*	mg/L	5	30	07/16/19 23:38	dcm
Uranium, dissolved	M200.8 ICP-MS	20	0.010		*	mg/L	0.002	0.01	07/16/19 17:36	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 23:38	dcm

ARCADIS
Project ID:
Sample ID: BK2-59-60-051619-STEP 3

ACZ Sample ID: ***L52546-05***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	12.6		*	mg/L	0.3	1	07/18/19 17:54	jlw
Calcium, dissolved	M200.7 ICP	5	39.9		*	mg/L	0.5	3	07/16/19 23:41	dcm
Iron, dissolved	M200.7 ICP	5	51.4		*	mg/L	0.2	0.4	07/16/19 23:41	dcm
Magnesium, dissolved	M200.7 ICP	5	11		*	mg/L	1	5	07/16/19 23:41	dcm
Manganese, dissolved	M200.7 ICP	5	0.98		*	mg/L	0.05	0.3	07/16/19 23:41	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 15:39	mfm
Potassium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 23:41	dcm
Selenium, dissolved	M200.8 ICP-MS	5	0.0013		*	mg/L	0.0005	0.001	07/15/19 15:39	mfm
Silicon, dissolved	M200.7 ICP	5	18.4		*	mg/L	0.5	3	07/16/19 23:41	dcm
Sodium, dissolved	M200.7 ICP	5	29		*	mg/L	1	5	07/16/19 23:41	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.0055		*	mg/L	0.0005	0.003	07/15/19 15:39	mfm
Vanadium, dissolved	M200.7 ICP	5	0.08	J	*	mg/L	0.03	0.1	07/16/19 23:41	dcm

ARCADIS
Project ID:
Sample ID: BK2-59-60-051619-STEP 4

ACZ Sample ID: ***L52546-06***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	8.2		*	mg/L	0.3	1	07/18/19 17:57	jlw
Calcium, dissolved	M200.7 ICP	5	3.4		*	mg/L	0.5	3	07/16/19 23:45	dcm
Iron, dissolved	M200.7 ICP	5	1.0		*	mg/L	0.2	0.4	07/16/19 23:45	dcm
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:45	dcm
Manganese, dissolved	M200.7 ICP	5	0.18	J	*	mg/L	0.05	0.3	07/16/19 23:45	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10	0.004	J	*	mg/L	0.002	0.005	07/15/19 15:41	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:45	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.001	J	*	mg/L	0.001	0.003	07/15/19 15:41	mfm
Silicon, dissolved	M200.7 ICP	5	9.9		*	mg/L	0.5	3	07/16/19 23:45	dcm
Sodium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 23:45	dcm
Uranium, dissolved	M200.8 ICP-MS	10	0.001	J	*	mg/L	0.001	0.005	07/15/19 15:41	mfm
Vanadium, dissolved	M200.7 ICP	5	0.03	J	*	mg/L	0.03	0.1	07/16/19 23:45	dcm

ARCADIS
Project ID:
Sample ID: BK2-59-60-051619-STEP 5

ACZ Sample ID: ***L52546-07***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	20500			mg/Kg	300	1000	07/17/19 6:59	aeh
Calcium, total (3052)	M6010D ICP	5000	1400	J		mg/Kg	500	3000	07/17/19 6:59	aeh
Iron, total (3052)	M6010D ICP	5000	12300			mg/Kg	200	400	07/17/19 6:59	aeh
Magnesium, total (3052)	M6010D ICP	5000		U	*	mg/Kg	1000	5000	07/17/19 6:59	aeh
Manganese, total (3052)	M6010D ICP	5000	180	J		mg/Kg	50	300	07/17/19 6:59	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:56	mfm
Potassium, total (3052)	M6010D ICP	5000	14000			mg/Kg	1000	5000	07/17/19 6:59	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:39	mfm
Silicon, total (3052)	M6010D ICP	5000	408000	~~U~~ J	*	mg/Kg	500	3000	07/17/19 6:59	aeh
Sodium, total (3052)	M6010D ICP	5000	8000		*	mg/Kg	1000	5000	07/17/19 6:59	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:39	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 6:59	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 13:23	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52547

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33841R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52547 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK2-63.5-64	L52547-1	Soil	05/16/19						X
BK2-63.5-64-DI	L52547-2	Leach	05/16/19				X		
BK2-63.5-64 Step 1	L52547-3	Leach	05/16/19				X		
BK2-63.5-64 Step 2	L52547-4	Leach	05/16/19				X		
BK2-63.5-64 Step 3	L52547-5	Leach	05/16/19				X		
BK2-63.5-64 Step 4	L52547-6	Leach	05/16/19				X		
BK2-63.5-64 Step 5	L52547-7	Soil	05/16/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

All analytes associated with the QA blanks exhibited a concentration less than the MDL, with the exception of the analytes listed in the following table. Sample results associated with QA blank contamination that were greater than the BAL resulted in the removal of the laboratory qualifier (B) from the data. Sample results less than the BAL associated with the following sample locations were qualified as listed in the following table.

Sample Locations	Analytes	Sample Result	Qualification
BK2-63.5-64	Selenium (D)	Detected sample results <RL and <BAL	“UB” at the RL

Note:

RL = reporting limit

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument’s continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD performed on samples BK2-63.5-64 STEP 1 and BK2-63.5-64 DTEP exhibited recoveries and RPDs within the control limits.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
BK2-63.5-64 STEP 3	Selenium (D)	173%	170%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The “O” qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The “O” qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X	X		
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS was not included in the data package.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate performed on sample BK2-63.5-64 STEP 1 exhibited RPDs within the control limits.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L 52547

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts payable
Company: Arcadis
E-mail: accountspayable.administration.arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich Sampler's Site Information State NM Zip code 87021 Time Zone MST

*Sampler's Signature: SU

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 6DB120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? [X*]

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract
BK2-12-13-051519	5-15-19:1620	SO	1	HOLD
BK2-20-21-051519	5-15-19:1650	SO	1	HOLD
BK2-35-36-051519	5-15-19:1740	SO	1	HOLD
BK2-38-39-051519	5-15-19:1825	SO	1	HOLD
BK2-41.5-42.5-051519	5-15-19:1920	SO	1	HOLD
BK2-44-44.5-051619	5-16-19:0930	SO	1	HOLD
BK2-59-60-051619	5-16-19:1055	SO	1	HOLD
BK2-63.5-64-051619	5-16-19:1135	SO	1	HOLD
BK2-72.5-73.5-051619	5-16-19:1205	SO	1	HOLD
BK2-77-77.5-051619	5-16-19:1345	SO	1	HOLD

SW

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1431	FedEx	5/28/19:1430
			5/29/19 13:21

L52547 1907101125

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

COPY

L52547 Chain of Custod

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK2-63.5-64-051619

ACZ Sample ID: ***L52547-01***
Date Sampled: *05/16/19 11:35*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	96.1		*	%	0.1	0.5	06/23/19 3:04	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 13:08	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK2-63.5-64-051619-DI

ACZ Sample ID: ***L52547-02***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.3	J	*	mg/L	0.1	0.5	07/18/19 13:54	jlw
Calcium, dissolved	M200.7 ICP	2	9.2		*	mg/L	0.2	1	07/18/19 13:54	jlw
Iron, dissolved	M200.7 ICP	2	0.18	J	*	mg/L	0.06	0.2	07/17/19 18:58	aeh
Magnesium, dissolved	M200.7 ICP	2	0.8	J	*	mg/L	0.4	2	07/17/19 18:58	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/18/19 13:54	jlw
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0016		*	mg/L	0.0004	0.001	07/16/19 12:45	bsu
Potassium, dissolved	M200.7 ICP	2	1.5	J	*	mg/L	0.4	2	07/18/19 13:54	jlw
Selenium, dissolved	M200.8 ICP-MS	2	0.0053 J		*	mg/L	0.0002	0.0005	07/16/19 12:45	bsu
Silicon, dissolved	M200.7 ICP	2	2.6		*	mg/L	0.2	1	07/17/19 18:58	aeh
Sodium, dissolved	M200.7 ICP	2	7.5		*	mg/L	0.4	2	07/17/19 18:58	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0004	J	*	mg/L	0.0002	0.001	07/16/19 12:45	bsu
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/17/19 18:58	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	20.0	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	20.0	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.01	~~BH~~ J	*	mg/L	0.01	0.05	07/16/19 21:46	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	24.4	~~H~~ J	*	mg/L	1	5	07/17/19 10:10	ttg

ARCADIS
Project ID:
Sample ID: BK2-63.5-64-051619-STEP 1

ACZ Sample ID: ***L52547-03***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	0.6	J	*	mg/L	0.3	1	07/18/19 13:57	jlw
Calcium, dissolved	M200.7 ICP	5	1.4	J	*	mg/L	0.5	3	07/18/19 13:57	jlw
Iron, dissolved	M200.7 ICP	5	0.4		*	mg/L	0.2	0.4	07/17/19 19:02	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 19:02	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/18/19 13:57	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/16/19 13:05	bsu
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/18/19 13:57	jlw
Selenium, dissolved	M200.8 ICP-MS	5 .001	~~0.0007~~	UB ~~J~~	*	mg/L	0.0005	0.001	07/16/19 13:05	bsu
Silicon, dissolved	M200.7 ICP	5	3.4		*	mg/L	0.5	3	07/17/19 19:02	aeh
Sodium, dissolved	M200.7 ICP	5	333		*	mg/L	1	5	07/17/19 19:02	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0039		*	mg/L	0.0005	0.003	07/16/19 13:05	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 19:02	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	~~H~~ J	*	mg/L	0.01	0.05	07/16/19 21:47	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	4.6	~~BH~~ J	*	mg/L	1	5	07/17/19 11:04	ttg

ARCADIS
Project ID:
Sample ID: BK2-63.5-64-051619-STEP 2

ACZ Sample ID: ***L52547-04***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	2	J	*	mg/L	1	6	07/18/19 14:06	jlw
Calcium, dissolved	M200.7 ICP	25	3360		*	mg/L	3	10	07/18/19 14:06	jlw
Iron, dissolved	M200.7 ICP	25	9.0		*	mg/L	0.8	2	07/17/19 19:11	aeh
Magnesium, dissolved	M200.7 ICP	25	24	J	*	mg/L	5	30	07/17/19 19:11	aeh
Manganese, dissolved	M200.7 ICP	25	29.6		*	mg/L	0.3	1	07/18/19 14:06	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:38	bsu
Potassium, dissolved	M200.7 ICP	25	7	J	*	mg/L	5	30	07/18/19 14:06	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/16/19 17:38	bsu
Silicon, dissolved	M200.7 ICP	25	4	J	*	mg/L	3	10	07/17/19 19:11	aeh
Sodium, dissolved	M200.7 ICP	25	21000		*	mg/L	5	30	07/17/19 19:11	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.053		*	mg/L	0.002	0.01	07/16/19 17:38	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 19:11	aeh

ARCADIS
Project ID:
Sample ID: BK2-63.5-64-051619-STEP 3

ACZ Sample ID: ***L52547-05***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	15		*	mg/L	1	5	07/18/19 14:10	jlw
Calcium, dissolved	M200.7 ICP	20	88		*	mg/L	2	10	07/18/19 14:10	jlw
Iron, dissolved	M200.7 ICP	20	55.0		*	mg/L	0.6	2	07/17/19 19:15	aeh
Magnesium, dissolved	M200.7 ICP	20	27		*	mg/L	4	20	07/17/19 19:15	aeh
Manganese, dissolved	M200.7 ICP	20	1.2		*	mg/L	0.2	1	07/18/19 14:10	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/17/19 15:43	bsu
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/18/19 14:10	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/18/19 10:49	mfm
Silicon, dissolved	M200.7 ICP	20	27		*	mg/L	2	10	07/17/19 19:15	aeh
Sodium, dissolved	M200.7 ICP	20	96		*	mg/L	4	20	07/17/19 19:15	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.015		*	mg/L	0.002	0.01	07/17/19 15:43	bsu
Vanadium, dissolved	M200.7 ICP	20		U	*	mg/L	0.1	0.5	07/17/19 19:15	aeh

ARCADIS
Project ID:
Sample ID: BK2-63.5-64-051619-STEP 4

ACZ Sample ID: ***L52547-06***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	20.1		*	mg/L	0.3	1	07/18/19 14:13	jlw
Calcium, dissolved	M200.7 ICP	5	17.0		*	mg/L	0.5	3	07/18/19 14:13	jlw
Iron, dissolved	M200.7 ICP	5	2.3		*	mg/L	0.2	0.4	07/17/19 19:18	aeh
Magnesium, dissolved	M200.7 ICP	5	6		*	mg/L	1	5	07/17/19 19:18	aeh
Manganese, dissolved	M200.7 ICP	5	0.27	J	*	mg/L	0.05	0.3	07/18/19 14:13	jlw
Molybdenum, dissolved	M200.8 ICP-MS	10	0.004	J	*	mg/L	0.002	0.005	07/17/19 16:02	bsu
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/18/19 14:13	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/18/19 10:54	mfm
Silicon, dissolved	M200.7 ICP	5	18.2		*	mg/L	0.5	3	07/17/19 19:18	aeh
Sodium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/17/19 19:18	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.005	07/17/19 16:02	bsu
Vanadium, dissolved	M200.7 ICP	5	0.07	J	*	mg/L	0.03	0.1	07/17/19 19:18	aeh

ARCADIS
Project ID:
Sample ID: BK2-63.5-64-051619-STEP 5

ACZ Sample ID: ***L52547-07***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	31400			mg/Kg	300	1000	07/17/19 7:11	aeh
Calcium, total (3052)	M6010D ICP	5000	1100	J		mg/Kg	500	3000	07/17/19 7:11	aeh
Iron, total (3052)	M6010D ICP	5000	14200			mg/Kg	200	400	07/17/19 7:11	aeh
Magnesium, total (3052)	M6010D ICP	5000	1000	J	*	mg/Kg	1000	5000	07/17/19 7:11	aeh
Manganese, total (3052)	M6010D ICP	5000	170	J		mg/Kg	50	300	07/17/19 7:11	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:02	mfm
Potassium, total (3052)	M6010D ICP	5000	16000			mg/Kg	1000	5000	07/17/19 7:11	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:45	mfm
Silicon, total (3052)	M6010D ICP	5000	389000	~~O~~ J	*	mg/Kg	500	3000	07/17/19 7:11	aeh
Sodium, total (3052)	M6010D ICP	5000	8000		*	mg/Kg	1000	5000	07/17/19 7:11	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:45	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 7:11	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 13:54	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52548

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33842R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52548 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK2-72.5-73.5	L52548-1	Soil	05/16/19						X
BK2-72.5-73.5-DI	L52548-2	Leach	05/16/19				X		
BK2-72.5-73.5 Step 1	L52548-3	Leach	05/16/19				X		
BK2-72.5-73.5 Step 2	L52548-4	Leach	05/16/19				X		
BK2-72.5-73.5 Step 3	L52548-5	Leach	05/16/19				X		
BK2-72.5-73.5 Step 4	L52548-6	Leach	05/16/19				X		
BK2-72.5-73.5 Step 5	L52548-7	Soil	05/16/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No other qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations

where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A site-specific MS/MSD was not included in the data package.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The "O" qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The "O" qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X	X		
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS was not included in the data package.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L52548

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts payable
Company: Arcadis
E-mail: accountspayable.administration.arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich Sampler's Site Information State NM Zip code 87021 Time Zone MST

*Sampler's Signature: SW

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? [X*]

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract
BK2-12-13-051519	5-15-19:1620	SO	1	HOLD
BK2-20-21-051519	5-15-19:1650	SO	1	HOLD
BK2-35-36-051519	5-15-19:1740	SO	1	HOLD
BK2-38-39-051519	5-15-19:1825	SO	1	HOLD
BK2-41.5-42.5-051519	5-15-19:1920	SO	1	HOLD
BK2-44-44.5-051619	5-16-19:0930	SO	1	HOLD
BK2-59-60-051619	5-16-19:1055	SO	1	HOLD
BK2-63.5-64-051619	5-16-19:1135	SO	1	HOLD
BK2-72.5-73.5-051619	5-16-19:1205	SO	1	HOLD
BK2-77-77.5-051619	5-16-19:1345	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

COPY

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1430	FedEx	5/28/19:1430
		JZ	5/29/19 13:21

L52548 1007191125

L52548 Chain of Custod

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK2-72.5-73.5-051619

ACZ Sample ID: ***L52548-01***
Date Sampled: *05/16/19 12:05*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	94.2		*	%	0.1	0.5	06/23/19 7:31	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 13:47	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK2-72.5-73.5-051619-DI

ACZ Sample ID: ***L52548-02***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.7		*	mg/L	0.1	0.5	07/18/19 14:16	jlw
Calcium, dissolved	M200.7 ICP	2	6.3		*	mg/L	0.2	1	07/18/19 14:16	jlw
Iron, dissolved	M200.7 ICP	2	1.22		*	mg/L	0.06	0.2	07/17/19 19:21	aeh
Magnesium, dissolved	M200.7 ICP	2	0.6	J	*	mg/L	0.4	2	07/17/19 19:21	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/18/19 14:16	jlw
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0024		*	mg/L	0.0004	0.001	07/16/19 12:47	bsu
Potassium, dissolved	M200.7 ICP	2	1.5	J	*	mg/L	0.4	2	07/18/19 14:16	jlw
Selenium, dissolved	M200.8 ICP-MS	2	0.0051		*	mg/L	0.0002	0.0005	07/16/19 12:47	bsu
Silicon, dissolved	M200.7 ICP	2	5.1		*	mg/L	0.2	1	07/17/19 19:21	aeh
Sodium, dissolved	M200.7 ICP	2	7.2		*	mg/L	0.4	2	07/17/19 19:21	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0008	J	*	mg/L	0.0002	0.001	07/16/19 12:47	bsu
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/17/19 19:21	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	33.3	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	33.3	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	~~BH~~ J	*	mg/L	0.01	0.05	07/16/19 21:48	pjb
Sulfate	D516-02/-07 - Turbidimetric	10	13.5	~~BH~~ J	*	mg/L	10	50	07/17/19 11:04	ttg

ARCADIS
Project ID:
Sample ID: BK2-72.5-73.5-051619-STEP 1

ACZ Sample ID: ***L52548-03***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	3.1		*	mg/L	0.3	1	07/18/19 14:19	jlw
Calcium, dissolved	M200.7 ICP	5	2.3	J	*	mg/L	0.5	3	07/18/19 14:19	jlw
Iron, dissolved	M200.7 ICP	5	1.0		*	mg/L	0.2	0.4	07/17/19 19:24	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 19:24	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/18/19 14:19	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/16/19 13:07	bsu
Potassium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/18/19 14:19	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0032		*	mg/L	0.0005	0.001	07/16/19 13:07	bsu
Silicon, dissolved	M200.7 ICP	5	5.8		*	mg/L	0.5	3	07/17/19 19:24	aeh
Sodium, dissolved	M200.7 ICP	5	335		*	mg/L	1	5	07/17/19 19:24	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0051		*	mg/L	0.0005	0.003	07/16/19 13:07	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 19:24	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.07	~~H~~ J	*	mg/L	0.01	0.05	07/16/19 21:49	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	3.2	~~BH~~ J	*	mg/L	1	5	07/17/19 11:04	ttg

ARCADIS
Project ID:
Sample ID: BK2-72.5-73.5-051619-STEP 2

ACZ Sample ID: ***L52548-04***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	1	J	*	mg/L	1	6	07/18/19 14:28	jlw
Calcium, dissolved	M200.7 ICP	25	1440		*	mg/L	3	10	07/18/19 14:28	jlw
Iron, dissolved	M200.7 ICP	25	1.5	J	*	mg/L	0.8	2	07/17/19 19:34	aeh
Magnesium, dissolved	M200.7 ICP	25	30		*	mg/L	5	30	07/17/19 19:34	aeh
Manganese, dissolved	M200.7 ICP	25	10.9		*	mg/L	0.3	1	07/18/19 14:28	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:43	bsu
Potassium, dissolved	M200.7 ICP	25	6	J	*	mg/L	5	30	07/18/19 14:28	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.007		*	mg/L	0.002	0.005	07/16/19 17:43	bsu
Silicon, dissolved	M200.7 ICP	25	4	J	*	mg/L	3	10	07/17/19 19:34	aeh
Sodium, dissolved	M200.7 ICP	25	21100		*	mg/L	5	30	07/17/19 19:34	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.024		*	mg/L	0.002	0.01	07/16/19 17:43	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 19:34	aeh

ARCADIS
Project ID:
Sample ID: BK2-72.5-73.5-051619-STEP 3

ACZ Sample ID: ***L52548-05***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	16		*	mg/L	1	5	07/18/19 14:31	jlw
Calcium, dissolved	M200.7 ICP	20	121		*	mg/L	2	10	07/18/19 14:31	jlw
Iron, dissolved	M200.7 ICP	20	57.5		*	mg/L	0.6	2	07/17/19 19:38	aeh
Magnesium, dissolved	M200.7 ICP	20	56		*	mg/L	4	20	07/17/19 19:38	aeh
Manganese, dissolved	M200.7 ICP	20	1.5		*	mg/L	0.2	1	07/18/19 14:31	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/17/19 15:44	bsu
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/18/19 14:31	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.004	J	*	mg/L	0.002	0.005	07/18/19 10:56	mfm
Silicon, dissolved	M200.7 ICP	20	26		*	mg/L	2	10	07/17/19 19:38	aeh
Sodium, dissolved	M200.7 ICP	20	108		*	mg/L	4	20	07/17/19 19:38	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.011		*	mg/L	0.002	0.01	07/17/19 15:44	bsu
Vanadium, dissolved	M200.7 ICP	20		U	*	mg/L	0.1	0.5	07/17/19 19:38	aeh

ARCADIS
Project ID:
Sample ID: BK2-72.5-73.5-051619-STEP 4

ACZ Sample ID: ***L52548-06***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	19.0		*	mg/L	0.3	1	07/18/19 14:34	jlw
Calcium, dissolved	M200.7 ICP	5	17.0		*	mg/L	0.5	3	07/18/19 14:34	jlw
Iron, dissolved	M200.7 ICP	5	3.4		*	mg/L	0.2	0.4	07/17/19 19:41	aeh
Magnesium, dissolved	M200.7 ICP	5	8		*	mg/L	1	5	07/17/19 19:41	aeh
Manganese, dissolved	M200.7 ICP	5	0.22	J	*	mg/L	0.05	0.3	07/18/19 14:34	jlw
Molybdenum, dissolved	M200.8 ICP-MS	10	0.003	J	*	mg/L	0.002	0.005	07/17/19 16:04	bsu
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/18/19 14:34	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.028		*	mg/L	0.002	0.005	07/18/19 10:58	mfm
Silicon, dissolved	M200.7 ICP	5	16.3		*	mg/L	0.5	3	07/17/19 19:41	aeh
Sodium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/17/19 19:41	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.005		*	mg/L	0.001	0.005	07/17/19 16:04	bsu
Vanadium, dissolved	M200.7 ICP	5	0.05	J	*	mg/L	0.03	0.1	07/17/19 19:41	aeh

ARCADIS
Project ID:
Sample ID: BK2-72.5-73.5-051619-STEP 5

ACZ Sample ID: ***L52548-07***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	29700			mg/Kg	300	1000	07/17/19 7:15	aeh
Calcium, total (3052)	M6010D ICP	5000	600	J		mg/Kg	500	3000	07/17/19 7:15	aeh
Iron, total (3052)	M6010D ICP	5000	7500			mg/Kg	200	400	07/17/19 7:15	aeh
Magnesium, total (3052)	M6010D ICP	5000		U	*	mg/Kg	1000	5000	07/17/19 7:15	aeh
Manganese, total (3052)	M6010D ICP	5000	70	J		mg/Kg	50	300	07/17/19 7:15	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:03	mfm
Potassium, total (3052)	M6010D ICP	5000	19000			mg/Kg	1000	5000	07/17/19 7:15	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:46	mfm
Silicon, total (3052)	M6010D ICP	5000	418000	O	*	mg/Kg	500	3000	07/17/19 7:15	aeh
Sodium, total (3052)	M6010D ICP	5000	9000		*	mg/Kg	1000	5000	07/17/19 7:15	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:46	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 7:15	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 14:25	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52549

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33843R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52549 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK2-77-77.5	L52549-1	Soil	05/16/19						X
BK2-77-77.5-DI	L52549-2	Leach	05/16/19				X		
BK2-77-77.5 Step 1	L52549-3	Leach	05/16/19				X		
BK2-77-77.5 Step 2	L52549-4	Leach	05/16/19				X		
BK2-77-77.5 Step 3	L52549-5	Leach	05/16/19				X		
BK2-77-77.5 Step 4	L52549-6	Leach	05/16/19				X		
BK2-77-77.5 Step 5	L52549-7	Soil	05/16/19					X	

Note: The date collected was incorrect on the Form 1s and was hand-corrected to match the date collected on the Chain of Custody.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No other qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations

where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD performed on sample BK2-77-77.5 STEP 2 exhibited recoveries and RPDs within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The "O" qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The "O" qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X	X		
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS was not included in the data package.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate performed on sample BK2-77-77.5 for phosphorous exhibited an RPD within the control limits.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L52549

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts payable
Company: Arcadis
E-mail: accountspayable.administration.arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich Sampler's Site Information State NM Zip code 87021 Time Zone MST

*Sampler's Signature: SU

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 6DB120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? [X*]

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Custom selective sequential extract
BK2-12-13-051519	5-15-19:1620	SO	1	HOLD
BK2-20-21-051519	5-15-19:1650	SO	1	HOLD
BK2-35-36-051519	5-15-19:1740	SO	1	HOLD
BK2-38-39-051519	5-15-19:1825	SO	1	HOLD
BK2-41.5-42.5-051519	5-15-19:1920	SO	1	HOLD
BK2-44-44.5-051619	5-16-19:0930	SO	1	HOLD
BK2-59-60-051619	5-16-19:1055	SO	1	HOLD
BK2-63.5-64-051619	5-16-19:1135	SO	1	HOLD
BK2-72.5-73.5-051619	5-16-19:1205	SO	1	HOLD
BK2-77-77.5-051619	5-16-19:1345	SO	1	HOLD

SWM

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1430	FedEx	5/28/19:1430
			5/29/19 13:21

L52549 1007191126

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK2-77-77.5-051619

ACZ Sample ID: ***L52549-01***
Date Sampled: ~~*06/16/19*~~ *13:45* 5-16-19
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.4		*	%	0.1	0.5	06/23/19 11:59	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 14:25	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK2-77-77.5-051619-DI

ACZ Sample ID: ***L52549-02***
Date Sampled: ~~*06/16/19*~~ *00:00* 5-16-19
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.8		*	mg/L	0.1	0.5	07/18/19 14:37	jlw
Calcium, dissolved	M200.7 ICP	2	6.0		*	mg/L	0.2	1	07/18/19 14:37	jlw
Iron, dissolved	M200.7 ICP	2	1.38		*	mg/L	0.06	0.2	07/17/19 19:44	aeh
Magnesium, dissolved	M200.7 ICP	2	0.7	J	*	mg/L	0.4	2	07/17/19 19:44	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/18/19 14:37	jlw
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0021		*	mg/L	0.0004	0.001	07/16/19 12:49	bsu
Potassium, dissolved	M200.7 ICP	2	1.8	J	*	mg/L	0.4	2	07/18/19 14:37	jlw
Selenium, dissolved	M200.8 ICP-MS	2	0.0039		*	mg/L	0.0002	0.0005	07/16/19 12:49	bsu
Silicon, dissolved	M200.7 ICP	2	7.1		*	mg/L	0.2	1	07/17/19 19:44	aeh
Sodium, dissolved	M200.7 ICP	2	8.7		*	mg/L	0.4	2	07/17/19 19:44	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0006	J	*	mg/L	0.0002	0.001	07/16/19 12:49	bsu
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/17/19 19:44	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26.7	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	26.7	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.04	~~BH~~ J	*	mg/L	0.01	0.05	07/16/19 21:52	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	13.3	~~H~~ J	*	mg/L	1	5	07/17/19 11:04	ttg

ARCADIS
Project ID:
Sample ID: BK2-77-77.5-051619-STEP 1

ACZ Sample ID: ***L52549-03***
Date Sampled: ~~*06/16/19*~~ *00:00* 5-16-19
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	1.7		*	mg/L	0.3	1	07/18/19 14:40	jlw
Calcium, dissolved	M200.7 ICP	5	2.8	J	*	mg/L	0.5	3	07/18/19 14:40	jlw
Iron, dissolved	M200.7 ICP	5	1.3		*	mg/L	0.2	0.4	07/17/19 19:48	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 19:48	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/18/19 14:40	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.001	J	*	mg/L	0.001	0.003	07/16/19 13:09	bsu
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/18/19 14:40	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0022		*	mg/L	0.0005	0.001	07/16/19 13:09	bsu
Silicon, dissolved	M200.7 ICP	5	7.1		*	mg/L	0.5	3	07/17/19 19:48	aeh
Sodium, dissolved	M200.7 ICP	5	330		*	mg/L	1	5	07/17/19 19:48	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0037		*	mg/L	0.0005	0.003	07/16/19 13:09	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 19:48	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.08	~~H~~ J	*	mg/L	0.01	0.05	07/16/19 21:54	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	3.7	~~BH~~ J	*	mg/L	1	5	07/17/19 11:04	ttg

ARCADIS
Project ID:
Sample ID: BK2-77-77.5-051619-STEP 2

ACZ Sample ID: ***L52549-04***
Date Sampled: ~~*06/16/19*~~ *00:00* 5-16-19
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	2	J	*	mg/L	1	6	07/18/19 14:44	jlw
Calcium, dissolved	M200.7 ICP	25	1620		*	mg/L	3	10	07/18/19 14:44	jlw
Iron, dissolved	M200.7 ICP	25	2.2		*	mg/L	0.8	2	07/17/19 19:51	aeh
Magnesium, dissolved	M200.7 ICP	25	38		*	mg/L	5	30	07/17/19 19:51	aeh
Manganese, dissolved	M200.7 ICP	25	13.1		*	mg/L	0.3	1	07/18/19 14:44	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:45	bsu
Potassium, dissolved	M200.7 ICP	25	8	J	*	mg/L	5	30	07/18/19 14:44	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.005		*	mg/L	0.002	0.005	07/16/19 17:45	bsu
Silicon, dissolved	M200.7 ICP	25	5	J	*	mg/L	3	10	07/17/19 19:51	aeh
Sodium, dissolved	M200.7 ICP	25	21300		*	mg/L	5	30	07/17/19 19:51	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.026		*	mg/L	0.002	0.01	07/16/19 17:45	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 19:51	aeh

ARCADIS
Project ID:
Sample ID: BK2-77-77.5-051619-STEP 3

ACZ Sample ID: ***L52549-05***
Date Sampled: ~~*06/16/19*~~ *00:00* 5-16-19
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	18		*	mg/L	1	5	07/18/19 14:53	jlw
Calcium, dissolved	M200.7 ICP	20	123		*	mg/L	2	10	07/18/19 14:53	jlw
Iron, dissolved	M200.7 ICP	20	65.4		*	mg/L	0.6	2	07/17/19 20:01	aeh
Magnesium, dissolved	M200.7 ICP	20	55		*	mg/L	4	20	07/17/19 20:01	aeh
Manganese, dissolved	M200.7 ICP	20	1.8		*	mg/L	0.2	1	07/18/19 14:53	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/17/19 15:46	bsu
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/18/19 14:53	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.004	J	*	mg/L	0.002	0.005	07/18/19 10:59	mfm
Silicon, dissolved	M200.7 ICP	20	32		*	mg/L	2	10	07/17/19 20:01	aeh
Sodium, dissolved	M200.7 ICP	20	173		*	mg/L	4	20	07/17/19 20:01	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.010		*	mg/L	0.002	0.01	07/17/19 15:46	bsu
Vanadium, dissolved	M200.7 ICP	20	0.1	J	*	mg/L	0.1	0.5	07/17/19 20:01	aeh

ARCADIS
Project ID:
Sample ID: BK2-77-77.5-051619-STEP 4

ACZ Sample ID: ***L52549-06***
Date Sampled: ~~*06/16/19*~~ *00:00* 5-16-19
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	22.8		*	mg/L	0.3	1	07/18/19 14:56	jlw
Calcium, dissolved	M200.7 ICP	5	20.3		*	mg/L	0.5	3	07/18/19 14:56	jlw
Iron, dissolved	M200.7 ICP	5	3.7		*	mg/L	0.2	0.4	07/17/19 20:04	aeh
Magnesium, dissolved	M200.7 ICP	5	11		*	mg/L	1	5	07/17/19 20:04	aeh
Manganese, dissolved	M200.7 ICP	5	0.31		*	mg/L	0.05	0.3	07/18/19 14:56	jlw
Molybdenum, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.002	0.005	07/17/19 16:06	bsu
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/18/19 14:56	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.009		*	mg/L	0.002	0.005	07/18/19 11:01	mfm
Silicon, dissolved	M200.7 ICP	5	18.9		*	mg/L	0.5	3	07/17/19 20:04	aeh
Sodium, dissolved	M200.7 ICP	5	3	J	*	mg/L	1	5	07/17/19 20:04	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.004	J	*	mg/L	0.001	0.005	07/17/19 16:06	bsu
Vanadium, dissolved	M200.7 ICP	5	0.04	J	*	mg/L	0.03	0.1	07/17/19 20:04	aeh

ARCADIS
Project ID:
Sample ID: BK2-77-77.5-051619-STEP 5

ACZ Sample ID: ***L52549-07***
Date Sampled: ~~*06/16/19*~~ *00:00* 5-16-9
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	36300			mg/Kg	300	1000	07/17/19 7:19	aeh
Calcium, total (3052)	M6010D ICP	5000	1000	J		mg/Kg	500	3000	07/17/19 7:19	aeh
Iron, total (3052)	M6010D ICP	5000	11400			mg/Kg	200	400	07/17/19 7:19	aeh
Magnesium, total (3052)	M6010D ICP	5000	2000	J	*	mg/Kg	1000	5000	07/17/19 7:19	aeh
Manganese, total (3052)	M6010D ICP	5000	100	J		mg/Kg	50	300	07/17/19 7:19	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:05	mfm
Potassium, total (3052)	M6010D ICP	5000	19000			mg/Kg	1000	5000	07/17/19 7:19	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	1	3	07/16/19 12:48	mfm
Silicon, total (3052)	M6010D ICP	5000	406000	~~O~~ J	*	mg/Kg	500	3000	07/17/19 7:19	aeh
Sodium, total (3052)	M6010D ICP	5000	9000		*	mg/Kg	1000	5000	07/17/19 7:19	aeh
Uranium, total (3052)	M6020B ICP-MS	12500	1	J		mg/Kg	1	6	07/16/19 12:48	mfm
Vanadium, total (3052)	M6010D ICP	5000	40	J		mg/Kg	30	100	07/17/19 7:19	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 14:56	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52550

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33844R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52550 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK3-31.5-32.5	L52550-1	Soil	05/22/19						X
BK3-31.5-32.5-DI	L52550-2	Leach	05/22/19				X		
BK3-31.5-32.5 Step 1	L52550-3	Leach	05/22/19				X		
BK3-31.5-32.5 Step 3	L52550-4	Leach	05/22/19				X		
BK3-31.5-32.5 Step 3	L52550-5	Leach	05/22/19				X		
BK3-31.5-32.5 Step 4	L52550-6	Leach	05/22/19				X		
BK3-31.5-32.5 Step 5	L52550-7	Soil	05/22/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No other qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations

where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD performed on sample BK3-31.5-32.5 DI exhibited recoveries and RPDs within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The "O" qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The "O" qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X	X		
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS was not included in the data package.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L52550

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: shannon.ulrich@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: ~~Shannon Ulrich~~ Accounts Payable
Company: Arcadis
E-mail: accounts payable.administration ~~shannon.ulrich~~@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** SW

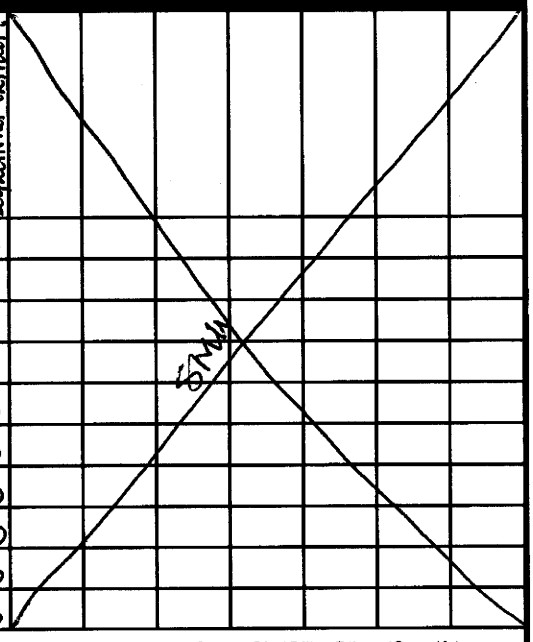
*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK3-14.5-15-052219	5-22-19:1035	SO	1	HOLD
BK3-23-23.5-052219	5-22-19:1055	SO	1	HOLD
BK3-26-27-052219	5-22-19:1115	SO	1	HOLD
1. BK3-31.5-32.5-052219	5-22-19:1130	SO	1	HOLD
BK3-35-35.5-052219	5-22-19:1200	SO	1	HOLD
BK3-46.5-47.5-052219	5-22-19:1230	SO	1	HOLD
BK3-47.5-48.5-052219	5-22-19:1300	SO	1	HOLD
BK3-50.5-52-052219	5-22-19:1320	SO	1	HOLD
BK3-55-56-052219	5-22-19:1400	SO	1	HOLD
BK3-42.5-43.5-052219	5-22-19:1505	SO	1	HOLD



Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom Selective sequential extraction; contact Tim Van Wyngarden
Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/20/19: 1430	FedEx	5/20/19: 1430
			5/21/19 13:21

L52550 Chain of Custod

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK3-31.5-32.5-052219

ACZ Sample ID: ***L52550-01***
Date Sampled: *05/22/19 11:30*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	97.1		*	%	0.1	0.5	06/23/19 16:26	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 15:04	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK3-31.5-32.5-052219-DI

ACZ Sample ID: ***L52550-02***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.7		*	mg/L	0.1	0.5	07/18/19 15:05	jlw
Calcium, dissolved	M200.7 ICP	2	3.9		*	mg/L	0.2	1	07/18/19 15:05	jlw
Iron, dissolved	M200.7 ICP	2	1.22		*	mg/L	0.06	0.2	07/17/19 20:14	aeh
Magnesium, dissolved	M200.7 ICP	2	0.5	J	*	mg/L	0.4	2	07/17/19 20:14	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/18/19 15:05	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.024		*	mg/L	0.001	0.003	07/16/19 12:50	bsu
Potassium, dissolved	M200.7 ICP	2	1.6	J	*	mg/L	0.4	2	07/18/19 15:05	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0018		*	mg/L	0.0005	0.001	07/16/19 12:50	bsu
Silicon, dissolved	M200.7 ICP	2	6.9		*	mg/L	0.2	1	07/17/19 20:14	aeh
Sodium, dissolved	M200.7 ICP	2	20.1		*	mg/L	0.4	2	07/17/19 20:14	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0006	J	*	mg/L	0.0005	0.003	07/16/19 12:50	bsu
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/17/19 20:14	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	40.0	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	40.0	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	~~BH~~ J	*	mg/L	0.01	0.05	07/16/19 21:58	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	15.1	~~H~~ J	*	mg/L	1	5	07/17/19 11:04	ttg

ARCADIS
Project ID:
Sample ID: BK3-31.5-32.5-052219-STEP 1

ACZ Sample ID: ***L52550-03***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	0.8	J	*	mg/L	0.3	1	07/18/19 15:08	jlw
Calcium, dissolved	M200.7 ICP	5	2.5	J	*	mg/L	0.5	3	07/18/19 15:08	jlw
Iron, dissolved	M200.7 ICP	5	1.0		*	mg/L	0.2	0.4	07/17/19 20:17	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 20:17	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/18/19 15:08	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.017		*	mg/L	0.001	0.003	07/16/19 13:10	bsu
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/18/19 15:08	jlw
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/16/19 13:10	bsu
Silicon, dissolved	M200.7 ICP	5	6.6		*	mg/L	0.5	3	07/17/19 20:17	aeh
Sodium, dissolved	M200.7 ICP	5	340		*	mg/L	1	5	07/17/19 20:17	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0019	J	*	mg/L	0.0005	0.003	07/16/19 13:10	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 20:17	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.04	~~BH~~ J	*	mg/L	0.01	0.05	07/16/19 22:00	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	3.5	~~BH~~ J	*	mg/L	1	5	07/17/19 11:05	ttg

ARCADIS
Project ID:
Sample ID: BK3-31.5-32.5-052219-STEP 2

ACZ Sample ID: ***L52550-04***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	9		*	mg/L	1	6	07/18/19 15:11	jlw
Calcium, dissolved	M200.7 ICP	25	1590		*	mg/L	3	10	07/18/19 15:11	jlw
Iron, dissolved	M200.7 ICP	25	17.9		*	mg/L	0.8	2	07/17/19 20:21	aeh
Magnesium, dissolved	M200.7 ICP	25	51		*	mg/L	5	30	07/17/19 20:21	aeh
Manganese, dissolved	M200.7 ICP	25	13.1		*	mg/L	0.3	1	07/18/19 15:11	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:50	bsu
Potassium, dissolved	M200.7 ICP	25	13	J	*	mg/L	5	30	07/18/19 15:11	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.004	J	*	mg/L	0.002	0.005	07/16/19 17:50	bsu
Silicon, dissolved	M200.7 ICP	25	14		*	mg/L	3	10	07/17/19 20:21	aeh
Sodium, dissolved	M200.7 ICP	25	20800		*	mg/L	5	30	07/17/19 20:21	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.014		*	mg/L	0.002	0.01	07/16/19 17:50	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 20:21	aeh

ARCADIS
Project ID:
Sample ID: BK3-31.5-32.5-052219-STEP 3

ACZ Sample ID: ***L52550-05***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	19		*	mg/L	1	5	07/18/19 15:14	jlw
Calcium, dissolved	M200.7 ICP	20	125		*	mg/L	2	10	07/18/19 15:14	jlw
Iron, dissolved	M200.7 ICP	20	97.6		*	mg/L	0.6	2	07/17/19 20:24	aeh
Magnesium, dissolved	M200.7 ICP	20	54		*	mg/L	4	20	07/17/19 20:24	aeh
Manganese, dissolved	M200.7 ICP	20	1.3		*	mg/L	0.2	1	07/18/19 15:14	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20	0.025		*	mg/L	0.004	0.01	07/17/19 15:48	bsu
Potassium, dissolved	M200.7 ICP	20	6	J	*	mg/L	4	20	07/18/19 15:14	jlw
Selenium, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.002	0.005	07/17/19 15:48	bsu
Silicon, dissolved	M200.7 ICP	20	34		*	mg/L	2	10	07/17/19 20:24	aeh
Sodium, dissolved	M200.7 ICP	20	195		*	mg/L	4	20	07/17/19 20:24	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.010		*	mg/L	0.002	0.01	07/17/19 15:48	bsu
Vanadium, dissolved	M200.7 ICP	20	0.1	J	*	mg/L	0.1	0.5	07/17/19 20:24	aeh

ARCADIS
Project ID:
Sample ID: BK3-31.5-32.5-052219-STEP 4

ACZ Sample ID: ***L52550-06***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	28.3		*	mg/L	0.3	1	07/18/19 15:17	jlw
Calcium, dissolved	M200.7 ICP	5	27.1		*	mg/L	0.5	3	07/18/19 15:17	jlw
Iron, dissolved	M200.7 ICP	5	5.3		*	mg/L	0.2	0.4	07/17/19 20:27	aeh
Magnesium, dissolved	M200.7 ICP	5	12		*	mg/L	1	5	07/17/19 20:27	aeh
Manganese, dissolved	M200.7 ICP	5	0.30		*	mg/L	0.05	0.3	07/18/19 15:17	jlw
Molybdenum, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.002	0.005	07/17/19 16:08	bsu
Potassium, dissolved	M200.7 ICP	5	3	J	*	mg/L	1	5	07/18/19 15:17	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/18/19 11:03	mfm
Silicon, dissolved	M200.7 ICP	5	24.3		*	mg/L	0.5	3	07/17/19 20:27	aeh
Sodium, dissolved	M200.7 ICP	5	4	J	*	mg/L	1	5	07/17/19 20:27	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.005	07/17/19 16:08	bsu
Vanadium, dissolved	M200.7 ICP	5	0.05	J	*	mg/L	0.03	0.1	07/17/19 20:27	aeh

ARCADIS
Project ID:
Sample ID: BK3-31.5-32.5-052219-STEP 5

ACZ Sample ID: ***L52550-07***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	35500			mg/Kg	300	1000	07/17/19 7:23	aeh
Calcium, total (3052)	M6010D ICP	5000	1600	J		mg/Kg	500	3000	07/17/19 7:23	aeh
Iron, total (3052)	M6010D ICP	5000	13900			mg/Kg	200	400	07/17/19 7:23	aeh
Magnesium, total (3052)	M6010D ICP	5000	2000	J	*	mg/Kg	1000	5000	07/17/19 7:23	aeh
Manganese, total (3052)	M6010D ICP	5000	110	J		mg/Kg	50	300	07/17/19 7:23	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:07	mfm
Potassium, total (3052)	M6010D ICP	5000	18000			mg/Kg	1000	5000	07/17/19 7:23	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	1	3	07/16/19 12:50	mfm
Silicon, total (3052)	M6010D ICP	5000	390000	~~J~~ J	*	mg/Kg	500	3000	07/17/19 7:23	aeh
Sodium, total (3052)	M6010D ICP	5000	9000		*	mg/Kg	1000	5000	07/17/19 7:23	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:50	mfm
Vanadium, total (3052)	M6010D ICP	5000	50	J		mg/Kg	30	100	07/17/19 7:23	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 15:27	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52551

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33845R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52551 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK3-42.5-43.5	L52551-1	Soil	05/22/19						X
BK3-42.5-43.5-DI	L52551-2	Leach	05/22/19				X		
BK3-42.5-43.5 Step 1	L52551-3	Leach	05/22/19				X		
BK3-42.5-43.5 Step 3	L52551-4	Leach	05/22/19				X		
BK3-42.5-43.5 Step 3	L52551-5	Leach	05/22/19				X		
BK3-42.5-43.5 Step 4	L52551-6	Leach	05/22/19				X		
BK3-42.5-43.5 Step 5	L52551-7	Soil	05/22/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No other qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations

where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD performed on samples BK3-42.5-43.5- STEP 3 and BK3-42.5-43.5 STEP 4 exhibited recoveries and RPDs within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The "O" qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The "O" qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X	X		
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS was not included in the data package.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L 52551

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: shannon.ulrich@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: ~~Shannon Ulrich~~ Accounts Payable
Company: Arcadis
E-mail: accounts payable.administration@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** SU

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Custom Selective Sequential Extraction
BK3-14.5-15-052219	5-22-19:1035	SO	1	HOLD
BK3-23-23.5-052219	5-22-19:1055	SO	1	HOLD
BK3-26-27-052219	5-22-19:1115	SO	1	HOLD
BK3-31.5-32.5-052219	5-22-19:1130	SO	1	HOLD
BK3-35-35.5-052219	5-22-19:1200	SO	1	HOLD
BK3-46.5-47.5-052219	5-22-19:1230	SO	1	HOLD
BK3-47.5-48.5-052219	5-22-19:1300	SO	1	HOLD
BK3-50.5-52-052219	5-22-19:1320	SO	1	HOLD
BK3-55-56-052219	5-22-19:1400	SO	1	HOLD
BK3-42.5-43.5-052219	5-22-19:1505	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom Selective Sequential extraction; contact Tim Van Wyngarden
*Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/20/19: 1430	FedEx	5/20/19: 1430
			5/29/19 13:21

L52551 1007101127

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

COPY

L52551 Chain of Custod

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK3-42.5-43.5-052219

ACZ Sample ID: ***L52551-01***
Date Sampled: *05/22/19 15:05*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	88.9		*	%	0.1	0.5	06/23/19 20:53	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 15:42	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK3-42.5-43.5-052219-DI

ACZ Sample ID: ***L52551-02***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	2.6		*	mg/L	0.1	0.5	07/18/19 13:46	jlw
Calcium, dissolved	M200.7 ICP	2	7.0		*	mg/L	0.2	1	07/18/19 13:46	jlw
Iron, dissolved	M200.7 ICP	2	1.34		*	mg/L	0.06	0.2	07/17/19 21:14	aeh
Magnesium, dissolved	M200.7 ICP	2	1.3	J	*	mg/L	0.4	2	07/17/19 21:14	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/17/19 21:14	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0012		*	mg/L	0.0004	0.001	07/16/19 12:56	bsu
Potassium, dissolved	M200.7 ICP	2	1.4	J	*	mg/L	0.4	2	07/17/19 21:14	aeh
Selenium, dissolved	M200.8 ICP-MS	2	0.0019		*	mg/L	0.0002	0.0005	07/16/19 12:56	bsu
Silicon, dissolved	M200.7 ICP	2	10.0		*	mg/L	0.2	1	07/17/19 21:14	aeh
Sodium, dissolved	M200.7 ICP	2	32.8		*	mg/L	0.4	2	07/18/19 13:46	jlw
Uranium, dissolved	M200.8 ICP-MS	2	0.0017		*	mg/L	0.0002	0.001	07/16/19 12:56	bsu
Vanadium, dissolved	M200.7 ICP	2	0.03	J	*	mg/L	0.01	0.05	07/17/19 21:14	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	66.7	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	66.7	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.40	H J	*	mg/L	0.01	0.05	07/16/19 22:01	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	36.0	H J	*	mg/L	1	5	07/17/19 11:07	ttg

ARCADIS
Project ID:
Sample ID: BK3-42.5-43.5-052219-STEP 1

ACZ Sample ID: ***L52551-03***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	0.3	J	*	mg/L	0.3	1	07/18/19 13:49	jlw
Calcium, dissolved	M200.7 ICP	5	6.7		*	mg/L	0.5	3	07/18/19 13:49	jlw
Iron, dissolved	M200.7 ICP	5		U	*	mg/L	0.2	0.4	07/17/19 21:17	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 21:17	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/17/19 21:17	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.001	J	*	mg/L	0.001	0.003	07/16/19 13:12	bsu
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 21:17	aeh
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/16/19 13:12	bsu
Silicon, dissolved	M200.7 ICP	5	4.6		*	mg/L	0.5	3	07/17/19 21:17	aeh
Sodium, dissolved	M200.7 ICP	5	283		*	mg/L	1	5	07/18/19 13:49	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0051		*	mg/L	0.0005	0.003	07/16/19 13:12	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 21:17	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.11	~~H~~ J	*	mg/L	0.01	0.05	07/16/19 22:02	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	6.1	~~H~~ J	*	mg/L	1	5	07/17/19 11:07	ttg

ARCADIS
Project ID:
Sample ID: BK3-42.5-43.5-052219-STEP 2

ACZ Sample ID: ***L52551-04***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	2	J	*	mg/L	1	6	07/18/19 13:52	jlw
Calcium, dissolved	M200.7 ICP	25	3430		*	mg/L	3	10	07/18/19 13:52	jlw
Iron, dissolved	M200.7 ICP	25		U	*	mg/L	0.8	2	07/17/19 21:21	aeh
Magnesium, dissolved	M200.7 ICP	25	110		*	mg/L	5	30	07/17/19 21:21	aeh
Manganese, dissolved	M200.7 ICP	25	18.5		*	mg/L	0.3	1	07/17/19 21:21	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:52	bsu
Potassium, dissolved	M200.7 ICP	25	14	J	*	mg/L	5	30	07/17/19 21:21	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.004	J	*	mg/L	0.002	0.005	07/16/19 17:52	bsu
Silicon, dissolved	M200.7 ICP	25	13		*	mg/L	3	10	07/17/19 21:21	aeh
Sodium, dissolved	M200.7 ICP	25	20800		*	mg/L	5	30	07/18/19 13:52	jlw
Uranium, dissolved	M200.8 ICP-MS	20	0.037		*	mg/L	0.002	0.01	07/16/19 17:52	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 21:21	aeh

ARCADIS
Project ID:
Sample ID: BK3-42.5-43.5-052219-STEP 3

ACZ Sample ID: ***L52551-05***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	15		*	mg/L	1	5	07/18/19 13:56	jlw
Calcium, dissolved	M200.7 ICP	20	191		*	mg/L	2	10	07/18/19 13:56	jlw
Iron, dissolved	M200.7 ICP	20	35.3		*	mg/L	0.6	2	07/17/19 21:24	aeh
Magnesium, dissolved	M200.7 ICP	20	58		*	mg/L	4	20	07/17/19 21:24	aeh
Manganese, dissolved	M200.7 ICP	20	4.1		*	mg/L	0.2	1	07/17/19 21:24	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/17/19 15:50	bsu
Potassium, dissolved	M200.7 ICP	20	5	J	*	mg/L	4	20	07/17/19 21:24	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/18/19 11:08	mfm
Silicon, dissolved	M200.7 ICP	20	52		*	mg/L	2	10	07/17/19 21:24	aeh
Sodium, dissolved	M200.7 ICP	20	389		*	mg/L	4	20	07/18/19 13:56	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0164		*	mg/L	0.0005	0.003	07/16/19 18:09	bsu
Vanadium, dissolved	M200.7 ICP	20	0.3	J	*	mg/L	0.1	0.5	07/17/19 21:24	aeh

ARCADIS
Project ID:
Sample ID: BK3-42.5-43.5-052219-STEP 4

ACZ Sample ID: ***L52551-06***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	50.2		*	mg/L	0.3	1	07/18/19 13:59	jlw
Calcium, dissolved	M200.7 ICP	5	127		*	mg/L	0.5	3	07/18/19 13:59	jlw
Iron, dissolved	M200.7 ICP	5	2.4		*	mg/L	0.2	0.4	07/17/19 21:27	aeh
Magnesium, dissolved	M200.7 ICP	5	47		*	mg/L	1	5	07/17/19 21:27	aeh
Manganese, dissolved	M200.7 ICP	5	1.86		*	mg/L	0.05	0.3	07/17/19 21:27	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.002	0.005	07/17/19 16:10	bsu
Potassium, dissolved	M200.7 ICP	5	7		*	mg/L	1	5	07/17/19 21:27	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.006		*	mg/L	0.002	0.005	07/18/19 11:10	mfm
Silicon, dissolved	M200.7 ICP	5	41.6		*	mg/L	0.5	3	07/17/19 21:27	aeh
Sodium, dissolved	M200.7 ICP	5	15		*	mg/L	1	5	07/18/19 13:59	jlw
Uranium, dissolved	M200.8 ICP-MS	10	0.004	J	*	mg/L	0.001	0.005	07/17/19 16:10	bsu
Vanadium, dissolved	M200.7 ICP	5	0.22		*	mg/L	0.03	0.1	07/17/19 21:27	aeh

ARCADIS
Project ID:
Sample ID: BK3-42.5-43.5-052219-STEP 5

ACZ Sample ID: ***L52551-07***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	67600			mg/Kg	300	1000	07/17/19 7:27	aeh
Calcium, total (3052)	M6010D ICP	5000	3000			mg/Kg	500	3000	07/17/19 7:27	aeh
Iron, total (3052)	M6010D ICP	5000	33000			mg/Kg	200	400	07/17/19 7:27	aeh
Magnesium, total (3052)	M6010D ICP	5000	8000		*	mg/Kg	1000	5000	07/17/19 7:27	aeh
Manganese, total (3052)	M6010D ICP	5000	250	J		mg/Kg	50	300	07/17/19 7:27	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:09	mfm
Potassium, total (3052)	M6010D ICP	5000	23000			mg/Kg	1000	5000	07/17/19 7:27	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	1	3	07/16/19 12:52	mfm
Silicon, total (3052)	M6010D ICP	5000	334000	Ø J	*	mg/Kg	500	3000	07/17/19 7:27	aeh
Sodium, total (3052)	M6010D ICP	5000	10000		*	mg/Kg	1000	5000	07/17/19 7:27	aeh
Uranium, total (3052)	M6020B ICP-MS	12500	2	J		mg/Kg	1	6	07/16/19 12:52	mfm
Vanadium, total (3052)	M6010D ICP	5000	80	J		mg/Kg	30	100	07/17/19 7:27	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 15:58	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52552

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33846R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52552 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK3-47.5-48.5	L52552-1	Soil	05/22/19						X
BK3-47.5-48.5-DI	L52552-2	Leach	05/22/19				X		
BK3-47.5-48.5 Step 1	L52552-3	Leach	05/22/19				X		
BK3-47.5-48.5 Step 3	L52552-4	Leach	05/22/19				X		
BK3-47.5-48.5 Step 3	L52552-5	Leach	05/22/19				X		
BK3-47.5-48.5 Step 4	L52552-6	Leach	05/22/19				X		
BK3-47.5-48.5 Step 5	L52552-7	Soil	05/22/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No other qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations

where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
BK3-47.5-48.5 SEP 3	Selenium (D)	308%	318%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The “O” qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The “O” qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X	X		
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

A MS was not included in the data package.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L 52552

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: shannon.ulrich@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: ~~Shannon Ulrich~~ Accounts Payable
Company: Arcadis
E-mail: ~~shannon.ulrich~~ accounts payable.administration@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** SU

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK3-14.5-15-052219	5-22-19:1035	SO	1	HOLD
BK3-23-23.5-052219	5-22-19:1055	SO	1	HOLD
BK3-26-27-052219	5-22-19:1115	SO	1	HOLD
BK3-31.5-32.5-052219	5-22-19:1130	SO	1	HOLD
BK3-35-35.5-052219	5-22-19:1200	SO	1	HOLD
BK3-46.5-47.5-052219	5-22-19:1230	SO	1	HOLD
BK3-47.5-48.5-052219	5-22-19:1300	SO	1	HOLD
BK3-50.5-52-052219	5-22-19:1320	SO	1	HOLD
BK3-55-56-052219	5-22-19:1400	SO	1	HOLD
BK3-42.5-43.5-052219	5-22-19:1505	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

COPY

REMARKS

Custom Selective sequential extraction; contact Tim Van Wyngarden
Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/20/19: 1430	FedEx	5/20/19: 1430
			5/29/19 13:21

L52552 1007101127

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L52552 Chain of Custod

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK3-47.5-48.5-052219

ACZ Sample ID: ***L52552-01***
Date Sampled: *05/22/19 13:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	90.1		*	%	0.1	0.5	06/24/19 1:20	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 16:21	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK3-47.5-48.5-052219-DI

ACZ Sample ID: ***L52552-02***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.6		*	mg/L	0.1	0.5	07/18/19 14:09	jlw
Calcium, dissolved	M200.7 ICP	2	3.4		*	mg/L	0.2	1	07/18/19 14:09	jlw
Iron, dissolved	M200.7 ICP	2	1.27		*	mg/L	0.06	0.2	07/17/19 21:37	aeh
Magnesium, dissolved	M200.7 ICP	2		U	*	mg/L	0.4	2	07/17/19 21:37	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/17/19 21:37	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0017		*	mg/L	0.0004	0.001	07/16/19 13:01	bsu
Potassium, dissolved	M200.7 ICP	2	0.9	J	*	mg/L	0.4	2	07/17/19 21:37	aeh
Selenium, dissolved	M200.8 ICP-MS	2	0.0012		*	mg/L	0.0002	0.0005	07/16/19 13:01	bsu
Silicon, dissolved	M200.7 ICP	2	6.7		*	mg/L	0.2	1	07/17/19 21:37	aeh
Sodium, dissolved	M200.7 ICP	2	13.8		*	mg/L	0.4	2	07/18/19 14:09	jlw
Uranium, dissolved	M200.8 ICP-MS	2	0.0004	J	*	mg/L	0.0002	0.001	07/16/19 13:01	bsu
Vanadium, dissolved	M200.7 ICP	2	0.02	J	*	mg/L	0.01	0.05	07/17/19 21:37	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26.7	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	26.7	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	~~H~~ J	*	mg/L	0.01	0.05	07/16/19 22:03	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	10.3	~~H~~ J	*	mg/L	1	5	07/17/19 11:07	ttg

ARCADIS
Project ID:
Sample ID: BK3-47.5-48.5-052219-STEP 1

ACZ Sample ID: ***L52552-03***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	0.7	J	*	mg/L	0.3	1	07/18/19 14:12	jlw
Calcium, dissolved	M200.7 ICP	5	1.8	J	*	mg/L	0.5	3	07/18/19 14:12	jlw
Iron, dissolved	M200.7 ICP	5	0.9		*	mg/L	0.2	0.4	07/17/19 21:40	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 21:40	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/17/19 21:40	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.001	J	*	mg/L	0.001	0.003	07/16/19 13:14	bsu
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 21:40	aeh
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/16/19 13:14	bsu
Silicon, dissolved	M200.7 ICP	5	5.4		*	mg/L	0.5	3	07/17/19 21:40	aeh
Sodium, dissolved	M200.7 ICP	5	355		*	mg/L	1	5	07/18/19 14:12	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0018	J	*	mg/L	0.0005	0.003	07/16/19 13:14	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 21:40	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	~~H~~ J	*	mg/L	0.01	0.05	07/16/19 22:04	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	2.3	~~BH~~ J	*	mg/L	1	5	07/17/19 11:07	ttg

ARCADIS
Project ID:
Sample ID: BK3-47.5-48.5-052219-STEP 2

ACZ Sample ID: ***L52552-04***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	2	J	*	mg/L	1	6	07/18/19 14:22	jlw
Calcium, dissolved	M200.7 ICP	25	1190		*	mg/L	3	10	07/18/19 14:22	jlw
Iron, dissolved	M200.7 ICP	25	4.1		*	mg/L	0.8	2	07/17/19 21:50	aeh
Magnesium, dissolved	M200.7 ICP	25	20	J	*	mg/L	5	30	07/17/19 21:50	aeh
Manganese, dissolved	M200.7 ICP	25	9.1		*	mg/L	0.3	1	07/17/19 21:50	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:54	bsu
Potassium, dissolved	M200.7 ICP	25		U	*	mg/L	5	30	07/17/19 21:50	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.004	J	*	mg/L	0.002	0.005	07/16/19 17:54	bsu
Silicon, dissolved	M200.7 ICP	25	3	J	*	mg/L	3	10	07/17/19 21:50	aeh
Sodium, dissolved	M200.7 ICP	25	21300		*	mg/L	5	30	07/18/19 14:22	jlw
Uranium, dissolved	M200.8 ICP-MS	20	0.010		*	mg/L	0.002	0.01	07/16/19 17:54	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 21:50	aeh

ARCADIS
Project ID:
Sample ID: BK3-47.5-48.5-052219-STEP 3

ACZ Sample ID: ***L52552-05***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	15		*	mg/L	1	5	07/18/19 14:25	jlw
Calcium, dissolved	M200.7 ICP	20	83		*	mg/L	2	10	07/18/19 14:25	jlw
Iron, dissolved	M200.7 ICP	20	64.3		*	mg/L	0.6	2	07/17/19 21:54	aeh
Magnesium, dissolved	M200.7 ICP	20	35		*	mg/L	4	20	07/17/19 21:54	aeh
Manganese, dissolved	M200.7 ICP	20	0.7	J	*	mg/L	0.2	1	07/17/19 21:54	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/17/19 15:55	bsu
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/17/19 21:54	aeh
Selenium, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.002	0.005	07/18/19 11:12	mfm
Silicon, dissolved	M200.7 ICP	20	28		*	mg/L	2	10	07/17/19 21:54	aeh
Sodium, dissolved	M200.7 ICP	20	81		*	mg/L	4	20	07/18/19 14:25	jlw
Uranium, dissolved	M200.8 ICP-MS	20	0.007	J	*	mg/L	0.002	0.01	07/17/19 15:55	bsu
Vanadium, dissolved	M200.7 ICP	20	0.2	J	*	mg/L	0.1	0.5	07/17/19 21:54	aeh

ARCADIS
Project ID:
Sample ID: BK3-47.5-48.5-052219-STEP 4

ACZ Sample ID: ***L52552-06***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	16.7		*	mg/L	0.3	1	07/18/19 14:29	jlw
Calcium, dissolved	M200.7 ICP	5	13.1		*	mg/L	0.5	3	07/18/19 14:29	jlw
Iron, dissolved	M200.7 ICP	5	2.7		*	mg/L	0.2	0.4	07/17/19 21:57	aeh
Magnesium, dissolved	M200.7 ICP	5	5		*	mg/L	1	5	07/17/19 21:57	aeh
Manganese, dissolved	M200.7 ICP	5	0.14	J	*	mg/L	0.05	0.3	07/17/19 21:57	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10	0.003	J	*	mg/L	0.002	0.005	07/17/19 16:12	bsu
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 21:57	aeh
Selenium, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.002	0.005	07/18/19 11:14	mfm
Silicon, dissolved	M200.7 ICP	5	16.4		*	mg/L	0.5	3	07/17/19 21:57	aeh
Sodium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/18/19 14:29	jlw
Uranium, dissolved	M200.8 ICP-MS	10	0.001	J	*	mg/L	0.001	0.005	07/17/19 16:12	bsu
Vanadium, dissolved	M200.7 ICP	5	0.05	J	*	mg/L	0.03	0.1	07/17/19 21:57	aeh

ARCADIS
Project ID:
Sample ID: BK3-47.5-48.5-052219-STEP 5

ACZ Sample ID: ***L52552-07***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	31300			mg/Kg	300	1000	07/17/19 7:31	aeh
Calcium, total (3052)	M6010D ICP	5000	8900			mg/Kg	500	3000	07/17/19 7:31	aeh
Iron, total (3052)	M6010D ICP	5000	12500			mg/Kg	200	400	07/17/19 7:31	aeh
Magnesium, total (3052)	M6010D ICP	5000	2000	J	*	mg/Kg	1000	5000	07/17/19 7:31	aeh
Manganese, total (3052)	M6010D ICP	5000	180	J		mg/Kg	50	300	07/17/19 7:31	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:10	mfm
Potassium, total (3052)	M6010D ICP	5000	19000			mg/Kg	1000	5000	07/17/19 7:31	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	1	3	07/16/19 12:53	mfm
Silicon, total (3052)	M6010D ICP	5000	395000	Ø J	*	mg/Kg	500	3000	07/17/19 7:31	aeh
Sodium, total (3052)	M6010D ICP	5000	11000		*	mg/Kg	1000	5000	07/17/19 7:31	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:53	mfm
Vanadium, total (3052)	M6010D ICP	5000	30	J		mg/Kg	30	100	07/17/19 7:31	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 16:29	cra/ajm

ARCADIS Design & Consultancy for natural and built assets

Homestake Mining Company

Grants Reclamation Project

DATA REVIEW

Grants, NM

Metals and Miscellaneous Analysis

SDG #L52553

Analyses Performed By:
ACZ Labs
Steamboat Springs, CO

Report #33878R
Review Level: Tier II
Project: CO0002019.1901.30009 (30008273)

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # L52553 for samples collected in association with the Grants Reclamation Grants, NM site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	CA Wet	MET	MISC
BK3-50.5-52	L53553-1	Soil	05/22/19						X
BK3-50.5-52-DI	L53553-2	Leach	05/22/19				X		
BK3-50.5-52 Step 1	L53553-3	Leach	05/22/19				X		
BK3-50.5-52 Step 3	L53553-4	Leach	05/22/19				X		
BK3-50.5-52 Step 3	L53553-5	Leach	05/22/19				X		
BK3-50.5-52 Step 4	L53553-6	Leach	05/22/19				X		
BK3-50.5-52 Step 5	L53553-7	Soil	05/22/19					X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010, 6020, 200.7, 200.8, SM2320B, 365.1 and D516. Data were reviewed in accordance with the methods, as well as in accordance with USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate) with consideration of the project-specific data uses.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.7/200.8 CA – Wet SSE	Soil	180 days from collection to extraction and 180 days from extraction to analysos	Cool to <6 °C
SW-846 6010/6020	Soil	180 days from collection to analysis	Cool to <6 °C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

All analytes associated with the QA blanks exhibited a concentration less than the MDL, with the exception of the analytes listed in the following table. Sample results associated with QA blank contamination that were greater than the BAL resulted in the removal of the laboratory qualifier (B) from the data. Sample results less than the BAL associated with the following sample locations were qualified as listed in the following table.

Sample Locations	Analytes	Sample Result	Qualification
BK3-50.5-52 DI	Selenium (D)	Detected sample results <RL and <BAL	“UB” at the RL

Note:

RL = reporting limit

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument’s continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All initial and continuing calibration verification standard recoveries were within the control limit.

4. Matrix Spike (MS) and Matrix Spike Duplicate (MSD)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD performed on sample BK3-50.5-52 STEP 4 exhibited recoveries and RPDs within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate was not included in the data package.

5. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

A serial dilution was not included int the data package.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

The "O" qualifier was used by the laboratory to indicate that the result was reported over the calibration range. The "O" qualifier will be changed in the validation to indicate that the result is an estimated value.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; EPA 6010/6020 and 200.7/200.8 SSE CA -Wet	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
A. Instrument Blanks		X	X		
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D	X				X
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
Interference Check Sample	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Alkalinity by method SM2320B	Soil	14 days	Cool to <6 °C.
Ortho phosphorous by method 365.1	Soil	2 days	Cool to <6 °C.
Sulfate by method D516	Soil	28 days	Cool to <6 °C.

The samples were received at 17.4 degrees C.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
All field samples SM2320B	>2x Holding Time	<14 days
All field samples 365.1	>2x Holding Time	<2 days
All field samples D516	>2x Holding Time	<28 Day

Sample results associated with sample locations analyzed by analytical methods SM2320B, 365.1 and D516 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times holding time	J	UJ
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS performed on sample BK3-50.5-52 DI for sulfate exhibited a recovery within the control limit.

6.1 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate performed on sample BK3-50.5-52 DI for sulfate exhibited a RPD within the control limit.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included in the data package.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various EPA and ASTM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Rachelle Borne

SIGNATURE: 

DATE: August 22, 2019

PEER REVIEW: Joseph C. Houser

DATE: August 23, 2019

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACZ Laboratories, Inc. L 52553

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: shannon.ulrich@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: ~~Shannon Ulrich~~ Accounts Payable
Company: Arcadis
E-mail: accounts payable.administration@arcadis.com ~~shannon.ulrich@arcadis.com~~
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich Sampler's Site Information State NM Zip code 87021 Time Zone MST

*Sampler's Signature: SW

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract
BK3-14.5-15-052219	5-22-19:1035	SO	1	HOLD
BK3-23-23.5-052219	5-22-19:1055	SO	1	HOLD
BK3-26-27-052219	5-22-19:1115	SO	1	HOLD
BK3-31.5-32.5-052219	5-22-19:1130	SO	1	HOLD
BK3-35-35.5-052219	5-22-19:1200	SO	1	HOLD
BK3-46.5-47.5-052219	5-22-19:1230	SO	1	HOLD
BK3-47.5-48.5-052219	5-22-19:1300	SO	1	HOLD
BK3-50.5-52-052219	5-22-19:1320	SO	1	HOLD
BK3-55-56-052219	5-22-19:1400	SO	1	HOLD
BK3-42.5-43.5-052219	5-22-19:1505	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom Selective Sequential extraction; contact Tim Van Wyngarden
*Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/20/19: 1430	FedEx	5/20/19: 1430
			5/21/19 1321

L52553 1007101454

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

COPY

L52553 Chain of Custod

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK3-50.5-52-052219

ACZ Sample ID: ***L52553-01***
Date Sampled: *05/22/19 13:20*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	90.7		*	%	0.1	0.5	06/24/19 5:47	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 16:59	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK3-50.5-52-052219-DI

ACZ Sample ID: ***L52553-02***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	1.1		*	mg/L	0.1	0.5	07/18/19 14:32	jlw
Calcium, dissolved	M200.7 ICP	2	3.7		*	mg/L	0.2	1	07/18/19 14:32	jlw
Iron, dissolved	M200.7 ICP	2	1.04		*	mg/L	0.06	0.2	07/17/19 22:00	aeh
Magnesium, dissolved	M200.7 ICP	2	0.4	J	*	mg/L	0.4	2	07/17/19 22:00	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/17/19 22:00	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0182		*	mg/L	0.0004	0.001	07/16/19 13:03	bsu
Potassium, dissolved	M200.7 ICP	2	1.2	J	*	mg/L	0.4	2	07/17/19 22:00	aeh
Selenium, dissolved	M200.8 ICP-MS	2 .005	~~0.0004~~	UB ~~J~~	*	mg/L	0.0002	0.0005	07/16/19 13:03	bsu
Silicon, dissolved	M200.7 ICP	2	7.3		*	mg/L	0.2	1	07/17/19 22:00	aeh
Sodium, dissolved	M200.7 ICP	2	19.4		*	mg/L	0.4	2	07/18/19 14:32	jlw
Uranium, dissolved	M200.8 ICP-MS	2	0.0006	J	*	mg/L	0.0002	0.001	07/16/19 13:03	bsu
Vanadium, dissolved	M200.7 ICP	2	0.02	J	*	mg/L	0.01	0.05	07/17/19 22:00	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	46.7	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
~~Carbonate as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
~~Hydroxide as CaCO3~~		~~1~~		~~UH~~ R	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	46.7	~~H~~ J	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.09	~~H~~ J	*	mg/L	0.01	0.05	07/16/19 22:05	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	11.4	~~H~~ J	*	mg/L	1	5	07/17/19 11:07	ttg

ARCADIS
Project ID:
Sample ID: BK3-50.5-52-052219-STEP 1

ACZ Sample ID: ***L52553-03***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	1.0		*	mg/L	0.3	1	07/18/19 14:35	jlw
Calcium, dissolved	M200.7 ICP	5	2.7	J	*	mg/L	0.5	3	07/18/19 14:35	jlw
Iron, dissolved	M200.7 ICP	5	1.6		*	mg/L	0.2	0.4	07/17/19 22:03	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 22:03	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/17/19 22:03	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.011		*	mg/L	0.001	0.003	07/16/19 13:16	bsu
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 22:03	aeh
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/16/19 13:16	bsu
Silicon, dissolved	M200.7 ICP	5	7.4		*	mg/L	0.5	3	07/17/19 22:03	aeh
Sodium, dissolved	M200.7 ICP	5	333		*	mg/L	1	5	07/18/19 14:35	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0018	J	*	mg/L	0.0005	0.003	07/16/19 13:16	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 22:03	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.06	~~H~~ J	*	mg/L	0.01	0.05	07/16/19 22:06	pjb
~~Sulfate~~	~~D516-02/-07 - Turbidimetric~~	~~10~~		~~UH~~ R	*	mg/L	10	50	07/17/19 11:07	ttg

ARCADIS
Project ID:
Sample ID: BK3-50.5-52-052219-STEP 2

ACZ Sample ID: ***L52553-04***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	3	J	*	mg/L	1	6	07/18/19 14:39	jlw
Calcium, dissolved	M200.7 ICP	25	1740		*	mg/L	3	10	07/18/19 14:39	jlw
Iron, dissolved	M200.7 ICP	25	3.4		*	mg/L	0.8	2	07/17/19 22:07	aeh
Magnesium, dissolved	M200.7 ICP	25	42		*	mg/L	5	30	07/17/19 22:07	aeh
Manganese, dissolved	M200.7 ICP	25	9.0		*	mg/L	0.3	1	07/17/19 22:07	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:56	bsu
Potassium, dissolved	M200.7 ICP	25	9	J	*	mg/L	5	30	07/17/19 22:07	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.004	J	*	mg/L	0.002	0.005	07/16/19 17:56	bsu
Silicon, dissolved	M200.7 ICP	25	9	J	*	mg/L	3	10	07/17/19 22:07	aeh
Sodium, dissolved	M200.7 ICP	25	21400		*	mg/L	5	30	07/18/19 14:39	jlw
Uranium, dissolved	M200.8 ICP-MS	20	0.015		*	mg/L	0.002	0.01	07/16/19 17:56	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 22:07	aeh

ARCADIS
Project ID:
Sample ID: BK3-50.5-52-052219-STEP 3

ACZ Sample ID: ***L52553-05***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	11		*	mg/L	1	5	07/18/19 18:33	jlw
Calcium, dissolved	M200.7 ICP	10	69		*	mg/L	1	5	07/17/19 12:21	dcm
Iron, dissolved	M200.7 ICP	10	41.2		*	mg/L	0.3	0.8	07/17/19 12:21	dcm
Magnesium, dissolved	M200.7 ICP	20	27		*	mg/L	4	20	07/18/19 18:33	jlw
Manganese, dissolved	M200.7 ICP	20	1.3		*	mg/L	0.2	1	07/18/19 18:33	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20	0.005	J	*	mg/L	0.004	0.01	07/17/19 15:57	bsu
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/19/19 10:52	jlw
Selenium, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.002	0.005	07/18/19 11:16	mfm
Silicon, dissolved	M200.7 ICP	10	30		*	mg/L	1	5	07/17/19 12:21	dcm
Sodium, dissolved	M200.7 ICP	10	181		*	mg/L	2	10	07/17/19 12:21	dcm
Uranium, dissolved	M200.8 ICP-MS	20	0.006	J	*	mg/L	0.002	0.01	07/17/19 15:57	bsu
Vanadium, dissolved	M200.7 ICP	10	0.21	J	*	mg/L	0.05	0.3	07/17/19 12:21	dcm

ARCADIS
Project ID:
Sample ID: BK3-50.5-52-052219-STEP 4

ACZ Sample ID: ***L52553-06***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	28.5		*	mg/L	0.3	1	07/18/19 14:42	jlw
Calcium, dissolved	M200.7 ICP	5	32.1		*	mg/L	0.5	3	07/18/19 14:42	jlw
Iron, dissolved	M200.7 ICP	5	3.9		*	mg/L	0.2	0.4	07/17/19 22:10	aeh
Magnesium, dissolved	M200.7 ICP	5	13		*	mg/L	1	5	07/17/19 22:10	aeh
Manganese, dissolved	M200.7 ICP	5	0.43		*	mg/L	0.05	0.3	07/17/19 22:10	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10	0.004	J	*	mg/L	0.002	0.005	07/17/19 16:13	bsu
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/17/19 22:10	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.006		*	mg/L	0.002	0.005	07/18/19 11:17	mfm
Silicon, dissolved	M200.7 ICP	5	24.0		*	mg/L	0.5	3	07/17/19 22:10	aeh
Sodium, dissolved	M200.7 ICP	5	5		*	mg/L	1	5	07/18/19 14:42	jlw
Uranium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.005	07/17/19 16:13	bsu
Vanadium, dissolved	M200.7 ICP	5	0.09	J	*	mg/L	0.03	0.1	07/17/19 22:10	aeh

ARCADIS
Project ID:
Sample ID: BK3-50.5-52-052219-STEP 5

ACZ Sample ID: ***L52553-07***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	26400			mg/Kg	300	1000	07/17/19 7:34	aeh
Calcium, total (3052)	M6010D ICP	5000	900	J		mg/Kg	500	3000	07/17/19 7:34	aeh
Iron, total (3052)	M6010D ICP	5000	9300			mg/Kg	200	400	07/17/19 7:34	aeh
Magnesium, total (3052)	M6010D ICP	5000		U	*	mg/Kg	1000	5000	07/17/19 7:34	aeh
Manganese, total (3052)	M6010D ICP	5000	100	J		mg/Kg	50	300	07/17/19 7:34	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:12	mfm
Potassium, total (3052)	M6010D ICP	5000	16000			mg/Kg	1000	5000	07/17/19 7:34	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	1	3	07/16/19 12:55	mfm
Silicon, total (3052)	M6010D ICP	5000	403000	~~U~~ J	*	mg/Kg	500	3000	07/17/19 7:34	aeh
Sodium, total (3052)	M6010D ICP	5000	8000		*	mg/Kg	1000	5000	07/17/19 7:34	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:55	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 7:34	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 17:00	cra/ajm

UNVALIDATED ANALYTICAL REPORTS

ANALYTICAL SUMMARY REPORT

June 18, 2019

Homestake Mining Co
Hwy 605
Grants, NM 87020

Work Order: C19050918 Quote ID: C5566

Project Name: Grants Reclamation Project

Energy Laboratories, Inc. Casper WY received the following 12 samples for Homestake Mining Co on 5/23/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C19050918-001	BK1-11.5-12.5-052119	05/21/19 12:35	05/23/19	Solid	Metals by ICP/ICPMS, Total or Soluble Total Carbon Moisture Oxidation Reduction Potential pH, Saturated Paste Percent Moisture Digestion, Total Metals Saturated Paste Extraction Services Provided by Lab Total Sulfur
C19050918-002	BK1-15-15.5-052119	05/21/19 13:15	05/23/19	Solid	Same As Above
C19050918-003	BK1-33.5-34-052119	05/21/19 13:50	05/23/19	Solid	Same As Above
C19050918-004	BK1-39-40-052119	05/21/19 14:20	05/23/19	Solid	Same As Above
C19050918-005	BK1-41-41.5-052119	05/21/19 16:00	05/23/19	Solid	Same As Above
C19050918-006	BK1-47-48-052119	05/21/19 16:30	05/23/19	Solid	Same As Above
C19050918-007	BK1-48.5-49.5-052119	05/21/19 17:25	05/23/19	Solid	Same As Above
C19050918-008	BK1-51-52-052119	05/21/19 17:50	05/23/19	Solid	Same As Above
C19050918-009	BK1-52-53-052119	05/21/19 18:20	05/23/19	Solid	Same As Above
C19050918-010	BK1-55.5-56.5-052219	05/22/19 08:55	05/23/19	Solid	Same As Above
C19050918-011	DUP		05/23/19	Solid	Same As Above
C19050918-012	DUP-2		05/23/19	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager .

Report Approved By:

CLIENT: Homestake Mining Co
Project: Grants Reclamation Project
Work Order: C19050918

Revised Date: 06/18/19
Report Date: 06/11/19

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

REVISED/SUPPLEMENTAL REPORT
Revised 6/18/2019
Per request from Shannon Ulrich, Total Sodium has been added to the report for all samples. In addition, the Sample ID for C19050918-010 has been corrected to BK1-55.5-56.5-052219.
The report has been revised and replaces any previously issued report in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-001
Client Sample ID: BK1-11.5-12.5-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 12:35
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	1.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:21 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.1	wt%		0.1		Leco	06/03/19 18:21 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	276	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	2290	mg/kg-dry		5		SW6010B	06/04/19 00:14 / eli-b
Calcium	2770	mg/kg-dry		30		SW6010B	06/04/19 00:14 / eli-b
Iron	3860	mg/kg-dry		20		SW6010B	06/04/19 00:14 / eli-b
Magnesium	787	mg/kg-dry		5		SW6010B	06/04/19 00:14 / eli-b
Manganese	59	mg/kg-dry		1		SW6020	06/01/19 03:47 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:47 / eli-b
Potassium	409	mg/kg-dry		6		SW6010B	06/04/19 00:14 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 03:47 / eli-b
Silica	648	mg/kg-dry		10		SW6010B	06/04/19 00:14 / eli-b
Sodium	43	mg/kg-dry		10		SW6010B	06/04/19 00:14 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 03:47 / eli-b
Vanadium	5	mg/kg-dry		2		SW6020	06/07/19 01:02 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-002
Client Sample ID: BK1-15-15.5-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 13:15
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	0.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.5	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:25 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.1	wt%		0.1		Leco	06/03/19 18:25 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	232	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	1350	mg/kg-dry		5		SW6010B	06/04/19 01:54 / eli-b
Calcium	2460	mg/kg-dry		30		SW6010B	06/04/19 01:54 / eli-b
Iron	2680	mg/kg-dry		10		SW6020	06/04/19 04:51 / eli-b
Magnesium	459	mg/kg-dry		10		SW6020	06/04/19 04:51 / eli-b
Manganese	28	mg/kg-dry		1		SW6020	06/01/19 06:13 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 06:13 / eli-b
Potassium	286	mg/kg-dry		30		SW6020	06/04/19 04:51 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 06:13 / eli-b
Silica	726	mg/kg-dry		10		SW6010B	06/04/19 01:54 / eli-b
Sodium	<40	mg/kg-dry		40		SW6020	06/04/19 04:51 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 06:13 / eli-b
Vanadium	<5	mg/kg-dry		5		SW6020	06/04/19 04:51 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-003
Client Sample ID: BK1-33.5-34-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 13:50
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	2.7	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.1	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:28 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.3	wt%		0.1		Leco	06/03/19 18:28 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	254	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	3350	mg/kg-dry		5		SW6010B	06/04/19 00:55 / eli-b
Calcium	5840	mg/kg-dry		30		SW6010B	06/04/19 00:55 / eli-b
Iron	7210	mg/kg-dry		20		SW6010B	06/04/19 00:55 / eli-b
Magnesium	1120	mg/kg-dry		5		SW6010B	06/04/19 00:55 / eli-b
Manganese	96	mg/kg-dry		1		SW6010B	06/04/19 00:55 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:51 / eli-b
Potassium	678	mg/kg-dry		6		SW6010B	06/04/19 00:55 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 03:51 / eli-b
Silica	825	mg/kg-dry		10		SW6010B	06/04/19 00:55 / eli-b
Sodium	111	mg/kg-dry		10		SW6010B	06/04/19 00:55 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 03:51 / eli-b
Vanadium	9	mg/kg-dry		2		SW6020	06/07/19 01:06 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-004
Client Sample ID: BK1-39-40-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 14:20
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	6.8	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:32 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.4	wt%		0.1		Leco	06/03/19 18:32 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	218	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	3390	mg/kg-dry		5		SW6010B	06/04/19 00:59 / eli-b
Calcium	8760	mg/kg-dry		30		SW6010B	06/04/19 00:59 / eli-b
Iron	8320	mg/kg-dry		20		SW6010B	06/04/19 00:59 / eli-b
Magnesium	1060	mg/kg-dry		5		SW6010B	06/04/19 00:59 / eli-b
Manganese	148	mg/kg-dry		1		SW6010B	06/04/19 00:59 / eli-b
Molybdenum	1	mg/kg-dry		1		SW6020	06/01/19 03:55 / eli-b
Potassium	844	mg/kg-dry		6		SW6010B	06/04/19 00:59 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 03:55 / eli-b
Silica	878	mg/kg-dry		10		SW6010B	06/04/19 00:59 / eli-b
Sodium	228	mg/kg-dry		10		SW6010B	06/04/19 00:59 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 03:55 / eli-b
Vanadium	9	mg/kg-dry		2		SW6020	06/07/19 01:10 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-005
Client Sample ID: BK1-41-41.5-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 16:00
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	1.8	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.4	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:35 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.2	wt%		0.1		Leco	06/03/19 18:35 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	186	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	1730	mg/kg-dry		5		SW6010B	06/04/19 01:03 / eli-b
Calcium	4560	mg/kg-dry		30		SW6010B	06/04/19 01:03 / eli-b
Iron	4480	mg/kg-dry		20		SW6010B	06/04/19 01:03 / eli-b
Magnesium	518	mg/kg-dry		5		SW6010B	06/04/19 01:03 / eli-b
Manganese	80	mg/kg-dry		1		SW6010B	06/04/19 01:03 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:59 / eli-b
Potassium	452	mg/kg-dry		6		SW6010B	06/04/19 01:03 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 03:59 / eli-b
Silica	765	mg/kg-dry		10		SW6010B	06/04/19 01:03 / eli-b
Sodium	119	mg/kg-dry		10		SW6010B	06/04/19 01:03 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 03:59 / eli-b
Vanadium	5	mg/kg-dry		2		SW6020	06/07/19 01:14 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-006
Client Sample ID: BK1-47-48-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 16:30
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	13.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.03	wt%		0.01		E3.2.6	06/03/19 18:39 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.7	wt%		0.1		Leco	06/03/19 18:39 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	267	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	7810	mg/kg-dry		5		SW6010B	06/04/19 01:07 / eli-b
Calcium	22400	mg/kg-dry		40		SW6010B	06/04/19 01:07 / eli-b
Iron	14200	mg/kg-dry		30		SW6010B	06/04/19 01:07 / eli-b
Magnesium	3500	mg/kg-dry		5		SW6010B	06/04/19 01:07 / eli-b
Manganese	325	mg/kg-dry		1		SW6020	06/01/19 04:04 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 04:04 / eli-b
Potassium	1260	mg/kg-dry		7		SW6010B	06/04/19 01:07 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:04 / eli-b
Silica	1920	mg/kg-dry		10		SW6010B	06/04/19 01:07 / eli-b
Sodium	235	mg/kg-dry		10		SW6010B	06/04/19 01:07 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 04:04 / eli-b
Vanadium	13	mg/kg-dry		2		SW6020	06/07/19 01:19 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-007
Client Sample ID: BK1-48.5-49.5-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 17:25
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	11.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:42 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.3	wt%		0.1		Leco	06/03/19 18:42 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	275	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	1640	mg/kg-dry		5		SW6010B	06/04/19 01:11 / eli-b
Calcium	18500	mg/kg-dry		40		SW6010B	06/04/19 01:11 / eli-b
Iron	7740	mg/kg-dry		30		SW6010B	06/04/19 01:11 / eli-b
Magnesium	748	mg/kg-dry		5		SW6010B	06/04/19 01:11 / eli-b
Manganese	272	mg/kg-dry		1		SW6020	06/01/19 04:08 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 04:08 / eli-b
Potassium	317	mg/kg-dry		7		SW6010B	06/04/19 01:11 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:08 / eli-b
Silica	942	mg/kg-dry		10		SW6010B	06/04/19 01:11 / eli-b
Sodium	100	mg/kg-dry		10		SW6010B	06/04/19 01:11 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 04:08 / eli-b
Vanadium	8	mg/kg-dry		2		SW6020	06/07/19 01:23 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-008
Client Sample ID: BK1-51-52-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 17:50
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	7.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:45 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	1.2	wt%		0.1		Leco	06/03/19 18:45 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	262	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	2500	mg/kg-dry		5		SW6010B	06/04/19 01:16 / eli-b
Calcium	21200	mg/kg-dry		30		SW6010B	06/04/19 01:16 / eli-b
Iron	46300	mg/kg-dry		20		SW6010B	06/04/19 01:16 / eli-b
Magnesium	1090	mg/kg-dry		5		SW6010B	06/04/19 01:16 / eli-b
Manganese	1520	mg/kg-dry		1		SW6020	06/01/19 04:12 / eli-b
Molybdenum	2	mg/kg-dry		1		SW6020	06/01/19 04:12 / eli-b
Potassium	317	mg/kg-dry		6		SW6010B	06/04/19 01:16 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:12 / eli-b
Silica	769	mg/kg-dry		10		SW6010B	06/04/19 01:16 / eli-b
Sodium	211	mg/kg-dry		10		SW6010B	06/04/19 01:16 / eli-b
Uranium	2	mg/kg-dry		1		SW6020	06/01/19 04:12 / eli-b
Vanadium	21	mg/kg-dry		2		SW6020	06/07/19 01:27 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-009
Client Sample ID: BK1-52-53-052119

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/21/19 18:20
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	18.3	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:49 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	1.0	wt%		0.1		Leco	06/03/19 18:49 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	294	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	10800	mg/kg-dry		5		SW6010B	06/04/19 01:20 / eli-b
Calcium	32700	mg/kg-dry		40		SW6010B	06/04/19 01:20 / eli-b
Iron	17500	mg/kg-dry		30		SW6010B	06/04/19 01:20 / eli-b
Magnesium	4010	mg/kg-dry		5		SW6010B	06/04/19 01:20 / eli-b
Manganese	406	mg/kg-dry		1		SW6020	06/01/19 04:16 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 04:16 / eli-b
Potassium	1780	mg/kg-dry		7		SW6010B	06/04/19 01:20 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:16 / eli-b
Silica	2170	mg/kg-dry		10		SW6010B	06/04/19 01:20 / eli-b
Sodium	347	mg/kg-dry		10		SW6010B	06/04/19 01:20 / eli-b
Uranium	2	mg/kg-dry		1		SW6020	06/01/19 04:16 / eli-b
Vanadium	18	mg/kg-dry		2		SW6020	06/07/19 01:47 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-010
Client Sample ID: BK1-55.5-56.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 08:55
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	13.8	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.01	wt%		0.01		E3.2.6	06/03/19 18:52 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.8	wt%		0.1		Leco	06/03/19 18:52 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	268	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	20000	mg/kg-dry		5		SW6010B	06/04/19 01:25 / eli-b
Calcium	24100	mg/kg-dry		40		SW6010B	06/04/19 01:25 / eli-b
Iron	14100	mg/kg-dry		20		SW6010B	06/04/19 01:25 / eli-b
Magnesium	8750	mg/kg-dry		5		SW6010B	06/04/19 01:25 / eli-b
Manganese	550	mg/kg-dry		1		SW6020	06/01/19 04:20 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 04:20 / eli-b
Potassium	1810	mg/kg-dry		7		SW6010B	06/04/19 01:25 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:20 / eli-b
Silica	2110	mg/kg-dry		10		SW6010B	06/04/19 01:25 / eli-b
Sodium	328	mg/kg-dry		10		SW6010B	06/04/19 01:25 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 04:20 / eli-b
Vanadium	22	mg/kg-dry		2		SW6020	06/07/19 01:51 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-011
Client Sample ID: DUP

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: Not Provided
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	8.5	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 17:36 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.4	wt%		0.1		Leco	06/03/19 17:36 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	288	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	1720	mg/kg-dry		5		SW6010B	06/04/19 01:29 / eli-b
Calcium	10100	mg/kg-dry		30		SW6010B	06/04/19 01:29 / eli-b
Iron	7390	mg/kg-dry		10		SW6020	06/01/19 04:41 / eli-b
Magnesium	672	mg/kg-dry		5		SW6010B	06/04/19 01:29 / eli-b
Manganese	144	mg/kg-dry		1		SW6020	06/01/19 04:41 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 04:41 / eli-b
Potassium	331	mg/kg-dry		6		SW6010B	06/04/19 01:29 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:41 / eli-b
Silica	889	mg/kg-dry		10		SW6010B	06/04/19 01:29 / eli-b
Sodium	118	mg/kg-dry		10		SW6010B	06/04/19 01:29 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 04:41 / eli-b
Vanadium	7	mg/kg-dry		5		SW6020	06/01/19 04:41 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050918-012
Client Sample ID: DUP-2

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: Not Provided
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	1.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.6	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 17:40 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.2	wt%		0.1		Leco	06/03/19 17:40 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	237	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	1680	mg/kg-dry		5		SW6010B	06/04/19 01:34 / eli-b
Calcium	6470	mg/kg-dry		30		SW6010B	06/04/19 01:34 / eli-b
Iron	3950	mg/kg-dry		10		SW6020	06/01/19 04:45 / eli-b
Magnesium	521	mg/kg-dry		10		SW6020	06/01/19 04:45 / eli-b
Manganese	87	mg/kg-dry		1		SW6020	06/01/19 04:45 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 04:45 / eli-b
Potassium	386	mg/kg-dry		30		SW6020	06/01/19 04:45 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 04:45 / eli-b
Silica	601	mg/kg-dry		30		SW6020	06/01/19 04:45 / eli-b
Sodium	115	mg/kg-dry		10		SW6010B	06/04/19 01:34 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 04:45 / eli-b
Vanadium	<5	mg/kg-dry		5		SW6020	06/01/19 04:45 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050918 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Analytical Run: ICP203-B_190603A
Lab ID: QCS	9	Initial Calibration Verification Standard								06/03/19 09:50
Aluminum		3.90	mg/L	0.10	97	90	110			
Calcium		39.9	mg/L	1.0	100	90	110			
Iron		3.96	mg/L	0.030	99	90	110			
Magnesium		39.6	mg/L	1.0	99	90	110			
Manganese		3.81	mg/L	0.010	95	90	110			
Potassium		39.5	mg/L	1.0	99	90	110			
Silicon		7.68	mg/L	0.074	96	90	110			
Sodium		39.6	mg/L	1.0	99	90	110			
Silica		16.4	mg/L	0.16		0	0			
Lab ID: ICSA	9	Interference Check Sample A								06/03/19 09:54
Aluminum		458	mg/L	0.10	92	80	120			
Calcium		446	mg/L	1.0	89	80	120			
Iron		167	mg/L	0.030	83	80	120			
Magnesium		490	mg/L	1.0	98	80	120			
Manganese		0.0111	mg/L	0.010						
Potassium		0.0128	mg/L	1.0						
Silicon		0.0288	mg/L	0.074						
Sodium		0.0445	mg/L	1.0						
Silica		0.0617	mg/L	0.16		0	0			
Lab ID: ICSAB	9	Interference Check Sample AB								06/03/19 09:58
Aluminum		460	mg/L	0.10	92	80	120			
Calcium		440	mg/L	1.0	88	80	120			
Iron		165	mg/L	0.030	82	80	120			
Magnesium		485	mg/L	1.0	97	80	120			
Manganese		0.424	mg/L	0.010	85	80	120			
Potassium		19.0	mg/L	1.0	95	80	120			
Silicon		9.02	mg/L	0.074	90	80	120			
Sodium		19.1	mg/L	1.0	95	80	120			
Silica		19.3	mg/L	0.16		0	0			
Method: SW6010B										Batch: 133522
Lab ID: MB-133522	9	Method Blank				Run: ICP203-B_190603A				06/03/19 23:11
Aluminum		ND	mg/kg	2						
Calcium		ND	mg/kg	9						
Iron		ND	mg/kg	20						
Magnesium		ND	mg/kg	2						
Manganese		ND	mg/kg	0.6						
Potassium		ND	mg/kg	6						
Silicon		ND	mg/kg	3						
Sodium		ND	mg/kg	20						
Silica		ND	mg/kg	7						
Lab ID: SRM-133522	9	Standard Reference Material				Run: ICP203-B_190603A				06/03/19 23:15
Aluminum		13400	mg/kg	5.0	106	42	158			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050918 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**										Batch: 133522
Lab ID: **SRM-133522**	9	Standard Reference Material				Run: ICP203-B_190603A			06/03/19 23:15	
Calcium		6040	mg/kg	8.3	94	82	118			
Iron		9330	mg/kg	22	94	83	117			
Magnesium		2360	mg/kg	5.0	85	63	138			
Manganese		861	mg/kg	1.0	88	79	120			
Potassium		6190	mg/kg	6.0	98	86	114			
Silicon		279	mg/kg	5.0	50	0	3133			
Sodium		901	mg/kg	16	89	80	120			
Silica		597	mg/kg	11	50	0	362.184874			
Lab ID: **B19052285-005ADIL**	9	Serial Dilution				Run: ICP203-B_190603A			06/03/19 23:36	
Aluminum		2810	mg/kg-dry	11				1.8	10	
Calcium		9830	mg/kg-dry	200				4.9	10	
Iron		7250	mg/kg-dry	140				6.4	10	
Magnesium		1440	mg/kg-dry	13				4.3	10	
Manganese		118	mg/kg-dry	3.6				5.2	10	
Potassium		588	mg/kg-dry	37				2.3	10	
Silicon		370	mg/kg-dry	19				4.7	10	
Sodium		213	mg/kg-dry	60					10	N
Silica		791	mg/kg-dry	41				4.7	10	
Lab ID: **B19052285-005APDS**	9	Post Digestion/Distillation Spike				Run: ICP203-B_190603A			06/03/19 23:40	
Aluminum		3050	mg/kg-dry	5.0		75	125			A
Calcium		12100	mg/kg-dry	41	88	75	125			
Iron		6920	mg/kg-dry	29		75	125			A
Magnesium		4270	mg/kg-dry	5.0	94	75	125			
Manganese		387	mg/kg-dry	1.0	89	75	125			
Potassium		3550	mg/kg-dry	7.7	97	75	125			
Silicon		909	mg/kg-dry	5.0	90	75	125			
Sodium		3350	mg/kg-dry	12	101	75	125			
Silica		1940	mg/kg-dry	11	90	75	125			
Lab ID: **B19052285-005AMS3**	9	Sample Matrix Spike				Run: ICP203-B_190603A			06/03/19 23:44	
Aluminum		6410	mg/kg-dry	5.0		75	125			A
Calcium		11400	mg/kg-dry	37	71	75	125			S
Iron		8620	mg/kg-dry	26		75	125			A
Magnesium		4440	mg/kg-dry	5.0	109	75	125			
Manganese		387	mg/kg-dry	1.0	98	75	125			
Potassium		3890	mg/kg-dry	7.0	118	75	125			
Silicon		530	mg/kg-dry	5.0	32	75	125			S
Sodium		3160	mg/kg-dry	11	105	75	125			
Silica		1130	mg/kg-dry	11	159	75	125			S
Lab ID: **B19052285-005AMSD**	9	Sample Matrix Spike Duplicate				Run: ICP203-B_190603A			06/03/19 23:48	
Aluminum		6530	mg/kg-dry	5.0		75	125	1.9	20	A
Calcium		12200	mg/kg-dry	36	106	75	125	7.6	20	
Iron		8740	mg/kg-dry	25		75	125	1.5	20	A
Magnesium		4400	mg/kg-dry	5.0	111	75	125	0.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050918 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 133522
Lab ID: B19052285-005AMSD	9	Sample Matrix Spike Duplicate				Run: ICP203-B_190603A			06/03/19 23:48	
Manganese		383	mg/kg-dry	1.0	100	75	125	1.1	20	
Potassium		3780	mg/kg-dry	6.8	118	75	125	2.8	20	
Silicon		553	mg/kg-dry	5.0	37	75	125	4.2	20	S
Sodium		2910	mg/kg-dry	18	99	75	125	8.2	20	
Silica		1180	mg/kg-dry	11	37	75	125	4.2	20	S
Method: SW6010B										Batch: 133523
Lab ID: MB-133523	4	Method Blank				Run: ICP203-B_190603A			06/04/19 01:46	
Aluminum		2	mg/kg	2						
Calcium		20	mg/kg	9						
Silicon		ND	mg/kg	3						
Silica		ND	mg/kg	7						
Lab ID: SRM-133523	4	Standard Reference Material				Run: ICP203-B_190603A			06/04/19 01:50	
Aluminum		13600	mg/kg	5.0	108	42	158			
Calcium		6090	mg/kg	8.3	95	82	118			
Silicon		583	mg/kg	5.0	105	0	3133			
Silica		1250	mg/kg	11	105	0	362.184874			
Lab ID: C19050918-002ADIL	4	Serial Dilution				Run: ICP203-B_190603A			06/04/19 01:58	
Aluminum		1400	mg/kg-dry	8.8				3.3	10	
Calcium		2590	mg/kg-dry	160				5.3	10	
Silicon		354	mg/kg-dry	16				4.2	10	
Silica		758	mg/kg-dry	33				4.2	10	
Lab ID: C19050918-002APDS	4	Post Digestion/Distillation Spike				Run: ICP203-B_190603A			06/04/19 02:02	
Aluminum		1580	mg/kg-dry	5.0		75	125			A
Calcium		4750	mg/kg-dry	34	90	75	125			
Silicon		802	mg/kg-dry	5.0	91	75	125			
Silica		1720	mg/kg-dry	11	91	75	125			
Lab ID: C19050918-002AMS3	4	Sample Matrix Spike				Run: ICP203-B_190603A			06/04/19 02:06	
Aluminum		2650	mg/kg-dry	5.0		75	125			A
Calcium		5210	mg/kg-dry	33	110	75	125			
Silicon		378	mg/kg-dry	5.0	8	75	125			S
Silica		808	mg/kg-dry	11	39	75	125			S
Lab ID: C19050918-002AMSD	4	Sample Matrix Spike Duplicate				Run: ICP203-B_190603A			06/04/19 02:10	
Aluminum		2750	mg/kg-dry	5.0		75	125	3.7	20	A
Calcium		5250	mg/kg-dry	33	111	75	125	0.9	20	
Silicon		368	mg/kg-dry	5.0	6	75	125	2.8	20	S
Silica		786	mg/kg-dry	11	6	75	125	2.8	20	S

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 06/13/19

Client: Homestake Mining Co

Work Order: C19050918

Report Date: 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS206-B_190603A	
Lab ID: ICSA	5	Interference Check Sample A							06/03/19 13:34	
Iron		100	mg/L	0.0010	100	80	120			
Magnesium		41.4	mg/L	0.0061	83					
Potassium		40.5	mg/L	0.081	81					
Sodium		101	mg/L	0.022	101					
Vanadium		-0.000653	mg/L	0.0012						
Lab ID: ICSAB	5	Interference Check Sample AB							06/03/19 13:39	
Iron		101	mg/L	0.0010	101	80	120			
Magnesium		40.5	mg/L	0.0061	101	80	120			
Potassium		41.6	mg/L	0.081	104	80	120			
Sodium		99.5	mg/L	0.022	99	80	120			
Vanadium		0.0200	mg/L	0.0012	100	80	120			
Lab ID: QCS	5	Initial Calibration Verification Standard							06/03/19 13:02	
Iron		0.260	mg/L	0.0010	104	90	110			
Magnesium		2.64	mg/L	0.0061	106	90	110			
Potassium		2.48	mg/L	0.081	99	90	110			
Sodium		2.66	mg/L	0.022	106	90	110			
Vanadium		0.0499	mg/L	0.0012	100	90	110			
Method: SW6020									Batch: 133523	
Lab ID: MB-133523	5	Method Blank				Run: ICPMS206-B_190603A			06/04/19 04:37	
Iron		6	mg/kg	3						
Magnesium		ND	mg/kg	2						
Potassium		ND	mg/kg	6						
Sodium		ND	mg/kg	7						
Vanadium		ND	mg/kg	1						
Lab ID: SRM-133523	5	Standard Reference Material				Run: ICPMS206-B_190603A			06/04/19 04:42	
Iron		10200	mg/kg	24	103	83	117			
Magnesium		2280	mg/kg	20	83	63	138			
Potassium		6230	mg/kg	60	99	86	114			
Sodium		931	mg/kg	69	92	80	120			
Vanadium		151	mg/kg	9.9	103	86	114			
Lab ID: C19050918-002ADIL	5	Serial Dilution				Run: ICPMS206-B_190603A			06/04/19 04:56	
Iron		2830	mg/kg-dry	63				5.5	10	
Magnesium		455	mg/kg-dry	53					10	N
Potassium		301	mg/kg-dry	160					10	N
Sodium		ND	mg/kg-dry	180					10	
Vanadium		ND	mg/kg-dry	26					10	
Lab ID: C19050918-002APDS1	5	Post Digestion/Distillation Spike				Run: ICPMS206-B_190603A			06/04/19 05:01	
Iron		3590	mg/kg-dry	13	72	75	125			S
Magnesium		12200	mg/kg-dry	11	93	75	125			
Potassium		11600	mg/kg-dry	32	90	75	125			
Sodium		11800	mg/kg-dry	37	94	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050918 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**										Batch: 133523
Lab ID: **C19050918-002APDS1**	5	Post Digestion/Distillation Spike				Run: ICPMS206-B_190603A				06/04/19 05:01
Vanadium		16.3	mg/kg-dry	5.3	129	75	125			S
Lab ID: **C19050918-002AMS3**	5	Sample Matrix Spike				Run: ICPMS206-B_190603A				06/04/19 05:24
Iron		2960	mg/kg-dry	25		75	125			A
Magnesium		3120	mg/kg-dry	21	107	75	125			
Potassium		2950	mg/kg-dry	63	107	75	125			
Sodium		2600	mg/kg-dry	73	105	75	125			
Vanadium		55.3	mg/kg-dry	10	111	75	125			
Lab ID: **C19050918-002AMSD**	5	Sample Matrix Spike Duplicate				Run: ICPMS206-B_190603A				06/04/19 05:29
Iron		2940	mg/kg-dry	26		75	125	0.7	20	A
Magnesium		3210	mg/kg-dry	21	110	75	125	2.8	20	
Potassium		2930	mg/kg-dry	64	106	75	125	0.5	20	
Sodium		2660	mg/kg-dry	74	106	75	125	2.2	20	
Vanadium		54.2	mg/kg-dry	11	108	75	125	2.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050918 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Analytical Run: ICPMS207-B_190531A
Lab ID: ICSA	9	Interference Check Sample A								05/31/19 12:09
Iron		98.3	mg/L	0.0012	98	80	120			
Magnesium		39.0	mg/L	0.0056	78					
Manganese		0.000290	mg/L	0.0010						
Molybdenum		0.816	mg/L	0.0010	102	80	120			
Potassium		40.0	mg/L	0.081	80					
Selenium		0.0000406	mg/L	0.0010						
Silicon		-0.00436	mg/L	0.10						
Uranium		0.0000250	mg/L	0.00030						
Vanadium		-0.000645	mg/L	0.0013						
Lab ID: ICSAB	9	Interference Check Sample AB								05/31/19 12:13
Iron		96.4	mg/L	0.0012	96	80	120			
Magnesium		40.0	mg/L	0.0056	100	80	120			
Manganese		0.0213	mg/L	0.0010	106	80	120			
Molybdenum		0.822	mg/L	0.0010	103	80	120			
Potassium		40.2	mg/L	0.081	100	80	120			
Selenium		0.00998	mg/L	0.0010	100	80	120			
Silicon		-0.00447	mg/L	0.10						
Uranium		4.94E-06	mg/L	0.00030						
Vanadium		0.0203	mg/L	0.0013	102	80	120			
Lab ID: QCS	9	Initial Calibration Verification Standard								05/31/19 11:44
Iron		0.247	mg/L	0.0012	99	90	110			
Magnesium		2.61	mg/L	0.0056	104	90	110			
Manganese		0.255	mg/L	0.0010	102	90	110			
Molybdenum		0.0483	mg/L	0.0010	97	90	110			
Potassium		2.44	mg/L	0.081	98	90	110			
Selenium		0.0503	mg/L	0.0010	101	90	110			
Silicon		0.495	mg/L	0.10	99	90	110			
Uranium		0.0494	mg/L	0.00030	99	90	110			
Vanadium		0.0502	mg/L	0.0013	100	90	110			
Method: SW6020										Batch: 133522
Lab ID: MB-133522	10	Method Blank				Run: ICPMS207-B_190531A				06/01/19 02:11
Iron		ND	mg/kg	3						
Magnesium		ND	mg/kg	2						
Manganese		ND	mg/kg	0.2						
Molybdenum		ND	mg/kg	0.02						
Potassium		ND	mg/kg	6						
Selenium		ND	mg/kg	0.5						
Silicon		ND	mg/kg	3						
Uranium		ND	mg/kg	0.006						
Vanadium		ND	mg/kg	1						
Silica		ND	mg/kg	6						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050918 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 133522
Lab ID: SRM-133522	10	Standard Reference Material				Run: ICPMS207-B_190531A			06/01/19 02:15	
Iron		10200	mg/kg	24	103	83	117			
Magnesium		2250	mg/kg	20	82	63	138			
Manganese		909	mg/kg	2.0	93	79	120			
Molybdenum		95.0	mg/kg	1.0	96	79	121			
Potassium		5600	mg/kg	61	89	86	114			
Selenium		272	mg/kg	4.9	112	80	120			
Silicon		258	mg/kg	26	46	0	3133			
Uranium		1.39	mg/kg	1.0						
Vanadium		134	mg/kg	10.0	92	86	114			
Silica		552	mg/kg	57	46	0	362.184874			
Lab ID: B19052285-005ADIL	10	Serial Dilution				Run: ICPMS207-B_190531A			06/01/19 02:49	
Iron		7360	mg/kg-dry	76				12	10	R
Magnesium		1400	mg/kg-dry	64				3.6	10	
Manganese		117	mg/kg-dry	6.3				1.6	10	
Molybdenum		ND	mg/kg-dry	1.0					10	
Potassium		583	mg/kg-dry	190					10	N
Selenium		ND	mg/kg-dry	15					10	
Silicon		395	mg/kg-dry	83					10	N
Uranium		0.481	mg/kg-dry	1.0					10	N
Vanadium		ND	mg/kg-dry	31					10	
Silica		845	mg/kg-dry	180					10	N
Lab ID: B19052285-005APDS1	10	Post Digestion/Distillation Spike				Run: ICPMS207-B_190531A			06/01/19 02:53	
Iron		8410	mg/kg-dry	16		75	125			A
Magnesium		14200	mg/kg-dry	13	84	75	125			
Manganese		122	mg/kg-dry	1.3		75	125			A
Molybdenum		15.0	mg/kg-dry	1.0	96	75	125			
Potassium		13200	mg/kg-dry	39	83	75	125			
Selenium		15.0	mg/kg-dry	3.1	99	75	125			
Silicon		415	mg/kg-dry	17	3	75	125			S
Uranium		15.7	mg/kg-dry	1.0	100	75	125			
Vanadium		23.4	mg/kg-dry	6.4	90	75	125			
Silica		888	mg/kg-dry	36	681	80	120			S
Lab ID: B19052285-005AMS3	10	Sample Matrix Spike				Run: ICPMS207-B_190531A			06/01/19 02:57	
Iron		8970	mg/kg-dry	29		75	125			A
Magnesium		4390	mg/kg-dry	24	109	75	125			
Manganese		402	mg/kg-dry	2.4	102	75	125			
Molybdenum		56.5	mg/kg-dry	1.0	100	75	125			
Potassium		3510	mg/kg-dry	71	107	75	125			
Selenium		56.5	mg/kg-dry	5.7	101	75	125			
Silicon		625	mg/kg-dry	31	42	75	125			S
Uranium		59.8	mg/kg-dry	1.0	106	75	125			
Vanadium		67.4	mg/kg-dry	12	103	75	125			
Silica		1340	mg/kg-dry	67	558	75	125			S

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050918 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 133522
Lab ID: B19052285-005AMSD	10	Sample Matrix Spike Duplicate				Run: ICPMS207-B_190531A			06/01/19 03:01	
Iron		8730	mg/kg-dry	28		75	125	2.6	20	A
Magnesium		4290	mg/kg-dry	23	108	75	125	2.4	20	
Manganese		394	mg/kg-dry	2.3	103	75	125	2.0	20	
Molybdenum		53.6	mg/kg-dry	1.0	98	75	125	5.3	20	
Potassium		3410	mg/kg-dry	69	107	75	125	2.9	20	
Selenium		52.5	mg/kg-dry	5.5	97	75	125	7.3	20	
Silicon		628	mg/kg-dry	30	44	75	125	0.4	20	S
Uranium		56.4	mg/kg-dry	1.0	103	75	125	5.8	20	
Vanadium		65.1	mg/kg-dry	11	102	75	125	3.5	20	
Silica		1340	mg/kg-dry	65	116	75	125	0.4	20	
Method: SW6020										Batch: 133523
Lab ID: MB-133523	4	Method Blank				Run: ICPMS207-B_190531A			06/01/19 06:01	
Manganese		ND	mg/kg	0.2						
Molybdenum		ND	mg/kg	0.02						
Selenium		ND	mg/kg	0.5						
Uranium		ND	mg/kg	0.006						
Lab ID: SRM-133523	4	Standard Reference Material				Run: ICPMS207-B_190531A			06/01/19 06:05	
Manganese		1050	mg/kg	2.0	108	79	120			
Molybdenum		93.7	mg/kg	1.0	94	79	121			
Selenium		260	mg/kg	4.8	107	80	120			
Uranium		1.45	mg/kg	1.0						
Lab ID: C19050918-002ADIL	4	Serial Dilution				Run: ICPMS207-B_190531A			06/01/19 06:18	
Manganese		27.9	mg/kg-dry	5.2					10	N
Molybdenum		ND	mg/kg-dry	1.0					10	
Selenium		ND	mg/kg-dry	13					10	
Uranium		0.188	mg/kg-dry	1.0					10	N
Lab ID: C19050918-002APDS1	4	Post Digestion/Distillation Spike				Run: ICPMS207-B_190531A			06/01/19 06:22	
Manganese		36.4	mg/kg-dry	1.1	64	75	125			S
Molybdenum		11.9	mg/kg-dry	1.0	93	75	125			
Selenium		15.9	mg/kg-dry	2.6	127	75	125			S
Uranium		12.7	mg/kg-dry	1.0	99	75	125			
Lab ID: C19050918-002AMS3	4	Sample Matrix Spike				Run: ICPMS207-B_190531A			06/01/19 06:26	
Manganese		246	mg/kg-dry	2.1	88	75	125			
Molybdenum		47.1	mg/kg-dry	1.0	94	75	125			
Selenium		62.3	mg/kg-dry	5.1	125	75	125			
Uranium		49.4	mg/kg-dry	1.0	99	75	125			
Lab ID: C19050918-002AMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS207-B_190531A			06/01/19 06:30	
Manganese		266	mg/kg-dry	2.1	95	75	125	7.5	20	
Molybdenum		54.6	mg/kg-dry	1.0	108	75	125	15	20	
Selenium		54.1	mg/kg-dry	5.1	108	75	125	14	20	
Uranium		56.0	mg/kg-dry	1.0	111	75	125	13	20	

Qualifiers:

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ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 06/13/19

Client: Homestake Mining Co

Work Order: C19050918

Report Date: 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**										Analytical Run: ICPMS207-B_190606A
Lab ID: **ICSA**		Interference Check Sample A								06/06/19 12:40
Vanadium		-0.000331	mg/L	0.0013						
Lab ID: **ICSAB**		Interference Check Sample AB								06/06/19 12:44
Vanadium		0.0207	mg/L	0.0013	103	80	120			
Lab ID: **QCS**		Initial Calibration Verification Standard								06/06/19 12:15
Vanadium		0.0514	mg/L	0.0013	103	90	110			
Method: **SW6020**										Batch: 133522
Lab ID: **MB-133522**		Method Blank				Run: ICPMS207-B_190606A				06/07/19 00:21
Vanadium		ND	mg/kg	1						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch **Revised Date:** 06/18/19

Client: Homestake Mining Co **Work Order:** C19050918 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A2580 BM**									Analytical Run: SUB-B321269	
Lab ID: **CCV1**	Continuing Calibration Verification Standard								05/30/19 10:43	
Oxidation-Reduction Potential		240	mV		103	95	105			
Method: **A2580 BM**									Batch: B_R321269	
Lab ID: **LCS1**	Laboratory Control Sample					Run: SUB-B321269			05/30/19 10:43	
Oxidation-Reduction Potential		235	mV		100	95	105			
Lab ID: **B19052285-001ADUP**	Sample Duplicate					Run: SUB-B321269			05/30/19 10:43	
Oxidation-Reduction Potential		215	mV-dry					3.0	10	
Lab ID: **C19050918-001A**	Sample Duplicate					Run: SUB-B321269			05/30/19 10:43	
Oxidation-Reduction Potential		274	mV-dry					0.7	10	
Method: **A2580 BM**									Batch: B_R321289	
Lab ID: **LCS2**	Laboratory Control Sample					Run: SUB-B321289			05/30/19 13:41	
Oxidation-Reduction Potential		301	mV		100	97	103			
Lab ID: **C19050918-011A**	Sample Duplicate					Run: SUB-B321289			05/30/19 13:41	
Oxidation-Reduction Potential		299	mV-dry					3.6	10	
Lab ID: **B19051815-009ADUP**	Sample Duplicate					Run: SUB-B321289			05/30/19 13:41	
Oxidation-Reduction Potential		271	mV-dry					1.4	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19050918 **Report Date:** 06/04/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA10-3**									Batch: 133499
Lab ID: **C19050918-001A DUP**	Sample Duplicate				Run: MISC-SOIL_190529B				05/29/19 14:47
pH, sat. paste	8.20	s.u.	0.10				0.0	10	
Lab ID: **C19050918-011A DUP**	Sample Duplicate				Run: MISC-SOIL_190529B				05/29/19 14:47
pH, sat. paste	8.20	s.u.	0.10				0.0	10	
Lab ID: **LCS-1905291447**	Laboratory Control Sample				Run: MISC-SOIL_190529B				05/29/19 14:47
pH, sat. paste	7.40	s.u.	0.10	99	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19050918 **Report Date:** 06/04/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E3.2.6**									Batch: R321531
Lab ID: **C19050918-001A DUP**	Sample Duplicate				Run: MISC-SOIL_190604A			06/03/19 16:35	
Sulfur, Total	0.0191	wt%	0.010				4.6	30	
Lab ID: **C19050918-011A DUP**	Sample Duplicate				Run: MISC-SOIL_190604A			06/03/19 17:21	
Sulfur, Total	0.0164	wt%	0.010				13	30	
Lab ID: **LCS-SOLO12091906031**	Laboratory Control Sample				Run: MISC-SOIL_190604A			06/03/19 17:33	
Sulfur, Total	0.193	wt%	0.010	102	50	150			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19050918 **Report Date:** 06/04/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **Leco**									Batch: R321531
Lab ID: **C19050918-001A DUP**	Sample Duplicate				Run: MISC-SOIL_190604A				06/03/19 16:35
Carbon, Total	0.138	wt%	0.010				1.8	50	
Lab ID: **C19050918-011A DUP**	Sample Duplicate				Run: MISC-SOIL_190604A				06/03/19 17:21
Carbon, Total	0.368	wt%	0.010				5.0	50	
Lab ID: **LCS-SOLO12091906031**	Laboratory Control Sample				Run: MISC-SOIL_190604A				06/03/19 17:33
Carbon, Total	3.37	wt%	0.010	95	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Work Order Receipt Checklist

Homestake Mining Co

C19050918

Login completed by: Dorian Quis
Date Received: 5/23/2019
Reviewed by: Kasey Vidick
Received by: CCP
Reviewed Date: 5/24/2019
Carrier name: NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.9°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None

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Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name: Homestake Mining Company
Contact: Adam Arguello
Phone: ~~303 471 3465~~ 505 287 4466 x31
Mailing Address: 560 Anaconda Road, Route 605
City, State, Zip: Milan, NM 87021
Email: aarguello@barrick.com
Receive Invoice: ☐Hard Copy ☑Email | Receive Report: ☐Hard Copy ☑Email
Purchase Order: | Quote: C5566 | Bottle Order: 58233

Report Information (if different than Account Information)

Company/Name: Adam Arguello at HMC and Arcadis
Contact: Shannon Ulrich
Phone: 303 471 3465
Mailing Address: 630 Plaza Drive ste 200
City, State, Zip: Highlands Ranch, CO 80129
Email: shannon.ulrich@arcadis.com
Receive Report: ☐Hard Copy ☑Email PDF & excel
Special Report/Formats: EQuIS
☐ LEVEL IV ☐ NELAC ☑ EDD/EDT (contact laboratory) ☐ Other

Comments

Holding samples and subbing select samples to: Huffman Hazen labs (HHL), DCM Science Labs, IT² isotope lab
MS/MSD on BK1-15-15.5-052119

Project Information

Project Name, PWSID, Permit, etc.: Grants Reclamation Project
Sampler Name: Shannon Ulrich | Sampler Phone: 303 471 3465
Sample Origin State: NM | EPA/State Compliance ☐ Yes ☑ No

URANIUM MINING CLIENTS MUST indicate sample type.
☒ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Paste pH	ORP on solids (ASTM D7869 BM)	TOC + total sulfur	total metals	For DCM: XRD, Petrographic microscopy	For HHL: QEMSCAN	For IT²: 34S on solids	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1 BK1-11.5-12.5-052119	5.21.19	1235	4	S	X	X	X	X	HOLD	HOLD	HOLD	SMU		C19050918
2 BK1-15-15.5-052119	5.21.19	1315	4	S	X	X	X	X	HOLD	HOLD	HOLD			
3 BK1-33.5-34-052119	5.21.19	1350	4	S	X	X	X	X	HOLD	HOLD	HOLD			
4 BK1-39-40-052119	5.21.19	1420	4	S	X	X	X	X	HOLD	HOLD	HOLD			
5 BK1-41-41.5-052119	5.21.19	1600	4	S	X	X	X	X	HOLD	HOLD	HOLD			
6 BK1-47-48-052119	5.21.19	1630	4	S	X	X	X	X	HOLD	HOLD	HOLD			
7 BK1-48.5-49.5-052119	5.21.19	1725	4	S	X	X	X	X	HOLD	HOLD	HOLD			
8 BK1-51-52-052119	5.21.19	1750	4	S	X	X	X	X	HOLD	HOLD	HOLD			
9 BK1-52-53-052119	5.21.19	1820	4	S	X	X	X	X	HOLD	HOLD	HOLD			
10 BK1-55.5-56.5-052219	5.22.19	0855	4	S	X	X	X	X	HOLD	HOLD	HOLD			

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Shannon Ulrich	5/22/19 1600				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Chase Pennington	5/23/19 1052	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

Chain of Custody & Analytical Request Record

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Account Information *(Billing information)*

Company/Name	Homestake Mining Company
Contact	Adam Arguello
Phone	505-287-4456 x31
Mailing Address	560 Anaconda Road, Route 605
City, State, Zip	Milan, NM 87021
Email	aarguello@barrick.com
Receive Invoice	☐Hard Copy ☑Email
Receive Report	☐Hard Copy ☑Email
Purchase Order	
Quote	C5566
Bottle Order	58233

Report Information *(if different than Account Information)*

Company/Name	Adam Arguello at HMC and Arcadis
Contact	Shannon Ulrich
Phone	303 471 3465
Mailing Address	630 Plaza Drive Ste 200
City, State, Zip	Highlands Ranch, CO 80129
Email	shannon.ulrich@arcadis.com
Receive Report	☐Hard Copy ☒Email PDF & excel
Special Report/Formats:	EQuIS
	☐ LEVEL IV ☐ NELAC ☒EDD/EDT *(contact laboratory)* ☐ Other

Comments

Holding samples and subbing select samples to: Huffman Hazen Lab (HHL), DCM science lab, IT2 isotope lab

Project Information

Project Name, PWSID, Permit, etc.	Grants Reclamation Project
Sampler Name	Shannon Ulrich
Sampler Phone	303-471-3465
Sample Origin State	NM
EPA/State Compliance	☐ Yes ☑ No

URANIUM MINING CLIENTS MUST indicate sample type.
☒ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes

A - Air; W - Water; S - Soils/Solids; V - Vegetation; B - Bioassay; O - Other; DW - Drinking Water

All turnaround times are standard unless marked as RUSH.

Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Paste pH	ORP on solids A2580 BM	TOC + total sulfur	total metals	For DCM: XRD, Petrographic mineralogy	For HHL: QEMSCAN SMU	For IT2: 34S on solids	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	DUP	—	—	1	S	x	x	x	x	HOLD	HOLD	HOLD			C19050918
2	DUP-2	—	—	1	S	x	x	x	x	HOLD	HOLD	HOLD			
3										HOLD	HOLD	HOLD			
4										HOLD	HOLD	HOLD			
5										HOLD	HOLD	HOLD			
6										HOLD	HOLD	HOLD			
7										HOLD	HOLD	HOLD			
8										HOLD	HOLD	HOLD			
9										HOLD	HOLD	HOLD			
10										HOLD	HOLD	HOLD			

SMU

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Shannon Ulrich	5/22/19/1600				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Josie Pennebaker	5/23/19 1052	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number *(cash/check only)*

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

ANALYTICAL SUMMARY REPORT

June 18, 2019

Homestake Mining Co
Hwy 605
Grants, NM 87020

Work Order: C19050766 Quote ID: C5566

Project Name: Grants Reclamation Project

Energy Laboratories, Inc. Casper WY received the following 10 samples for Homestake Mining Co on 5/20/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C19050766-001	BK2-12-13-051519	05/15/19 16:20	05/20/19	Soil	Metals by ICP/ICPMS, Total or Soluble Total Carbon Moisture Oxidation Reduction Potential pH, Saturated Paste Percent Moisture Digestion, Total Metals Saturated Paste Extraction Services Provided by Lab Total Sulfur
C19050766-002	BK2-20-21-051519	05/15/19 16:50	05/20/19	Soil	Same As Above
C19050766-003	BK2-35-36-051519	05/15/19 17:40	05/20/19	Soil	Same As Above
C19050766-004	BK2-38-39-051519	05/15/19 18:25	05/20/19	Soil	Same As Above
C19050766-005	BK2-41.5-42.5-051519	05/15/19 19:20	05/20/19	Soil	Same As Above
C19050766-006	BK2-44-44.5-051619	05/16/19 09:30	05/20/19	Soil	Same As Above
C19050766-007	BK2-59-60-051619	05/16/19 10:55	05/20/19	Soil	Same As Above
C19050766-008	BK2-63.5-64-051619	05/16/19 11:35	05/20/19	Soil	Same As Above
C19050766-009	BK2-72.5-73.5-051619	05/16/19 12:05	05/20/19	Soil	Same As Above
C19050766-010	BK2-77-77.5-051619	05/16/19 13:45	05/20/19	Soil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager .

Report Approved By:

CLIENT: Homestake Mining Co
Project: Grants Reclamation Project
Work Order: C19050766

Revised Date: 06/18/19
Report Date: 06/06/19

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

REVISED/SUPPLEMENTAL REPORT
Revised 6/18/2019
Per request from Shannon Ulrich, Total Sodium has been added to the report for all samples.
The report has been revised and replaces any previously issued report in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-001
Client Sample ID: BK2-12-13-051519

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/15/19 16:20
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	2.5	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	<0.01	wt%		0.01		E3.2.6	05/23/19 18:01 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.9	wt%		0.1		Leco	05/23/19 18:01 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	325	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	5620	mg/kg-dry		10		SW6010B	05/29/19 04:43 / eli-b
Calcium	19600	mg/kg-dry		30		SW6010B	05/29/19 04:43 / eli-b
Iron	6950	mg/kg-dry		5		SW6020	05/28/19 21:30 / eli-b
Magnesium	1880	mg/kg-dry		5		SW6010B	05/29/19 04:43 / eli-b
Manganese	185	mg/kg-dry		1		SW6020	05/28/19 21:30 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 21:30 / eli-b
Potassium	935	mg/kg-dry		6		SW6010B	05/29/19 04:43 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 21:30 / eli-b
Silica	397	mg/kg-dry		10		SW6010B	05/29/19 04:43 / eli-b
Sodium	167	mg/kg-dry		10		SW6010B	05/29/19 04:43 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	05/28/19 21:30 / eli-b
Vanadium	9	mg/kg-dry		5		SW6010B	05/29/19 04:43 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-002
Client Sample ID: BK2-20-21-051519

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/15/19 16:50
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	8.2	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	8.1	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.01	wt%		0.01		E3.2.6	05/23/19 18:05 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.2	wt%		0.1		Leco	05/23/19 18:05 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	229	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	2110	mg/kg-dry		10		SW6010B	05/29/19 04:47 / eli-b
Calcium	3150	mg/kg-dry		40		SW6010B	05/29/19 04:47 / eli-b
Iron	6870	mg/kg-dry		20		SW6010B	05/29/19 04:47 / eli-b
Magnesium	699	mg/kg-dry		5		SW6010B	05/29/19 04:47 / eli-b
Manganese	105	mg/kg-dry		1		SW6020	05/28/19 21:34 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 21:34 / eli-b
Potassium	504	mg/kg-dry		7		SW6010B	05/29/19 04:47 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 21:34 / eli-b
Silica	437	mg/kg-dry		10		SW6010B	05/29/19 04:47 / eli-b
Sodium	147	mg/kg-dry		10		SW6010B	05/29/19 04:47 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 05:02 / eli-b
Vanadium	9	mg/kg-dry		5		SW6010B	05/29/19 04:47 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-003
Client Sample ID: BK2-35-36-051519

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/15/19 17:40
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	3.1	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.01	wt%		0.01		E3.2.6	05/23/19 18:09 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.2	wt%		0.1		Leco	05/23/19 18:09 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	179	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	1620	mg/kg-dry		10		SW6010B	05/29/19 04:59 / eli-b
Calcium	5630	mg/kg-dry		30		SW6010B	05/29/19 04:59 / eli-b
Iron	4750	mg/kg-dry		5		SW6020	05/28/19 21:38 / eli-b
Magnesium	510	mg/kg-dry		5		SW6010B	05/29/19 04:59 / eli-b
Manganese	92	mg/kg-dry		1		SW6020	05/28/19 21:38 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 21:38 / eli-b
Potassium	433	mg/kg-dry		6		SW6010B	05/29/19 04:59 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 21:38 / eli-b
Silica	320	mg/kg-dry		10		SW6010B	05/29/19 04:59 / eli-b
Sodium	130	mg/kg-dry		10		SW6010B	05/29/19 04:59 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 05:06 / eli-b
Vanadium	6	mg/kg-dry		5		SW6010B	05/29/19 04:59 / eli-b

Report Definitions:
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MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-004
Client Sample ID: BK2-38-39-051519

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/15/19 18:25
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	0.3	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	8.4	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.01	wt%		0.01		E3.2.6	05/23/19 18:12 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.2	wt%		0.1		Leco	05/23/19 18:12 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	274	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	2200	mg/kg-dry		10		SW6010B	05/29/19 05:03 / eli-b
Calcium	5000	mg/kg-dry		30		SW6010B	05/29/19 05:03 / eli-b
Iron	5850	mg/kg-dry		20		SW6010B	05/29/19 05:03 / eli-b
Magnesium	627	mg/kg-dry		5		SW6010B	05/29/19 05:03 / eli-b
Manganese	105	mg/kg-dry		1		SW6020	05/28/19 21:42 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 21:42 / eli-b
Potassium	625	mg/kg-dry		6		SW6010B	05/29/19 05:03 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 21:42 / eli-b
Silica	462	mg/kg-dry		10		SW6010B	05/29/19 05:03 / eli-b
Sodium	180	mg/kg-dry		10		SW6010B	05/29/19 05:03 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	05/28/19 21:42 / eli-b
Vanadium	6	mg/kg-dry		5		SW6010B	05/29/19 05:03 / eli-b

Report Definitions:
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MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-005
Client Sample ID: BK2-41.5-42.5-051519

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/15/19 19:20
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	6.1	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	<0.01	wt%		0.01		E3.2.6	05/23/19 18:15 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.9	wt%		0.1		Leco	05/23/19 18:15 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	258	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	6150	mg/kg-dry		10		SW6010B	05/29/19 05:07 / eli-b
Calcium	15600	mg/kg-dry		30		SW6010B	05/29/19 05:07 / eli-b
Iron	8700	mg/kg-dry		5		SW6020	05/28/19 21:47 / eli-b
Magnesium	3190	mg/kg-dry		5		SW6010B	05/29/19 05:07 / eli-b
Manganese	165	mg/kg-dry		1		SW6020	05/28/19 21:47 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 21:47 / eli-b
Potassium	1120	mg/kg-dry		6		SW6010B	05/29/19 05:07 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 21:47 / eli-b
Silica	345	mg/kg-dry		10		SW6010B	05/29/19 05:07 / eli-b
Sodium	259	mg/kg-dry		10		SW6010B	05/29/19 05:07 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 05:15 / eli-b
Vanadium	11	mg/kg-dry		5		SW6010B	05/29/19 05:07 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-006
Client Sample ID: BK2-44-44.5-051619

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/16/19 09:30
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	7.3	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	<0.01	wt%		0.01		E3.2.6	05/23/19 18:26 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.6	wt%		0.1		Leco	05/23/19 18:26 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	247	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	5260	mg/kg-dry		10		SW6010B	05/29/19 05:12 / eli-b
Calcium	13900	mg/kg-dry		40		SW6010B	05/29/19 05:12 / eli-b
Iron	8930	mg/kg-dry		20		SW6010B	05/29/19 05:12 / eli-b
Magnesium	2740	mg/kg-dry		5		SW6010B	05/29/19 05:12 / eli-b
Manganese	138	mg/kg-dry		1		SW6010B	05/29/19 05:12 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 21:51 / eli-b
Potassium	927	mg/kg-dry		7		SW6010B	05/29/19 05:12 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 21:51 / eli-b
Silica	335	mg/kg-dry		10		SW6010B	05/29/19 05:12 / eli-b
Sodium	210	mg/kg-dry		10		SW6010B	05/29/19 05:12 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 05:19 / eli-b
Vanadium	10	mg/kg-dry		5		SW6010B	05/29/19 05:12 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-007
Client Sample ID: BK2-59-60-051619

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/16/19 10:55
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	8.7	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	<0.01	wt%		0.01		E3.2.6	05/23/19 18:33 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.4	wt%		0.1		Leco	05/23/19 18:33 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	252	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	1670	mg/kg-dry		10		SW6010B	05/29/19 05:16 / eli-b
Calcium	19800	mg/kg-dry		30		SW6010B	05/29/19 05:16 / eli-b
Iron	6480	mg/kg-dry		5		SW6020	05/28/19 21:55 / eli-b
Magnesium	723	mg/kg-dry		5		SW6010B	05/29/19 05:16 / eli-b
Manganese	152	mg/kg-dry		1		SW6010B	05/29/19 05:16 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 21:55 / eli-b
Potassium	338	mg/kg-dry		6		SW6010B	05/29/19 05:16 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 21:55 / eli-b
Silica	387	mg/kg-dry		10		SW6010B	05/29/19 05:16 / eli-b
Sodium	104	mg/kg-dry		10		SW6010B	05/29/19 05:16 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 05:23 / eli-b
Vanadium	6	mg/kg-dry		5		SW6010B	05/29/19 05:16 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-008
Client Sample ID: BK2-63.5-64-051619

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/16/19 11:35
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	4.5	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	<0.01	wt%		0.01		E3.2.6	05/23/19 18:36 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	1.0	wt%		0.1		Leco	05/23/19 18:36 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	272	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	3010	mg/kg-dry		10		SW6010B	05/29/19 05:20 / eli-b
Calcium	40100	mg/kg-dry		30		SW6010B	05/29/19 05:20 / eli-b
Iron	8840	mg/kg-dry		5		SW6020	05/28/19 21:59 / eli-b
Magnesium	1300	mg/kg-dry		5		SW6010B	05/29/19 05:20 / eli-b
Manganese	317	mg/kg-dry		1		SW6020	05/28/19 21:59 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 21:59 / eli-b
Potassium	547	mg/kg-dry		6		SW6010B	05/29/19 05:20 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 21:59 / eli-b
Silica	332	mg/kg-dry		10		SW6010B	05/29/19 05:20 / eli-b
Sodium	144	mg/kg-dry		10		SW6010B	05/29/19 05:20 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	05/28/19 21:59 / eli-b
Vanadium	10	mg/kg-dry		5		SW6010B	05/29/19 05:20 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-009
Client Sample ID: BK2-72.5-73.5-051619

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/16/19 12:05
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	6.0	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	<0.01	wt%		0.01		E3.2.6	05/23/19 18:40 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.8	wt%		0.1		Leco	05/23/19 18:40 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	267	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	3130	mg/kg-dry		10		SW6010B	05/29/19 05:24 / eli-b
Calcium	11000	mg/kg-dry		30		SW6010B	05/29/19 05:24 / eli-b
Iron	4290	mg/kg-dry		5		SW6020	05/28/19 22:03 / eli-b
Magnesium	1900	mg/kg-dry		5		SW6010B	05/29/19 05:24 / eli-b
Manganese	113	mg/kg-dry		1		SW6020	05/28/19 22:03 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 22:03 / eli-b
Potassium	642	mg/kg-dry		6		SW6010B	05/29/19 05:24 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 22:03 / eli-b
Silica	326	mg/kg-dry		10		SW6010B	05/29/19 05:24 / eli-b
Sodium	120	mg/kg-dry		10		SW6010B	05/29/19 05:24 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	05/28/19 22:03 / eli-b
Vanadium	7	mg/kg-dry		5		SW6010B	05/29/19 05:24 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050766-010
Client Sample ID: BK2-77-77.5-051619

Revised Date: 06/18/19
Report Date: 06/06/19
Collection Date: 05/16/19 13:45
Date Received: 05/20/19
Matrix: Soil

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	7.7	wt%		0.2		D2974	05/23/19 11:10 / eli-b
SATURATED PASTE							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	<0.01	wt%		0.01		E3.2.6	05/23/19 18:43 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.6	wt%		0.1		Leco	05/23/19 18:43 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	274	mV-dry				A2580 BM	05/30/19 13:41 / eli-b
METALS, TOTAL							
Aluminum	3910	mg/kg-dry		10		SW6010B	05/29/19 05:29 / eli-b
Calcium	10800	mg/kg-dry		30		SW6010B	05/29/19 05:29 / eli-b
Iron	5780	mg/kg-dry		5		SW6020	05/28/19 20:44 / eli-b
Magnesium	1980	mg/kg-dry		5		SW6010B	05/29/19 05:29 / eli-b
Manganese	112	mg/kg-dry		1		SW6020	05/28/19 20:44 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/28/19 20:44 / eli-b
Potassium	772	mg/kg-dry		20		SW6010B	05/29/19 05:29 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	05/28/19 20:44 / eli-b
Silica	373	mg/kg-dry		10		SW6020	05/28/19 20:44 / eli-b
Sodium	144	mg/kg-dry		10		SW6010B	05/29/19 05:29 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 05:52 / eli-b
Vanadium	8	mg/kg-dry		5		SW6010B	05/29/19 05:29 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 06/13/19

Client: Homestake Mining Co

Work Order: C19050766

Report Date: 06/06/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Analytical Run: ICP204-B_190528A
Lab ID: QCS	9	Initial Calibration Verification Standard								05/28/19 10:09
Aluminum		3.97	mg/L	0.10	99	90	110			
Calcium		41.2	mg/L	1.0	103	90	110			
Iron		4.03	mg/L	0.030	101	90	110			
Magnesium		40.7	mg/L	1.0	102	90	110			
Manganese		3.86	mg/L	0.010	97	90	110			
Potassium		40.7	mg/L	1.0	102	90	110			
Silicon		7.90	mg/L	0.074	99	90	110			
Vanadium		0.800	mg/L	0.10	100	90	110			
Silica		16.9	mg/L	0.16		0	0			
Lab ID: ICSA	9	Interference Check Sample A								05/28/19 10:13
Aluminum		480	mg/L	0.10	96	80	120			
Calcium		454	mg/L	1.0	91	80	120			
Iron		178	mg/L	0.11	89	80	120			
Magnesium		479	mg/L	1.0	96	80	120			
Manganese		-0.00568	mg/L	0.010						
Potassium		-0.00517	mg/L	1.0						
Silicon		0.0177	mg/L	0.074						
Vanadium		0.00270	mg/L	0.10						
Silica		0.0379	mg/L	0.16		0	0			
Lab ID: ICSAB	9	Interference Check Sample AB								05/28/19 10:17
Aluminum		470	mg/L	0.10	94	80	120			
Calcium		454	mg/L	1.0	91	80	120			
Iron		179	mg/L	0.11	90	80	120			
Magnesium		479	mg/L	1.0	96	80	120			
Manganese		0.426	mg/L	0.010	85	80	120			
Potassium		20.2	mg/L	1.0	101	80	120			
Silicon		9.38	mg/L	0.074	94	80	120			
Vanadium		0.456	mg/L	0.10	91	80	120			
Silica		20.1	mg/L	0.16		0	0			
Method: SW6010B										Batch: 133380
Lab ID: MB-133380	10	Method Blank				Run: ICP204-B_190528A				05/29/19 04:34
Aluminum		ND	mg/kg	2						
Calcium		ND	mg/kg	9						
Iron		ND	mg/kg	20						
Magnesium		ND	mg/kg	2						
Manganese		ND	mg/kg	0.6						
Potassium		ND	mg/kg	6						
Silicon		ND	mg/kg	3						
Sodium		ND	mg/kg	20						
Vanadium		ND	mg/kg	1						
Silica		ND	mg/kg	7						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050766 **Report Date:** 06/06/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Batch: 133380
Lab ID: SRM-133380	10	Standard Reference Material				Run: ICP204-B_190528A			05/29/19 04:38	
Aluminum		13100	mg/kg	9.8	104	42	158			
Calcium		6100	mg/kg	8.6	95	82	118			
Iron		9780	mg/kg	23	98	83	117			
Magnesium		2410	mg/kg	5.0	87	63	138			
Manganese		853	mg/kg	1.0	88	79	120			
Potassium		6050	mg/kg	6.1	96	86	114			
Silicon		207	mg/kg	5.0	37	0	3133			
Sodium		851	mg/kg	16	84	80	120			
Vanadium		130	mg/kg	4.9	89	86	114			
Silica		443	mg/kg	11	37	0	362.184874			
Lab ID: C19050766-010ADIL	10	Serial Dilution				Run: ICP204-B_190528A			05/29/19 05:33	
Aluminum		4040	mg/kg-dry	52				3.3	10	
Calcium		11500	mg/kg-dry	170				6.3	10	
Iron		6400	mg/kg-dry	81				2.5	10	
Magnesium		2120	mg/kg-dry	12				6.9	10	
Manganese		131	mg/kg-dry	3.0				6.9	10	
Potassium		814	mg/kg-dry	33				5.3	10	
Silicon		164	mg/kg-dry	17					10	N
Sodium		121	mg/kg-dry	87					10	N
Vanadium		8.65	mg/kg-dry	26					10	N
Silica		350	mg/kg-dry	36					10	N
Lab ID: C19050766-010APDS	10	Post Digestion/Distillation Spike				Run: ICP204-B_190528A			05/29/19 05:37	
Aluminum		4100	mg/kg-dry	11		75	125			A
Calcium		13100	mg/kg-dry	36	87	75	125			
Iron		6710	mg/kg-dry	25		75	125			A
Magnesium		4470	mg/kg-dry	5.0	92	75	125			
Manganese		356	mg/kg-dry	1.0	87	75	125			
Potassium		3360	mg/kg-dry	6.8	96	75	125			
Silicon		626	mg/kg-dry	5.0	87	75	125			
Sodium		2630	mg/kg-dry	18	92	75	125			
Vanadium		55.2	mg/kg-dry	5.4	88	75	125			
Silica		1340	mg/kg-dry	11	87	75	125			
Lab ID: C19050766-010AMS3	10	Sample Matrix Spike				Run: ICP204-B_190528A			05/29/19 06:19	
Aluminum		8970	mg/kg-dry	9.8		75	125			A
Calcium		14300	mg/kg-dry	32		75	125			A
Iron		6730	mg/kg-dry	23		75	125			A
Magnesium		4730	mg/kg-dry	5.0	113	75	125			
Manganese		352	mg/kg-dry	1.0	94	75	125			
Potassium		3880	mg/kg-dry	6.1	127	75	125			S
Silicon		285	mg/kg-dry	5.0	27	75	125			S
Sodium		2500	mg/kg-dry	16	96	75	125			
Vanadium		58.2	mg/kg-dry	4.9	103	75	125			
Silica		611	mg/kg-dry	11	134	75	125			S

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050766 **Report Date:** 06/06/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**									Batch: 133380	
Lab ID: **C19050766-010AMSD**	10	Sample Matrix Spike Duplicate				Run: ICP204-B_190528A			05/29/19 06:23	
Aluminum		8680	mg/kg-dry	9.8		75	125	3.3	20	A
Calcium		13100	mg/kg-dry	33		75	125	8.8	20	A
Iron		6860	mg/kg-dry	23		75	125	1.9	20	A
Magnesium		4750	mg/kg-dry	5.0	113	75	125	0.3	20	
Manganese		339	mg/kg-dry	1.0	88	75	125	3.8	20	
Potassium		3880	mg/kg-dry	6.1	127	75	125	0.0	20	S
Silicon		378	mg/kg-dry	5.0	46	75	125	28	20	SR
Sodium		2520	mg/kg-dry	16	97	75	125	1.0	20	
Vanadium		59.4	mg/kg-dry	4.9	105	75	125	2.1	20	
Silica		809	mg/kg-dry	11	46	75	125	28	20	SR

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050766 **Report Date:** 06/06/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS207-B_190528A	
Lab ID: ICSA	6	Interference Check Sample A							05/28/19 12:44	
Iron		90.0	mg/L	0.0012	90	80	120			
Manganese		0.000263	mg/L	0.0010						
Molybdenum		0.815	mg/L	0.0010	102	80	120			
Selenium		5.38E-06	mg/L	0.0010						
Silicon		-0.0294	mg/L	0.10						
Uranium		0.0000138	mg/L	0.00030						
Lab ID: ICSAB	6	Interference Check Sample AB							05/28/19 12:48	
Iron		84.6	mg/L	0.0012	85	80	120			
Manganese		0.0208	mg/L	0.0010	104	80	120			
Molybdenum		0.796	mg/L	0.0010	100	80	120			
Selenium		0.00915	mg/L	0.0010	92	80	120			
Silicon		-0.0292	mg/L	0.10						
Uranium		7.24E-07	mg/L	0.00030						
Lab ID: QCS	6	Initial Calibration Verification Standard							05/28/19 11:50	
Iron		0.241	mg/L	0.0012	96	90	110			
Manganese		0.256	mg/L	0.0010	103	90	110			
Molybdenum		0.0478	mg/L	0.0010	96	90	110			
Selenium		0.0499	mg/L	0.0010	100	90	110			
Silicon		0.542	mg/L	0.10	108	90	110			
Uranium		0.0510	mg/L	0.00030	102	90	110			
Method: SW6020									Batch: 133380	
Lab ID: MB-133380	7	Method Blank				Run: ICPMS207-B_190528A			05/28/19 20:27	
Iron		ND	mg/kg	3						
Manganese		ND	mg/kg	0.2						
Molybdenum		ND	mg/kg	0.02						
Selenium		ND	mg/kg	0.5						
Silicon		ND	mg/kg	3						
Uranium		ND	mg/kg	0.006						
Silica		ND	mg/kg	6						
Lab ID: SRM-133380	7	Standard Reference Material				Run: ICPMS207-B_190528A			05/28/19 20:32	
Iron		8360	mg/kg	13	84	83	117			
Manganese		933	mg/kg	1.0	96	79	120			
Molybdenum		82.6	mg/kg	1.0	83	79	121			
Selenium		227	mg/kg	2.5	94	80	120			
Silicon		258	mg/kg	14	46	0	3133			
Uranium		1.27	mg/kg	1.0						
Silica		553	mg/kg	29	46	0	362.184874			
Lab ID: C19050766-010ADIL	7	Serial Dilution				Run: ICPMS207-B_190528A			05/28/19 20:48	
Iron		5950	mg/kg-dry	27				2.8	10	
Manganese		118	mg/kg-dry	2.2				5.1	10	
Molybdenum		0.272	mg/kg-dry	1.0					10	N
Selenium		ND	mg/kg-dry	5.3					10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050766 **Report Date:** 06/06/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**										Batch: 133380
Lab ID: **C19050766-010ADIL**	7	Serial Dilution				Run: ICPMS207-B_190528A			05/28/19 20:48	
Silicon		207	mg/kg-dry	29					10	N
Uranium		0.588	mg/kg-dry	1.0					10	N
Silica		443	mg/kg-dry	62					10	N
Lab ID: **C19050766-010APDS1**	7	Post Digestion/Distillation Spike				Run: ICPMS207-B_190528A			05/28/19 20:52	
Iron		5840	mg/kg-dry	5.5		75	125			A
Manganese		112	mg/kg-dry	1.0		75	125			A
Molybdenum		4.58	mg/kg-dry	1.0	81	75	125			
Selenium		4.87	mg/kg-dry	1.1	91	75	125			
Silicon		191	mg/kg-dry	5.9	6	75	125			S
Uranium		5.36	mg/kg-dry	1.0	90	75	125			
Silica		409	mg/kg-dry	13		80	120			A
Lab ID: **C19050766-010AMS3**	7	Sample Matrix Spike				Run: ICPMS207-B_190528A			05/28/19 20:57	
Iron		6560	mg/kg-dry	25		75	125			A
Manganese		342	mg/kg-dry	2.1	94	75	125			
Molybdenum		42.8	mg/kg-dry	1.0	87	75	125			
Selenium		47.4	mg/kg-dry	5.0	97	75	125			
Silicon		348	mg/kg-dry	27	36	75	125			S
Uranium		51.5	mg/kg-dry	1.0	104	75	125			
Silica		744	mg/kg-dry	58	177	75	125			S
Lab ID: **C19050766-010AMSD**	7	Sample Matrix Spike Duplicate				Run: ICPMS207-B_190528A			05/28/19 21:01	
Iron		6750	mg/kg-dry	25		75	125	3.0	20	A
Manganese		345	mg/kg-dry	2.1	95	75	125	0.8	20	
Molybdenum		43.6	mg/kg-dry	1.0	88	75	125	1.8	20	
Selenium		49.1	mg/kg-dry	5.0	100	75	125	3.6	20	
Silicon		405	mg/kg-dry	27	47	75	125	15	20	S
Uranium		51.1	mg/kg-dry	1.0	103	75	125	0.8	20	
Silica		865	mg/kg-dry	58	47	75	125	15	20	S
Method: **SW6020**										Analytical Run: ICPMS207-B_190531A
Lab ID: **ICSA**		Interference Check Sample A							05/31/19 12:09	
Uranium		0.0000250	mg/L	0.00030						
Lab ID: **ICSAB**		Interference Check Sample AB							05/31/19 12:13	
Uranium		4.94E-06	mg/L	0.00030						
Lab ID: **QCS**		Initial Calibration Verification Standard							05/31/19 11:44	
Uranium		0.0494	mg/L	0.00030	99	90	110			
Method: **SW6020**										Batch: 133380
Lab ID: **MB-133380**		Method Blank				Run: ICPMS207-B_190531A			06/01/19 04:54	
Uranium		ND	mg/kg	0.006						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Casper, WY Branch **Revised Date:** 06/18/19

Client: Homestake Mining Co **Work Order:** C19050766 **Report Date:** 06/06/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2580 BM									Analytical Run: SUB-B321289	
Lab ID: CCV2		Continuing Calibration Verification Standard							05/30/19 13:41	
Oxidation-Reduction Potential		303	mV		101	97	103			
Method: A2580 BM									Batch: B_R321289	
Lab ID: LCS2		Laboratory Control Sample				Run: SUB-B321289			05/30/19 13:41	
Oxidation-Reduction Potential		301	mV		100	97	103			
Lab ID: C19050918-011A		Sample Duplicate				Run: SUB-B321289			05/30/19 13:41	
Oxidation-Reduction Potential		299	mV-dry					3.6	10	
Lab ID: B19051815-009ADUP		Sample Duplicate				Run: SUB-B321289			05/30/19 13:41	
Oxidation-Reduction Potential		271	mV-dry					1.4	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19050766 **Report Date:** 05/29/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA10-3**									Batch: 133499
Lab ID: **C19050766-001A DUP**	Sample Duplicate				Run: MISC-SOIL_190529B				05/29/19 14:47
pH, sat. paste	7.90	s.u.	0.10				0.0	10	
Lab ID: **LCS-1905291447**	Laboratory Control Sample				Run: MISC-SOIL_190529B				05/29/19 14:47
pH, sat. paste	7.40	s.u.	0.10	99	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19050766 **Report Date:** 05/29/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E3.2.6**									Batch: R320966
Lab ID: **C19050766-006A DUP**	Sample Duplicate				Run: MISC-SOIL_190524A				05/23/19 18:29
Sulfur, Total	ND	wt%	0.010					30	
Lab ID: **LCS-R320966**	Laboratory Control Sample				Run: MISC-SOIL_190524A				05/24/19 08:58
Sulfur, Total	0.190	wt%	0.010	100	50	150			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19050766 **Report Date:** 05/29/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **Leco**									Batch: R320966
Lab ID: **C19050766-006A DUP**	Sample Duplicate				Run: MISC-SOIL_190524A				05/23/19 18:29
Carbon, Total	0.649	wt%	0.010				2.3	50	
Lab ID: **LCS-R320966**	Laboratory Control Sample				Run: MISC-SOIL_190524A				05/24/19 08:58
Carbon, Total	3.74	wt%	0.010	105	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Work Order Receipt Checklist

Homestake Mining Co

C19050766

Login completed by:	Dorian Quis	Date Received:	5/20/2019
Reviewed by:	Kasey Vidick	Received by:	dcq
Reviewed Date:	5/20/2019	Carrier name:	NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	5.2°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	Homestake Mining Company
Contact	Adam Arguello
Phone	505 287 4456 x31
Mailing Address	560 Anaconda Road, Route 605
City, State, Zip	Milan, NM 87021
Email	aarguello@barrick.com
Receive Invoice	☐Hard Copy ☑Email
Receive Report	☐Hard Copy ☑Email
Purchase Order	
Quote	C5566
Bottle Order	58233

Report Information (if different than Account Information)

Company/Name	Adam Arguello at HMC and Arcadis
Contact	Shannon Ulrich
Phone	303 471 3465
Mailing Address	630 Plaza Drive, Ste 200
City, State, Zip	Highlands Ranch, CO 80129
Email	shannon.ulrich@arcadis.com
Receive Report	☐Hard Copy ☑Email PDF + excel
Special Report/Formats:	EQuIS
☐ LEVEL IV ☐ NELAC	☑EDD/EDT (contact laboratory) ☐ Other

Comments

Holding samples and subbing select samples to Huffman Hazen Labs (HHL), DCM Science lab, IT² isotope lab. Contact Tracey Archer

2 COOLERS

Project Information

Project Name, PWSID, Permit, etc.	Grants Reclamation Project
Sampler Name	Shannon Ulrich
Sampler Phone	303 471 3465
Sample Origin State	NM
EPA/State Compliance	☐ Yes ☑ No

URANIUM MINING CLIENTS MUST indicate sample type.

☒ NOT Source or Byproduct Material

☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING

☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes

A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.

Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Paste pH	DRP on Solids A2580 BM	TOC + Total Sulfur	Total Metals	For DCM: XRD, Petrographic Microscopy For HHL: QEMSCAN	For IT²: 345 on Solids	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1 BK2-12-13-051519	5/15/19	1620	4	S	X	X	X	X	HOLD	HOLD	HOLD		C19050766
2 BK2-20-21-051519	5/15/19	1650	4	S	X	X	X	X	HOLD	HOLD	HOLD		
3 BK2-35-36-051519	5/15/19	1740	4	S	X	X	X	X	HOLD	HOLD	HOLD		
4 BK2-38-39-051519	5/15/19	1825	4	S	X	X	X	X	HOLD	HOLD	HOLD		
5 BK2-41.5-42.5-051519	5/15/19	1920	4	S	X	X	X	X	HOLD	HOLD	HOLD		
6 BK2-44-44.5-051619	5/16/19	0930	4	S	X	X	X	X	HOLD	HOLD	HOLD		
7 BK2-59-60-051619	5/16/19	1055	4	S	X	X	X	X	HOLD	HOLD	HOLD		
8 BK2-63.5-64-051619	5/16/19	1135	4	S	X	X	X	X	HOLD	HOLD	HOLD		
9 BK2-72.5-73.5-051619	5/16/19	1205	4	S	X	X	X	X	HOLD	HOLD	HOLD		
10 BK2-77-77.5-051619	5/16/19	1345	4	S	X	X	X	X	HOLD	HOLD	HOLD		

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Shannon Ulrich	5/16/19/1630		UPS		
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
					5-20-19 8:15	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

ANALYTICAL SUMMARY REPORT

June 18, 2019

Homestake Mining Co
Hwy 605
Grants, NM 87020

Work Order: C19050916 Quote ID: C5566

Project Name: Grants Reclamation Project

Energy Laboratories, Inc. Casper WY received the following 10 samples for Homestake Mining Co on 5/23/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C19050916-001	BK3-14.5-15-052219	05/22/19 10:35	05/23/19	Solid	Metals by ICP/ICPMS, Total or Soluble Total Carbon Moisture Oxidation Reduction Potential pH, Saturated Paste Percent Moisture Digestion, Total Metals Saturated Paste Extraction Services Provided by Lab Total Sulfur
C19050916-002	BK3-23-23.5-052219	05/22/19 10:55	05/23/19	Solid	Same As Above
C19050916-003	BK3-26-27-052219	05/22/19 11:15	05/23/19	Solid	Same As Above
C19050916-004	BK3-31.5-32.5-052219	05/22/19 11:30	05/23/19	Solid	Same As Above
C19050916-005	BK3-35-35.5-052219	05/22/19 12:00	05/23/19	Solid	Same As Above
C19050916-006	BK3-46.5-47.5-052219	05/22/19 12:30	05/23/19	Solid	Same As Above
C19050916-007	BK3-47.5-48.5-052219	05/22/19 13:00	05/23/19	Solid	Same As Above
C19050916-008	BK3-50.5-52-052219	05/22/19 13:20	05/23/19	Solid	Same As Above
C19050916-009	BK3-55-56-052219	05/22/19 14:00	05/23/19	Solid	Same As Above
C19050916-010	BK3-42.5-43.5-052219	05/22/19 15:05	05/23/19	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager .

Report Approved By:

CLIENT: Homestake Mining Co
Project: Grants Reclamation Project
Work Order: C19050916

Revised Date: 06/18/19
Report Date: 06/11/19

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

REVISED/SUPPLEMENTAL REPORT
Revised 6/18/2019
Per request from Shannon Ulrich, Total Sodium has been added to the report for all samples.
The report has been revised and replaces any previously issued report in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-001
Client Sample ID: BK3-14.5-15-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 10:35
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	4.1	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 17:47 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.3	wt%		0.1		Leco	06/03/19 17:47 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	209	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	2340	mg/kg-dry		9		SW6020	05/31/19 05:47 / eli-b
Calcium	7390	mg/kg-dry		30		SW6010B	05/30/19 19:51 / eli-b
Iron	4250	mg/kg-dry		10		SW6020	05/31/19 05:47 / eli-b
Magnesium	1170	mg/kg-dry		10		SW6020	05/31/19 05:47 / eli-b
Manganese	95	mg/kg-dry		1		SW6020	05/31/19 05:47 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/31/19 05:47 / eli-b
Potassium	617	mg/kg-dry		30		SW6020	05/31/19 05:47 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	06/01/19 01:54 / eli-b
Silica	312	mg/kg-dry		10		SW6010B	05/30/19 19:51 / eli-b
Sodium	107	mg/kg-dry		10		SW6010B	05/30/19 19:51 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	05/31/19 05:47 / eli-b
Vanadium	10	mg/kg-dry		5		SW6020	05/31/19 05:47 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-002
Client Sample ID: BK3-23-23.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 10:55
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	2.5	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.2	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 17:50 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.2	wt%		0.1		Leco	06/03/19 17:50 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	319	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	6340	mg/kg-dry		8		SW6020	05/31/19 05:51 / eli-b
Calcium	8300	mg/kg-dry		30		SW6010B	05/30/19 19:55 / eli-b
Iron	9600	mg/kg-dry		10		SW6020	05/31/19 05:51 / eli-b
Magnesium	2130	mg/kg-dry		10		SW6020	05/31/19 05:51 / eli-b
Manganese	187	mg/kg-dry		1		SW6020	05/31/19 05:51 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 01:58 / eli-b
Potassium	1620	mg/kg-dry		30		SW6020	05/31/19 05:51 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	06/01/19 01:58 / eli-b
Silica	420	mg/kg-dry		10		SW6010B	05/30/19 19:55 / eli-b
Sodium	382	mg/kg-dry		9		SW6010B	05/30/19 19:55 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	05/31/19 05:51 / eli-b
Vanadium	16	mg/kg-dry		5		SW6020	05/31/19 05:51 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-003
Client Sample ID: BK3-26-27-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 11:15
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	2.5	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 17:54 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	1.3	wt%		0.1		Leco	06/03/19 17:54 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	309	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	7920	mg/kg-dry		9		SW6020	05/31/19 05:55 / eli-b
Calcium	37500	mg/kg-dry		30		SW6010B	05/30/19 19:59 / eli-b
Iron	8300	mg/kg-dry		10		SW6020	05/31/19 05:55 / eli-b
Magnesium	3770	mg/kg-dry		10		SW6020	05/31/19 05:55 / eli-b
Manganese	220	mg/kg-dry		1		SW6020	05/31/19 05:55 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	05/31/19 05:55 / eli-b
Potassium	1910	mg/kg-dry		30		SW6020	05/31/19 05:55 / eli-b
Selenium	<1	mg/kg-dry		1		SW6020	06/01/19 02:03 / eli-b
Silica	671	mg/kg-dry		10		SW6010B	05/30/19 19:59 / eli-b
Sodium	456	mg/kg-dry		10		SW6010B	05/30/19 19:59 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	05/31/19 05:55 / eli-b
Vanadium	12	mg/kg-dry		5		SW6020	05/31/19 05:55 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-004
Client Sample ID: BK3-31.5-32.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 11:30
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	3.4	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 17:57 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.6	wt%		0.1		Leco	06/03/19 17:57 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	256	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	6680	mg/kg-dry		5		SW6010B	06/03/19 23:19 / eli-b
Calcium	15100	mg/kg-dry		30		SW6010B	06/03/19 23:19 / eli-b
Iron	9290	mg/kg-dry		20		SW6010B	06/03/19 23:19 / eli-b
Magnesium	3190	mg/kg-dry		5		SW6010B	06/03/19 23:19 / eli-b
Manganese	186	mg/kg-dry		1		SW6020	06/01/19 02:40 / eli-b
Molybdenum	1	mg/kg-dry		1		SW6020	06/01/19 02:40 / eli-b
Potassium	1250	mg/kg-dry		6		SW6010B	06/03/19 23:19 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 02:40 / eli-b
Silica	1140	mg/kg-dry		10		SW6010B	06/03/19 23:19 / eli-b
Sodium	436	mg/kg-dry		10		SW6010B	06/03/19 23:19 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 02:40 / eli-b
Vanadium	13	mg/kg-dry		5		SW6020	06/04/19 07:22 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-005
Client Sample ID: BK3-35-35.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 12:00
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	16.7	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.5	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:01 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.3	wt%		0.1		Leco	06/03/19 18:01 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	245	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	2760	mg/kg-dry		5		SW6010B	06/03/19 23:23 / eli-b
Calcium	9360	mg/kg-dry		40		SW6010B	06/03/19 23:23 / eli-b
Iron	6800	mg/kg-dry		30		SW6010B	06/03/19 23:23 / eli-b
Magnesium	1380	mg/kg-dry		5		SW6010B	06/03/19 23:23 / eli-b
Manganese	116	mg/kg-dry		1		SW6020	06/01/19 02:44 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 02:44 / eli-b
Potassium	575	mg/kg-dry		7		SW6010B	06/03/19 23:23 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 02:44 / eli-b
Silica	754	mg/kg-dry		10		SW6010B	06/03/19 23:23 / eli-b
Sodium	234	mg/kg-dry		10		SW6010B	06/03/19 23:23 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 02:44 / eli-b
Vanadium	10	mg/kg-dry		3		SW6020	06/07/19 00:50 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-006
Client Sample ID: BK3-46.5-47.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 12:30
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	10.9	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.5	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:04 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.4	wt%		0.1		Leco	06/03/19 18:04 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	228	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	2420	mg/kg-dry		5		SW6010B	06/03/19 23:52 / eli-b
Calcium	12800	mg/kg-dry		40		SW6010B	06/03/19 23:52 / eli-b
Iron	10800	mg/kg-dry		30		SW6010B	06/03/19 23:52 / eli-b
Magnesium	1190	mg/kg-dry		5		SW6010B	06/03/19 23:52 / eli-b
Manganese	205	mg/kg-dry		1		SW6010B	06/03/19 23:52 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:09 / eli-b
Potassium	476	mg/kg-dry		7		SW6010B	06/03/19 23:52 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 03:09 / eli-b
Silica	792	mg/kg-dry		10		SW6010B	06/03/19 23:52 / eli-b
Sodium	202	mg/kg-dry		10		SW6010B	06/03/19 23:52 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 03:09 / eli-b
Vanadium	13	mg/kg-dry		6		SW6020	06/04/19 07:31 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-007
Client Sample ID: BK3-47.5-48.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 13:00
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	10.1	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.5	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.01	wt%		0.01		E3.2.6	06/03/19 18:08 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.4	wt%		0.1		Leco	06/03/19 18:08 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	212	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	3010	mg/kg-dry		5		SW6010B	06/03/19 23:57 / eli-b
Calcium	10300	mg/kg-dry		40		SW6010B	06/03/19 23:57 / eli-b
Iron	11700	mg/kg-dry		20		SW6010B	06/03/19 23:57 / eli-b
Magnesium	1420	mg/kg-dry		5		SW6010B	06/03/19 23:57 / eli-b
Manganese	152	mg/kg-dry		1		SW6010B	06/03/19 23:57 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:13 / eli-b
Potassium	597	mg/kg-dry		7		SW6010B	06/03/19 23:57 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 03:13 / eli-b
Silica	1230	mg/kg-dry		10		SW6010B	06/03/19 23:57 / eli-b
Sodium	220	mg/kg-dry		10		SW6010B	06/03/19 23:57 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 03:13 / eli-b
Vanadium	14	mg/kg-dry		6		SW6020	06/04/19 07:35 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-008
Client Sample ID: BK3-50.5-52-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 13:20
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	10.8	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.3	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:11 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	0.4	wt%		0.1		Leco	06/03/19 18:11 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	256	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	7370	mg/kg-dry		5		SW6010B	06/04/19 00:01 / eli-b
Calcium	9570	mg/kg-dry		40		SW6010B	06/04/19 00:01 / eli-b
Iron	7910	mg/kg-dry		20		SW6010B	06/04/19 00:01 / eli-b
Magnesium	2370	mg/kg-dry		5		SW6010B	06/04/19 00:01 / eli-b
Manganese	123	mg/kg-dry		1		SW6020	06/01/19 03:18 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:18 / eli-b
Potassium	1490	mg/kg-dry		7		SW6010B	06/04/19 00:01 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 03:18 / eli-b
Silica	1520	mg/kg-dry		10		SW6010B	06/04/19 00:01 / eli-b
Sodium	341	mg/kg-dry		10		SW6010B	06/04/19 00:01 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 03:18 / eli-b
Vanadium	13	mg/kg-dry		6		SW6020	06/04/19 07:39 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-009
Client Sample ID: BK3-55-56-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 14:00
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	9.9	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.5	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:15 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	1.0	wt%		0.1		Leco	06/03/19 18:15 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	226	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	6250	mg/kg-dry		5		SW6010B	06/04/19 00:05 / eli-b
Calcium	24700	mg/kg-dry		30		SW6010B	06/04/19 00:05 / eli-b
Iron	6530	mg/kg-dry		20		SW6010B	06/04/19 00:05 / eli-b
Magnesium	2050	mg/kg-dry		5		SW6010B	06/04/19 00:05 / eli-b
Manganese	195	mg/kg-dry		1		SW6010B	06/04/19 00:05 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:22 / eli-b
Potassium	1160	mg/kg-dry		6		SW6010B	06/04/19 00:05 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 03:22 / eli-b
Silica	1330	mg/kg-dry		10		SW6010B	06/04/19 00:05 / eli-b
Sodium	358	mg/kg-dry		10		SW6010B	06/04/19 00:05 / eli-b
Uranium	<1	mg/kg-dry		1		SW6020	06/01/19 03:22 / eli-b
Vanadium	13	mg/kg-dry		5		SW6020	06/04/19 07:43 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants Reclamation Project
Lab ID: C19050916-010
Client Sample ID: BK3-42.5-43.5-052219

Revised Date: 06/18/19
Report Date: 06/11/19
Collection Date: 05/22/19 15:05
Date Received: 05/23/19
Matrix: Solid

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	13.6	wt%		0.2		D2974	05/29/19 11:07 / eli-b
SATURATED PASTE							
pH, sat. paste	8.1	s.u.		0.1		ASA10-3	05/29/19 14:47 / eli-b
CHEMICAL CHARACTERISTICS							
Sulfur, Total	0.02	wt%		0.01		E3.2.6	06/03/19 18:18 / eli-b
CHEMICAL CHARACTERISTICS							
Carbon, Total	1.1	wt%		0.1		Leco	06/03/19 18:18 / eli-b
PHYSICAL PROPERTIES							
Oxidation-Reduction Potential	255	mV-dry				A2580 BM	05/30/19 10:43 / eli-b
METALS, TOTAL							
Aluminum	31900	mg/kg-dry		5		SW6010B	06/04/19 00:09 / eli-b
Calcium	33100	mg/kg-dry		40		SW6010B	06/04/19 00:09 / eli-b
Iron	21600	mg/kg-dry		30		SW6010B	06/04/19 00:09 / eli-b
Magnesium	10400	mg/kg-dry		5		SW6010B	06/04/19 00:09 / eli-b
Manganese	413	mg/kg-dry		1		SW6020	06/01/19 03:43 / eli-b
Molybdenum	<1	mg/kg-dry		1		SW6020	06/01/19 03:43 / eli-b
Potassium	6370	mg/kg-dry		7		SW6010B	06/04/19 00:09 / eli-b
Selenium	<3	mg/kg-dry		3		SW6020	06/01/19 03:43 / eli-b
Silica	1760	mg/kg-dry		10		SW6010B	06/04/19 00:09 / eli-b
Sodium	1150	mg/kg-dry		10		SW6010B	06/04/19 00:09 / eli-b
Uranium	1	mg/kg-dry		1		SW6020	06/01/19 03:43 / eli-b
Vanadium	36	mg/kg-dry		2		SW6020	06/07/19 00:58 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050916 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Analytical Run: ICP203-B_190603A
Lab ID: QCS	9	Initial Calibration Verification Standard								06/03/19 09:50
Aluminum		3.90	mg/L	0.10	97	90	110			
Calcium		39.9	mg/L	1.0	100	90	110			
Iron		3.96	mg/L	0.030	99	90	110			
Magnesium		39.6	mg/L	1.0	99	90	110			
Manganese		3.81	mg/L	0.010	95	90	110			
Potassium		39.5	mg/L	1.0	99	90	110			
Silicon		7.68	mg/L	0.074	96	90	110			
Sodium		39.6	mg/L	1.0	99	90	110			
Silica		16.4	mg/L	0.16		0	0			
Lab ID: ICSA	9	Interference Check Sample A								06/03/19 09:54
Aluminum		458	mg/L	0.10	92	80	120			
Calcium		446	mg/L	1.0	89	80	120			
Iron		167	mg/L	0.030	83	80	120			
Magnesium		490	mg/L	1.0	98	80	120			
Manganese		0.0111	mg/L	0.010						
Potassium		0.0128	mg/L	1.0						
Silicon		0.0288	mg/L	0.074						
Sodium		0.0445	mg/L	1.0						
Silica		0.0617	mg/L	0.16		0	0			
Lab ID: ICSAB	9	Interference Check Sample AB								06/03/19 09:58
Aluminum		460	mg/L	0.10	92	80	120			
Calcium		440	mg/L	1.0	88	80	120			
Iron		165	mg/L	0.030	82	80	120			
Magnesium		485	mg/L	1.0	97	80	120			
Manganese		0.424	mg/L	0.010	85	80	120			
Potassium		19.0	mg/L	1.0	95	80	120			
Silicon		9.02	mg/L	0.074	90	80	120			
Sodium		19.1	mg/L	1.0	95	80	120			
Silica		19.3	mg/L	0.16		0	0			
Method: SW6010B										Batch: 133522
Lab ID: MB-133522	9	Method Blank				Run: ICP203-B_190603A				06/03/19 23:11
Aluminum		ND	mg/kg	2						
Calcium		ND	mg/kg	9						
Iron		ND	mg/kg	20						
Magnesium		ND	mg/kg	2						
Manganese		ND	mg/kg	0.6						
Potassium		ND	mg/kg	6						
Silicon		ND	mg/kg	3						
Sodium		ND	mg/kg	20						
Silica		ND	mg/kg	7						
Lab ID: SRM-133522	9	Standard Reference Material				Run: ICP203-B_190603A				06/03/19 23:15
Aluminum		13400	mg/kg	5.0	106	42	158			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050916 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**										Batch: 133522
Lab ID: **SRM-133522**	9	Standard Reference Material				Run: ICP203-B_190603A			06/03/19 23:15	
Calcium		6040	mg/kg	8.3	94	82	118			
Iron		9330	mg/kg	22	94	83	117			
Magnesium		2360	mg/kg	5.0	85	63	138			
Manganese		861	mg/kg	1.0	88	79	120			
Potassium		6190	mg/kg	6.0	98	86	114			
Silicon		279	mg/kg	5.0	50	0	3133			
Sodium		901	mg/kg	16	89	80	120			
Silica		597	mg/kg	11	50	0	362.184874			
Lab ID: **C19050916-005ADIL**	9	Serial Dilution				Run: ICP203-B_190603A			06/03/19 23:36	
Aluminum		2810	mg/kg-dry	11				1.8	10	
Calcium		9830	mg/kg-dry	200				4.9	10	
Iron		7250	mg/kg-dry	140				6.4	10	
Magnesium		1440	mg/kg-dry	13				4.3	10	
Manganese		118	mg/kg-dry	3.6				5.2	10	
Potassium		588	mg/kg-dry	37				2.3	10	
Silicon		370	mg/kg-dry	19				4.7	10	
Sodium		213	mg/kg-dry	60					10	N
Silica		791	mg/kg-dry	41				4.7	10	
Lab ID: **C19050916-005APDS**	9	Post Digestion/Distillation Spike				Run: ICP203-B_190603A			06/03/19 23:40	
Aluminum		3050	mg/kg-dry	5.0		75	125			A
Calcium		12100	mg/kg-dry	41	88	75	125			
Iron		6920	mg/kg-dry	29		75	125			A
Magnesium		4270	mg/kg-dry	5.0	94	75	125			
Manganese		387	mg/kg-dry	1.0	89	75	125			
Potassium		3550	mg/kg-dry	7.7	97	75	125			
Silicon		909	mg/kg-dry	5.0	90	75	125			
Sodium		3350	mg/kg-dry	12	101	75	125			
Silica		1940	mg/kg-dry	11	90	75	125			
Lab ID: **C19050916-005AMS3**	9	Sample Matrix Spike				Run: ICP203-B_190603A			06/03/19 23:44	
Aluminum		6410	mg/kg-dry	5.0		75	125			A
Calcium		11400	mg/kg-dry	37	71	75	125			S
Iron		8620	mg/kg-dry	26		75	125			A
Magnesium		4440	mg/kg-dry	5.0	109	75	125			
Manganese		387	mg/kg-dry	1.0	98	75	125			
Potassium		3890	mg/kg-dry	7.0	118	75	125			
Silicon		530	mg/kg-dry	5.0	32	75	125			S
Sodium		3160	mg/kg-dry	11	105	75	125			
Silica		1130	mg/kg-dry	11	159	75	125			S
Lab ID: **C19050916-005AMSD**	9	Sample Matrix Spike Duplicate				Run: ICP203-B_190603A			06/03/19 23:48	
Aluminum		6530	mg/kg-dry	5.0		75	125	1.9	20	A
Calcium		12200	mg/kg-dry	36	106	75	125	7.6	20	
Iron		8740	mg/kg-dry	25		75	125	1.5	20	A
Magnesium		4400	mg/kg-dry	5.0	111	75	125	0.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 06/13/19

Client: Homestake Mining Co

Work Order: C19050916

Report Date: 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**										Batch: 133522
Lab ID: **C19050916-005AMSD**	9	Sample Matrix Spike Duplicate				Run: ICP203-B_190603A				06/03/19 23:48
Manganese		383	mg/kg-dry	1.0	100	75	125	1.1	20	
Potassium		3780	mg/kg-dry	6.8	118	75	125	2.8	20	
Silicon		553	mg/kg-dry	5.0	37	75	125	4.2	20	S
Sodium		2910	mg/kg-dry	18	99	75	125	8.2	20	
Silica		1180	mg/kg-dry	11	37	75	125	4.2	20	S

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 06/13/19

Client: Homestake Mining Co

Work Order: C19050916

Report Date: 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B									Analytical Run: ICP204-B_190530A	
Lab ID: QCS	4	Initial Calibration Verification Standard							05/30/19 10:15	
Calcium		41.2	mg/L	1.0	103	90	110			
Silicon		8.00	mg/L	0.074	100	90	110			
Sodium		40.8	mg/L	1.0	102	90	110			
Silica		17.1	mg/L	0.16		0	0			
Lab ID: ICSA	4	Interference Check Sample A							05/30/19 10:19	
Calcium		457	mg/L	1.0	91	80	120			
Silicon		0.0127	mg/L	0.074						
Sodium		0.117	mg/L	1.0						
Silica		0.0272	mg/L	0.16		0	0			
Lab ID: ICSAB	4	Interference Check Sample AB							05/30/19 10:24	
Calcium		453	mg/L	1.0	91	80	120			
Silicon		9.59	mg/L	0.074	96	80	120			
Sodium		20.1	mg/L	1.0	100	80	120			
Silica		20.5	mg/L	0.16		0	0			
Method: SW6010B									Batch: 133477	
Lab ID: MB-133477	4	Method Blank				Run: ICP204-B_190530A			05/30/19 19:42	
Calcium		ND	mg/kg	9						
Silicon		ND	mg/kg	3						
Sodium		ND	mg/kg	20						
Silica		ND	mg/kg	7						
Lab ID: SRM-133477	4	Standard Reference Material				Run: ICP204-B_190530A			05/30/19 19:46	
Calcium		6120	mg/kg	8.6	95	82	118			
Silicon		207	mg/kg	5.0	37	0	3133			
Sodium		985	mg/kg	16	98	80	120			
Silica		443	mg/kg	11	37	0	362.184874			
Lab ID: C19050916-003ADIL	4	Serial Dilution				Run: ICP204-B_190530A			05/30/19 20:03	
Calcium		40700	mg/kg-dry	170				8.1	10	
Silicon		330	mg/kg-dry	16				5.1	10	
Sodium		484	mg/kg-dry	50					10	N
Silica		706	mg/kg-dry	34				5.1	10	
Lab ID: C19050916-003APDS	4	Post Digestion/Distillation Spike				Run: ICP204-B_190530A			05/30/19 20:16	
Calcium		38900	mg/kg-dry	35		75	125			A
Silicon		782	mg/kg-dry	5.0	90	75	125			
Sodium		2920	mg/kg-dry	10	95	75	125			
Silica		1670	mg/kg-dry	11	90	75	125			
Lab ID: C19050916-003AMS3	4	Sample Matrix Spike				Run: ICP204-B_190530A			05/30/19 20:20	
Calcium		37700	mg/kg-dry	29		75	125			A
Silicon		275	mg/kg-dry	5.0	-9	75	125			S
Sodium		2590	mg/kg-dry	8.8	97	75	125			
Silica		589	mg/kg-dry	11	-44	75	125			S

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 06/13/19

Client: Homestake Mining Co

Work Order: C19050916

Report Date: 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**									Batch: 133477	
Lab ID: **C19050916-003AMSD**	4	Sample Matrix Spike Duplicate				Run: ICP204-B_190530A			05/30/19 20:24	
Calcium		38700	mg/kg-dry	34		75	125	2.5	20	A
Silicon		316	mg/kg-dry	5.0	0	75	125	14	20	S
Sodium		3010	mg/kg-dry	10	101	75	125	15	20	
Silica		676	mg/kg-dry	11	0	75	125	14	20	S

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050916 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Analytical Run: ICPMS207-B_190530A
Lab ID: ICSA	8	Interference Check Sample A								05/30/19 16:41
Aluminum		43.6	mg/L	0.0010	109	80	120			
Iron		87.1	mg/L	0.0012	87	80	120			
Magnesium		40.8	mg/L	0.0056	82					
Manganese		0.000252	mg/L	0.0010						
Molybdenum		0.931	mg/L	0.0010	116	80	120			
Potassium		42.7	mg/L	0.081	85					
Uranium		0.0000326	mg/L	0.00030						
Vanadium		-0.000133	mg/L	0.0013						
Lab ID: ICSAB	8	Interference Check Sample AB								05/30/19 16:45
Aluminum		46.2	mg/L	0.0010	116	80	120			
Iron		110	mg/L	0.0012	110	80	120			
Magnesium		37.0	mg/L	0.0056	92	80	120			
Manganese		0.0196	mg/L	0.0010	98	80	120			
Molybdenum		0.918	mg/L	0.0010	115	80	120			
Potassium		37.2	mg/L	0.081	93	80	120			
Uranium		2.14E-06	mg/L	0.00030						
Vanadium		0.0192	mg/L	0.0013	96	80	120			
Lab ID: QCS	8	Initial Calibration Verification Standard								05/30/19 16:16
Aluminum		0.245	mg/L	0.0010	98	90	110			
Iron		0.245	mg/L	0.0012	98	90	110			
Magnesium		2.66	mg/L	0.0056	106	90	110			
Manganese		0.258	mg/L	0.0010	103	90	110			
Molybdenum		0.0461	mg/L	0.0010	92	90	110			
Potassium		2.49	mg/L	0.081	100	90	110			
Uranium		0.0515	mg/L	0.00030	103	90	110			
Vanadium		0.0508	mg/L	0.0013	102	90	110			
Method: SW6020										Batch: 133477
Lab ID: MB-133477	9	Method Blank				Run: ICPMS207-B_190530A				05/31/19 03:54
Aluminum		ND	mg/kg	2						
Iron		ND	mg/kg	3						
Magnesium		ND	mg/kg	2						
Manganese		ND	mg/kg	0.2						
Molybdenum		ND	mg/kg	0.02						
Potassium		ND	mg/kg	6						
Selenium		ND	mg/kg	0.5						
Uranium		ND	mg/kg	0.006						
Vanadium		ND	mg/kg	1						
Lab ID: SRM-133477	9	Standard Reference Material				Run: ICPMS207-B_190530A				05/31/19 03:58
Aluminum		9550	mg/kg	17	76	42	158			
Iron		9930	mg/kg	27	100	83	117			
Magnesium		2540	mg/kg	21	92	63	138			
Manganese		1040	mg/kg	2.1	107	79	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050916 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 133477
Lab ID: SRM-133477	9	Standard Reference Material				Run: ICPMS207-B_190530A			05/31/19 03:58	
Molybdenum		94.8	mg/kg	1.0	95	79	121			
Potassium		6100	mg/kg	63	97	86	114			
Selenium		205	mg/kg	5.3	85	80	120			
Uranium		1.13	mg/kg	1.0						
Vanadium		145	mg/kg	10	100	86	114			
Lab ID: C19050916-003ADIL	9	Serial Dilution				Run: ICPMS207-B_190530A			05/31/19 05:59	
Aluminum		9330	mg/kg-dry	44				16	10	R
Iron		8410	mg/kg-dry	68				1.2	10	
Magnesium		3920	mg/kg-dry	54				3.9	10	
Manganese		239	mg/kg-dry	5.6				8.3	10	
Molybdenum		ND	mg/kg-dry	1.0					10	
Potassium		1860	mg/kg-dry	160				2.8	10	
Selenium		ND	mg/kg-dry	13					10	
Uranium		0.618	mg/kg-dry	1.0					10	N
Vanadium		ND	mg/kg-dry	27					10	
Lab ID: C19050916-003APDS1	9	Post Digestion/Distillation Spike				Run: ICPMS207-B_190530A			05/31/19 06:03	
Aluminum		7250	mg/kg-dry	9.0		75	125			A
Iron		8300	mg/kg-dry	14		75	125			A
Magnesium		12900	mg/kg-dry	11	71	75	125			S
Manganese		208	mg/kg-dry	1.1		75	125			A
Molybdenum		11.4	mg/kg-dry	1.0	87	75	125			
Potassium		12100	mg/kg-dry	33	79	75	125			
Selenium		13.2	mg/kg-dry	2.6	103	75	125			
Uranium		12.2	mg/kg-dry	1.0	90	75	125			
Vanadium		21.6	mg/kg-dry	5.4	73	75	125			S
Lab ID: C19050916-003AMS3	9	Sample Matrix Spike				Run: ICPMS207-B_190530A			05/31/19 06:07	
Aluminum		10300	mg/kg-dry	15		75	125			A
Iron		10700	mg/kg-dry	24		75	125			A
Magnesium		7240	mg/kg-dry	19	158	75	125			S
Manganese		330	mg/kg-dry	1.9	50	75	125			S
Molybdenum		44.9	mg/kg-dry	1.0	102	75	125			
Potassium		5830	mg/kg-dry	56	179	75	125			S
Selenium		56.2	mg/kg-dry	4.5	128	75	125			S
Uranium		29.4	mg/kg-dry	1.0	66	75	125			S
Vanadium		65.4	mg/kg-dry	9.2	121	75	125			
Lab ID: C19050916-003AMSD	9	Sample Matrix Spike Duplicate				Run: ICPMS207-B_190530A			05/31/19 06:11	
Aluminum		17300	mg/kg-dry	18		75	125	51	20	AR
Iron		12900	mg/kg-dry	27		75	125	19	20	A
Magnesium		8540	mg/kg-dry	22	188	75	125	16	20	S
Manganese		484	mg/kg-dry	2.2	104	75	125	38	20	R
Molybdenum		50.1	mg/kg-dry	1.0	98	75	125	11	20	
Potassium		7040	mg/kg-dry	65	203	75	125	19	20	S
Selenium		38.2	mg/kg-dry	5.2	76	75	125	38	20	R

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 06/13/19

Client: Homestake Mining Co

Work Order: C19050916

Report Date: 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**										Batch: 133477
Lab ID: **C19050916-003AMSD**	9	Sample Matrix Spike Duplicate				Run: ICPMS207-B_190530A			05/31/19 06:11	
Uranium		45.2	mg/kg-dry	1.0	88	75	125	42	20	R
Vanadium		75.2	mg/kg-dry	11	124	75	125	14	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Billings, MT Branch **Revised Date:** 06/13/19

Client: Homestake Mining Co **Work Order:** C19050916 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS207-B_190531A	
Lab ID: ICSA	4	Interference Check Sample A							05/31/19 12:09	
Manganese		0.000290	mg/L	0.0010						
Molybdenum		0.816	mg/L	0.0010	102	80	120			
Selenium		0.0000406	mg/L	0.0010						
Uranium		0.0000250	mg/L	0.00030						
Lab ID: ICSAB	4	Interference Check Sample AB							05/31/19 12:13	
Manganese		0.0213	mg/L	0.0010	106	80	120			
Molybdenum		0.822	mg/L	0.0010	103	80	120			
Selenium		0.00998	mg/L	0.0010	100	80	120			
Uranium		4.94E-06	mg/L	0.00030						
Lab ID: QCS	4	Initial Calibration Verification Standard							05/31/19 11:44	
Manganese		0.255	mg/L	0.0010	102	90	110			
Molybdenum		0.0483	mg/L	0.0010	97	90	110			
Selenium		0.0503	mg/L	0.0010	101	90	110			
Uranium		0.0494	mg/L	0.00030	99	90	110			
Method: SW6020									Batch: 133477	
Lab ID: MB-133477	4	Method Blank				Run: ICPMS207-B_190531A			06/01/19 00:35	
Manganese		ND	mg/kg	0.2						
Molybdenum		ND	mg/kg	0.02						
Selenium		ND	mg/kg	0.5						
Uranium		ND	mg/kg	0.006						
Method: SW6020									Batch: 133522	
Lab ID: MB-133522	5	Method Blank				Run: ICPMS207-B_190531A			06/01/19 02:11	
Manganese		ND	mg/kg	0.2						
Molybdenum		ND	mg/kg	0.02						
Selenium		ND	mg/kg	0.5						
Uranium		ND	mg/kg	0.006						
Vanadium		ND	mg/kg	1						
Lab ID: SRM-133522	5	Standard Reference Material				Run: ICPMS207-B_190531A			06/01/19 02:15	
Manganese		909	mg/kg	2.0	93	79	120			
Molybdenum		95.0	mg/kg	1.0	96	79	121			
Selenium		272	mg/kg	4.9	112	80	120			
Uranium		1.39	mg/kg	1.0						
Vanadium		134	mg/kg	10.0	92	86	114			
Lab ID: C19050916-005ADIL	5	Serial Dilution				Run: ICPMS207-B_190531A			06/01/19 02:49	
Manganese		117	mg/kg-dry	6.3				1.6	10	
Molybdenum		ND	mg/kg-dry	1.0					10	
Selenium		ND	mg/kg-dry	15					10	
Uranium		0.481	mg/kg-dry	1.0					10	N
Vanadium		ND	mg/kg-dry	31					10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 06/13/19

Client: Homestake Mining Co

Work Order: C19050916

Report Date: 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**										Batch: 133522
Lab ID: **C19050916-005APDS1**	5	Post Digestion/Distillation Spike				Run: ICPMS207-B_190531A				06/01/19 02:53
Manganese		122	mg/kg-dry	1.3		75	125			A
Molybdenum		15.0	mg/kg-dry	1.0	96	75	125			
Selenium		15.0	mg/kg-dry	3.1	99	75	125			
Uranium		15.7	mg/kg-dry	1.0	100	75	125			
Vanadium		23.4	mg/kg-dry	6.4	90	75	125			
Lab ID: **C19050916-005AMS3**	5	Sample Matrix Spike				Run: ICPMS207-B_190531A				06/01/19 02:57
Manganese		402	mg/kg-dry	2.4	102	75	125			
Molybdenum		56.5	mg/kg-dry	1.0	100	75	125			
Selenium		56.5	mg/kg-dry	5.7	101	75	125			
Uranium		59.8	mg/kg-dry	1.0	106	75	125			
Vanadium		67.4	mg/kg-dry	12	103	75	125			
Lab ID: **C19050916-005AMSD**	5	Sample Matrix Spike Duplicate				Run: ICPMS207-B_190531A				06/01/19 03:01
Manganese		394	mg/kg-dry	2.3	103	75	125	2.0	20	
Molybdenum		53.6	mg/kg-dry	1.0	98	75	125	5.3	20	
Selenium		52.5	mg/kg-dry	5.5	97	75	125	7.3	20	
Uranium		56.4	mg/kg-dry	1.0	103	75	125	5.8	20	
Vanadium		65.1	mg/kg-dry	11	102	75	125	3.5	20	
Method: **SW6020**										Analytical Run: ICPMS207-B_190603A
Lab ID: **ICSA**		Interference Check Sample A								06/03/19 16:29
Vanadium		-0.000906	mg/L	0.0013						
Lab ID: **ICSAB**		Interference Check Sample AB								06/03/19 16:33
Vanadium		0.0215	mg/L	0.0013	107	80	120			
Lab ID: **QCS**		Initial Calibration Verification Standard								06/03/19 15:41
Vanadium		0.0498	mg/L	0.0013	100	90	110			
Method: **SW6020**										Batch: 133522
Lab ID: **MB-133522**		Method Blank				Run: ICPMS207-B_190603A				06/04/19 07:18
Vanadium		ND	mg/kg	1						
Method: **SW6020**										Analytical Run: ICPMS207-B_190606A
Lab ID: **ICSA**		Interference Check Sample A								06/06/19 12:40
Vanadium		-0.000331	mg/L	0.0013						
Lab ID: **ICSAB**		Interference Check Sample AB								06/06/19 12:44
Vanadium		0.0207	mg/L	0.0013	103	80	120			
Lab ID: **QCS**		Initial Calibration Verification Standard								06/06/19 12:15
Vanadium		0.0514	mg/L	0.0013	103	90	110			
Method: **SW6020**										Batch: 133522
Lab ID: **MB-133522**		Method Blank				Run: ICPMS207-B_190606A				06/07/19 00:21
Vanadium		ND	mg/kg	1						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch **Revised Date:** 06/18/19

Client: Homestake Mining Co **Work Order:** C19050916 **Report Date:** 06/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A2580 BM**									Analytical Run: SUB-B321269	
Lab ID: **CCV1**	Continuing Calibration Verification Standard								05/30/19 10:43	
Oxidation-Reduction Potential		240	mV		103	95	105			
Method: **A2580 BM**									Batch: B_R321269	
Lab ID: **LCS1**	Laboratory Control Sample					Run: SUB-B321269			05/30/19 10:43	
Oxidation-Reduction Potential		235	mV		100	95	105			
Lab ID: **B19052285-001ADUP**	Sample Duplicate					Run: SUB-B321269			05/30/19 10:43	
Oxidation-Reduction Potential		215	mV-dry					3.0	10	
Lab ID: **C19050918-001A**	Sample Duplicate					Run: SUB-B321269			05/30/19 10:43	
Oxidation-Reduction Potential		274	mV-dry					0.7	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19050916 **Report Date:** 06/04/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA10-3**									Batch: 133499
Lab ID: **C19050916-001A DUP**	Sample Duplicate				Run: MISC-SOIL_190529B				05/29/19 14:47
pH, sat. paste	8.40	s.u.	0.10				1.2	10	
Lab ID: **LCS-1905291447**	Laboratory Control Sample				Run: MISC-SOIL_190529B				05/29/19 14:47
pH, sat. paste	7.40	s.u.	0.10	99	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19050916 **Report Date:** 06/04/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E3.2.6**									Batch: R321531
Lab ID: **C19050916-001A DUP**	Sample Duplicate				Run: MISC-SOIL_190604A			06/03/19 15:50	
Sulfur, Total	0.0236	wt%	0.010				8.2	30	
Lab ID: **LCS-SOLO12091906031**	Laboratory Control Sample				Run: MISC-SOIL_190604A			06/03/19 17:33	
Sulfur, Total	0.193	wt%	0.010	102	50	150			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19050916 **Report Date:** 06/04/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **Leco**									Batch: R321531
Lab ID: **C19050916-001A DUP**	Sample Duplicate				Run: MISC-SOIL_190604A				06/03/19 15:50
Carbon, Total	0.257	wt%	0.010				1.2	50	
Lab ID: **LCS-SOLO12091906031**	Laboratory Control Sample				Run: MISC-SOIL_190604A				06/03/19 17:33
Carbon, Total	3.37	wt%	0.010	95	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Work Order Receipt Checklist

Homestake Mining Co

C19050916

Login completed by:	Dorian Quis	Date Received:	5/23/2019
Reviewed by:	Kasey Vidick	Received by:	CCP
Reviewed Date:	5/24/2019	Carrier name:	NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	2.0°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information *(Billing information)*

Company/Name	Homestake Mining Company
Contact	Adam Arguello
Phone	505 287 4456 x 31
Mailing Address	560 Anaconda Road, Rte 605
City, State, Zip	Milan, NM 87021
Email	aarguello@barrick.com
Receive Invoice	☐Hard Copy ☑Email
Receive Report	☐Hard Copy ☑Email
Purchase Order	
Quote	C5566
Bottle Order	58233

Report Information *(if different than Account Information)*

Company/Name	Adam Arguello at HHC and Arcadis
Contact	Shannon Ulrich
Phone	303 471 3465
Mailing Address	630 Plaza Drive Ste 200
City, State, Zip	Highlands Ranch, CO 80129
Email	shannon.ulrich@arcadis.com
Receive Report	☐Hard Copy ☑Email PDF + excel
Special Report/Formats:	EQuIS
	☐ LEVEL IV ☐ NELAC ☑ EDD/EDT *(contact laboratory)* ☐ Other

Comments

Holding samples and subbing select samples to: Huffman Hazen Lab (HHL), DCM Science Lab, IT2 Isotope Lab

MS/MSD on: BK3-35-35.5-052219

Project Information

Project Name, PWSID, Permit, etc.	Grants Reclamation Project
Sampler Name	Shannon Ulrich
Sampler Phone	3034713465
Sample Origin State	NM
EPA/State Compliance	☐ Yes ☑ No

URANIUM MINING CLIENTS MUST indicate sample type.
☒ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes

A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Paste pH	ORP on solids	A2580 BM TOC + total sulfur	total metals	For DCM: XRD, petrographic microscopy	For HHL: QEMSCAN	For IT2: 34S	See Attached	RUSH TAT	ELI Lab ID (Laboratory Use Only)
1	BK3-14.5-15-052219	5.22.19	1035	4	S	X	X	X	X	HOLD	HOLD	HOLD			C19050916
2	BK3-23-23.5-052219	5.22.19	1055	4	S	X	X	X	X	HOLD	HOLD	HOLD			
3	BK3-26-27-052219	5.22.19	1115	4	S	X	X	X	X	HOLD	HOLD	HOLD			
4	BK3-31.5-32.5-052219	5.22.19	1130	4	S	X	X	X	X	HOLD	HOLD	HOLD			
5	BK3-35-35.5-052219	5.22.19	1200	4	S	X	X	X	X	HOLD	HOLD	HOLD			
6	BK3-46.5-47.5-052219	5.22.19	1230	4	S	X	X	X	X	HOLD	HOLD	HOLD			
7	BK3-47.5-48.5-052219	5.22.19	1300	4	S	X	X	X	X	HOLD	HOLD	HOLD			
8	BK3-50.5-52-052219	5.22.19	1320	4	S	X	X	X	X	HOLD	HOLD	HOLD			
9	BK3-55-56-052219	5.22.19	1400	4	S	X	X	X	X	HOLD	HOLD	HOLD			
10	BK3-42.5-43.5-052219	5.22.19	1505	4	S	X	X	X	X	HOLD	HOLD	HOLD			

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Shannon Ulrich	5/22/19 1600				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Josie Pepperseck	6/23/19 1040	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number *(cash/check only)*

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

ANALYTICAL SUMMARY REPORT

June 27, 2019

Homestake Mining Co
Hwy 605
Grants, NM 87020

Work Order: C19060385 Quote ID: C5573

Project Name: Grants

Energy Laboratories, Inc. Casper WY received the following 2 samples for Homestake Mining Co on 6/11/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C19060385-001	BK1f	06/10/19 09:22	06/11/19	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Carbon, Dissolved Organic Carbon, Total Organic Client Provided Field Parameters Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrite Nitrogen, Nitrate + Nitrite Nitrogen, Nitrate as N Digestion, Total Metals Digestion, Total P Phosphate, Total Phosphorus, Total Uranium, Isotopic, Total
C19060385-002	BK1c	06/10/19 11:48	06/11/19	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager .

Report Approved By:

CLIENT: Homestake Mining Co
Project: Grants
Work Order: C19060385

Revised Date: 06/27/19
Report Date: 06/26/19

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

REVISED/SUPPLEMENTAL REPORT
Revised 6/27/2019
Per request from Adam Arguello, the Sample ID's have been corrected to BK1f and BK1c.
The report has been revised and replaces any previously issued report in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060385-001
Client Sample ID: BK1f

Revised Date: 06/27/19
Report Date: 06/26/19
Collection Date: 06/10/19 09:22
Date Received: 06/11/19
Matrix: Aqueous

	Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS								
175	Alkalinity, Total as CaCO3	253	mg/L		5		A2320 B	06/12/19 18:12 / dmb
206	Carbonate as CO3	<5	mg/L		5		A2320 B	06/12/19 18:12 / dmb
505	Bicarbonate as HCO3	309	mg/L		5		A2320 B	06/12/19 18:12 / dmb
007	Chloride	70	mg/L		1		E300.0	06/17/19 18:42 / ljl
031	Fluoride	0.3	mg/L		0.1		E300.0	06/17/19 18:42 / ljl
108	Sulfate	1380	mg/L	D	4		E300.0	06/13/19 17:18 / ljl
	Calcium	330	mg/L		1		SW6010B	06/13/19 16:59 / eli-b
	Magnesium	82	mg/L		1		SW6010B	06/13/19 16:59 / eli-b
003	Potassium	5	mg/L		1		SW6010B	06/13/19 16:59 / eli-b
	Silica	21.5	mg/L	D	0.7		SW6010B	06/13/19 16:59 / eli-b
004	Sodium	276	mg/L		1		SW6010B	06/13/19 16:59 / eli-b
NON-METALS								
072	Organic Carbon, Dissolved (DOC)	1.9	mg/L		0.5		A5310 C	06/18/19 04:51 / kjp
172	Organic Carbon, Total (TOC)	1.8	mg/L		0.5		A5310 C	06/17/19 13:33 / kjp
NUTRIENTS								
139	Nitrogen, Nitrate as N	11.1	mg/L	D	0.1		E353.2	06/14/19 11:42 / tjp
150	Nitrogen, Nitrite as N	0.3	mg/L	D	0.1		A4500-NO2 B	06/11/19 16:15 / kjp
310	Nitrogen, Nitrate+Nitrite as N	11.4	mg/L	D	0.05		E353.2	06/12/19 15:02 / dmb
	Nitrogen, Ammonia as N	<0.05	mg/L		0.05		E350.1	06/14/19 13:32 / dmb
	Nitrogen, Ammonium	<0.06	mg/L		0.06		E350.1	06/14/19 13:32 / dmb
152	Phosphate, Total	0.05	mg/L		0.03		Calculation	06/21/19 14:47 / sec
146	Phosphorus, Total as P	0.016	mg/L		0.005		E365.1	06/18/19 09:40 / dmb
METALS, DISSOLVED								
022	Aluminum	<0.03	mg/L		0.03		SW6020	06/15/19 00:08 / eli-b
	Iron	0.03	mg/L		0.02		SW6020	06/19/19 00:32 / eli-b
	Manganese	0.024	mg/L		0.001		SW6020	06/15/19 00:08 / eli-b
	Molybdenum	0.001	mg/L		0.001		SW6020	06/15/19 00:08 / eli-b
040	Selenium	0.251	mg/L	D	0.004		SW6020	06/21/19 19:03 / eli-b
015	Uranium	0.0402	mg/L		0.0003		SW6020	06/19/19 00:32 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/15/19 00:08 / eli-b
METALS, TOTAL								
	Aluminum	0.04	mg/L		0.03		SW6020	06/21/19 19:12 / eli-b
	Calcium	339	mg/L		1		SW6010B	06/17/19 23:43 / eli-b
	Iron	<0.03	mg/L	D	0.03		SW6020	06/18/19 05:53 / eli-b
	Magnesium	84	mg/L		1		SW6010B	06/17/19 23:43 / eli-b
	Manganese	0.022	mg/L		0.001		SW6020	06/18/19 05:53 / eli-b
	Molybdenum	0.030	mg/L		0.001		SW6020	06/21/19 19:12 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060385-001
Client Sample ID: BK1f

Revised Date: 06/27/19
Report Date: 06/26/19
Collection Date: 06/10/19 09:22
Date Received: 06/11/19
Matrix: Aqueous

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL							
103 Potassium	5	mg/L		1		SW6010B	06/17/19 23:43 / eli-b
140 Selenium	0.207	mg/L	D	0.005		SW6020	06/21/19 19:12 / eli-b
Silica	23.1	mg/L	D	0.4		SW6010B	06/17/19 23:43 / eli-b
104 Sodium	308	mg/L	D	2		SW6010B	06/17/19 23:43 / eli-b
115 Uranium	0.0366	mg/L	D	0.0004		SW6020	06/18/19 05:53 / eli-b
Vanadium	<0.01	mg/L		0.01		SW6020	06/18/19 05:53 / eli-b
RADIONUCLIDES, TOTAL							
Uranium 234	16.5	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 234 precision (±)	3.2	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 234 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235	0.5	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235 precision (±)	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238	13.0	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238 precision (±)	2.5	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
109 Field pH	7.88	s.u.				FIELD	06/10/19 09:22 / ***

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060385-002
Client Sample ID: BK1c

Revised Date: 06/27/19
Report Date: 06/26/19
Collection Date: 06/10/19 11:48
Date Received: 06/11/19
Matrix: Aqueous

	Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS								
175	Alkalinity, Total as CaCO3	246	mg/L		5		A2320 B	06/12/19 18:20 / dmb
206	Carbonate as CO3	<5	mg/L		5		A2320 B	06/12/19 18:20 / dmb
505	Bicarbonate as HCO3	300	mg/L		5		A2320 B	06/12/19 18:20 / dmb
007	Chloride	69	mg/L		1		E300.0	06/17/19 19:02 / ljl
031	Fluoride	0.3	mg/L		0.1		E300.0	06/17/19 19:02 / ljl
108	Sulfate	1410	mg/L	D	4		E300.0	06/13/19 17:37 / ljl
	Calcium	345	mg/L		1		SW6010B	06/13/19 17:03 / eli-b
	Magnesium	85	mg/L		1		SW6010B	06/13/19 17:03 / eli-b
003	Potassium	5	mg/L		1		SW6010B	06/13/19 17:03 / eli-b
	Silica	20.5	mg/L	D	0.7		SW6010B	06/13/19 17:03 / eli-b
004	Sodium	272	mg/L		1		SW6010B	06/13/19 17:03 / eli-b
NON-METALS								
072	Organic Carbon, Dissolved (DOC)	1.9	mg/L		0.5		A5310 C	06/18/19 05:42 / kjp
172	Organic Carbon, Total (TOC)	1.9	mg/L		0.5		A5310 C	06/17/19 14:25 / kjp
NUTRIENTS								
139	Nitrogen, Nitrate as N	11.0	mg/L	D	0.05		E353.2	06/14/19 11:42 / tjp
150	Nitrogen, Nitrite as N	0.13	mg/L	D	0.05		A4500-NO2 B	06/11/19 16:15 / kjp
310	Nitrogen, Nitrate+Nitrite as N	11.2	mg/L	D	0.05		E353.2	06/12/19 15:03 / dmb
	Nitrogen, Ammonia as N	0.06	mg/L		0.05		E350.1	06/14/19 13:33 / dmb
	Nitrogen, Ammonium	0.08	mg/L		0.06		E350.1	06/14/19 13:33 / dmb
152	Phosphate, Total	0.04	mg/L		0.03		Calculation	06/21/19 14:47 / sec
146	Phosphorus, Total as P	0.012	mg/L		0.005		E365.1	06/18/19 09:42 / dmb
METALS, DISSOLVED								
022	Aluminum	<0.03	mg/L		0.03		SW6020	06/15/19 00:12 / eli-b
	Iron	<0.02	mg/L		0.02		SW6020	06/19/19 00:36 / eli-b
	Manganese	0.56	mg/L	D	0.01		SW6010B	06/13/19 17:03 / eli-b
	Molybdenum	0.004	mg/L		0.001		SW6020	06/15/19 00:12 / eli-b
040	Selenium	0.245	mg/L	D	0.004		SW6020	06/21/19 19:07 / eli-b
015	Uranium	0.0353	mg/L		0.0003		SW6020	06/19/19 00:36 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/15/19 00:12 / eli-b
METALS, TOTAL								
	Aluminum	0.09	mg/L		0.03		SW6020	06/21/19 19:17 / eli-b
	Calcium	349	mg/L		1		SW6010B	06/17/19 23:47 / eli-b
	Iron	0.04	mg/L	D	0.03		SW6020	06/18/19 05:57 / eli-b
	Magnesium	87	mg/L		1		SW6010B	06/17/19 23:47 / eli-b
	Manganese	0.55	mg/L	D	0.01		SW6010B	06/17/19 23:47 / eli-b
	Molybdenum	0.034	mg/L		0.001		SW6020	06/21/19 19:17 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
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MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060385-002
Client Sample ID: BK1c

Revised Date: 06/27/19
Report Date: 06/26/19
Collection Date: 06/10/19 11:48
Date Received: 06/11/19
Matrix: Aqueous

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL							
103 Potassium	5	mg/L		1		SW6010B	06/17/19 23:47 / eli-b
140 Selenium	0.225	mg/L	D	0.005		SW6020	06/21/19 19:17 / eli-b
Silica	22.3	mg/L	D	0.4		SW6010B	06/17/19 23:47 / eli-b
104 Sodium	300	mg/L	D	2		SW6010B	06/17/19 23:47 / eli-b
115 Uranium	0.0319	mg/L	D	0.0004		SW6020	06/18/19 05:57 / eli-b
Vanadium	<0.01	mg/L		0.01		SW6020	06/18/19 05:57 / eli-b
RADIONUCLIDES, TOTAL							
Uranium 234	14.9	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 234 precision (±)	2.9	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 234 MDC	0.4	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235	0.7	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235 precision (±)	0.3	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 235 MDC	0.3	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238	11.4	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238 precision (±)	2.2	pCi/L				E908.0	06/20/19 12:54 / dmf
Uranium 238 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
109 Field pH	7.83	s.u.				FIELD	06/10/19 11:48 / ***

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/19/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B									Analytical Run: MANTECH_190613A	
Lab ID: ICV		Initial Calibration Verification Standard							06/12/19 10:21	
pH		6.88	s.u.	0.010	100	98	102			
Method: A2320 B									Batch: R247705	
Lab ID: MBLK		Method Blank				Run: MANTECH_190613A			06/12/19 17:01	
Alkalinity, Total as CaCO3		ND	mg/L	2						
Lab ID: LCS		Laboratory Control Sample				Run: MANTECH_190613A			06/12/19 17:09	
Alkalinity, Total as CaCO3		260	mg/L	5.0	104	90	110			
Lab ID: C19060342-001CDUP		Sample Duplicate				Run: MANTECH_190613A			06/12/19 17:26	
Alkalinity, Total as CaCO3		108	mg/L	5.0				1.7	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/19/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NO2 B										Batch: R247629
Lab ID: MBLK		Method Blank				Run: SPECC-101_190611A				06/11/19 16:15
Nitrogen, Nitrite as N		ND	mg/L	0.002						
Lab ID: LCS		Laboratory Control Sample				Run: SPECC-101_190611A				06/11/19 16:15
Nitrogen, Nitrite as N		0.0540	mg/L	0.011	103	90	110			
Lab ID: C19060324-001AMS		Sample Matrix Spike				Run: SPECC-101_190611A				06/11/19 16:15
Nitrogen, Nitrite as N		0.0673	mg/L	0.011	100	90	110			
Lab ID: C19060324-001AMSD		Sample Matrix Spike Duplicate				Run: SPECC-101_190611A				06/11/19 16:15
Nitrogen, Nitrite as N		0.0689	mg/L	0.011	103	90	110	2.4	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/19/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A5310 C										Analytical Run: TOC3-C_190617A
Lab ID: CCV-10666		Continuing Calibration Verification Standard								06/17/19 13:18
Organic Carbon, Total (TOC)		4.74	mg/L	0.50	95	90	110			
Lab ID: CCV-10666		Continuing Calibration Verification Standard								06/18/19 04:35
Organic Carbon, Dissolved (DOC)		4.87	mg/L	0.50	97	90	110			
Method: A5310 C										Batch: R247869
Lab ID: LCS-10553		Laboratory Control Sample				Run: TOC3-C_190617A				06/17/19 12:28
Organic Carbon, Total (TOC)		4.86	mg/L	0.50	97	90	110			
Lab ID: MBLK		Method Blank				Run: TOC3-C_190617A				06/17/19 13:02
Organic Carbon, Total (TOC)		ND	mg/L	0.2						
Lab ID: C19060385-001FMS		Sample Matrix Spike				Run: TOC3-C_190617A				06/17/19 13:54
Organic Carbon, Total (TOC)		6.71	mg/L	0.50	99	85	115			
Lab ID: C19060385-001FMSD		Sample Matrix Spike Duplicate				Run: TOC3-C_190617A				06/17/19 14:09
Organic Carbon, Total (TOC)		6.60	mg/L	0.50	97	85	115	1.7	20	
Lab ID: LCS-10553		Laboratory Control Sample				Run: TOC3-C_190617A				06/18/19 04:04
Organic Carbon, Dissolved (DOC)		4.82	mg/L	0.50	96	90	110			
Lab ID: MBLK		Method Blank				Run: TOC3-C_190617A				06/18/19 04:19
Organic Carbon, Dissolved (DOC)		ND	mg/L	0.5						
Lab ID: C19060385-001EMS		Sample Matrix Spike				Run: TOC3-C_190617A				06/18/19 05:10
Organic Carbon, Dissolved (DOC)		6.91	mg/L	0.50	100	85	115			
Lab ID: C19060385-001EMSD		Sample Matrix Spike Duplicate				Run: TOC3-C_190617A				06/18/19 05:26
Organic Carbon, Dissolved (DOC)		6.98	mg/L	0.50	101	85	115	1.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/19/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC3-C_190613A	
Lab ID: ICV		Initial Calibration Verification Standard							06/13/19 13:28	
Sulfate		40.6	mg/L	1.0	101	90	110			
Method: E300.0									Batch: R247834	
Lab ID: ICB		Method Blank				Run: IC3-C_190613A			06/13/19 13:47	
Sulfate		ND	mg/L	0.1						
Lab ID: LFB		Laboratory Fortified Blank				Run: IC3-C_190613A			06/13/19 14:06	
Sulfate		41.8	mg/L	1.0	105	90	110			
Lab ID: C19060359-003AMS		Sample Matrix Spike				Run: IC3-C_190613A			06/13/19 16:39	
Sulfate		987	mg/L	2.1		80	120			A
Lab ID: C19060359-003AMSD		Sample Matrix Spike Duplicate				Run: IC3-C_190613A			06/13/19 16:59	
Sulfate		984	mg/L	2.1		80	120	0.3	20	A
Method: E300.0									Analytical Run: IC3-C_190617A	
Lab ID: ICV	2	Initial Calibration Verification Standard							06/17/19 12:58	
Chloride		9.90	mg/L	1.0	99	90	110			
Fluoride		4.95	mg/L	0.10	99	90	110			
Method: E300.0									Batch: R247891	
Lab ID: ICB	2	Method Blank				Run: IC3-C_190617A			06/17/19 13:17	
Chloride		ND	mg/L	0.05						
Fluoride		ND	mg/L	0.02						
Lab ID: LFB	2	Laboratory Fortified Blank				Run: IC3-C_190617A			06/17/19 13:36	
Chloride		10.4	mg/L	1.0	104	90	110			
Fluoride		5.16	mg/L	0.10	103	90	110			
Lab ID: C19050593-002AMS	2	Sample Matrix Spike				Run: IC3-C_190617A			06/17/19 14:33	
Chloride		2520	mg/L	10	99	80	120			
Fluoride		465	mg/L	5.2	93	80	120			
Lab ID: C19050593-002AMSD	2	Sample Matrix Spike Duplicate				Run: IC3-C_190617A			06/17/19 14:52	
Chloride		2500	mg/L	10	97	80	120	0.9	20	
Fluoride		464	mg/L	5.2	93	80	120	0.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/19/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E350.1									Analytical Run: FIA201-C_190614B	
Lab ID: ICV	2	Initial Calibration Verification Standard							06/14/19 13:24	
Nitrogen, Ammonia as N		1.07	mg/L	0.050	107	90	110			
Nitrogen, Ammonium		1.38	mg/L	0.064		0	0			
Method: E350.1									Batch: R247816	
Lab ID: MBLK		Method Blank				Run: FIA201-C_190614B			06/14/19 13:23	
Nitrogen, Ammonia as N		ND	mg/L	0.03						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA201-C_190614B			06/14/19 13:25	
Nitrogen, Ammonia as N		0.962	mg/L	0.050	97	90	110			
Lab ID: C19060350-001CMS		Sample Matrix Spike				Run: FIA201-C_190614B			06/14/19 13:28	
Nitrogen, Ammonia as N		0.872	mg/L	0.050	84	90	110			S
Lab ID: C19060350-001CMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_190614B			06/14/19 13:29	
Nitrogen, Ammonia as N		0.843	mg/L	0.050	81	90	110	3.3	10	S

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/19/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2										Analytical Run: FIA201-C_190612A
Lab ID: ICV		Initial Calibration Verification Standard								06/12/19 14:45
Nitrogen, Nitrate+Nitrite as N		0.980	mg/L	0.010	98	90	110			
Method: E353.2										Batch: R247673
Lab ID: MBLK		Method Blank				Run: FIA201-C_190612A				06/12/19 14:47
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.010						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA201-C_190612A				06/12/19 14:48
Nitrogen, Nitrate+Nitrite as N		0.982	mg/L	0.010	99	90	110			
Lab ID: C19060386-001DMS		Sample Matrix Spike				Run: FIA201-C_190612A				06/12/19 15:08
Nitrogen, Nitrate+Nitrite as N		2.37	mg/L	0.010	99	90	110			
Lab ID: C19060386-001DMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_190612A				06/12/19 15:09
Nitrogen, Nitrate+Nitrite as N		2.33	mg/L	0.010	95	90	110	1.7	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/19/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E365.1										Analytical Run: FIA201-C_190618A
Lab ID: ICV-54131		Initial Calibration Verification Standard								06/18/19 09:32
Phosphorus, Total as P		0.508	mg/L	0.0050	102	90	110			
Method: E365.1										Batch: 54131
Lab ID: MB-54131		Method Blank				Run: FIA201-C_190618A				06/18/19 09:30
Phosphorus, Total as P		ND	mg/L	0.005						
Lab ID: LCS-54131		Laboratory Control Sample				Run: FIA201-C_190618A				06/18/19 09:31
Phosphorus, Total as P		0.431	mg/L	0.0050	108	90	110			
Lab ID: C19060350-001CMS		Sample Matrix Spike				Run: FIA201-C_190618A				06/18/19 09:36
Phosphorus, Total as P		0.472	mg/L	0.0050	107	90	110			
Lab ID: C19060350-001CMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_190618A				06/18/19 09:37
Phosphorus, Total as P		0.470	mg/L	0.0050	106	90	110	0.4	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/25/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Analytical Run: ICP203-B_190613A
Lab ID: QCS	7	Initial Calibration Verification Standard								06/13/19 10:13
Calcium		40.8	mg/L	1.0	102	90	110			
Magnesium		41.5	mg/L	1.0	104	90	110			
Manganese		3.88	mg/L	0.010	97	90	110			
Potassium		40.6	mg/L	1.0	101	90	110			
Silicon		7.99	mg/L	0.074	100	90	110			
Sodium		40.6	mg/L	1.0	102	90	110			
Silica		17.1	mg/L	0.16		0	0			
Lab ID: ICSA	7	Interference Check Sample A								06/13/19 10:17
Calcium		462	mg/L	1.0	92	80	120			
Magnesium		503	mg/L	1.0	101	80	120			
Manganese		0.0107	mg/L	0.010						
Potassium		0.0693	mg/L	1.0						
Silicon		0.0467	mg/L	0.074						
Sodium		0.0575	mg/L	1.0						
Silica		0.100	mg/L	0.16		0	0			
Lab ID: ICSAB	7	Interference Check Sample AB								06/13/19 10:22
Calcium		454	mg/L	1.0	91	80	120			
Magnesium		493	mg/L	1.0	99	80	120			
Manganese		0.433	mg/L	0.010	87	80	120			
Potassium		19.9	mg/L	1.0	99	80	120			
Silicon		9.49	mg/L	0.074	95	80	120			
Sodium		19.8	mg/L	1.0	99	80	120			
Silica		20.3	mg/L	0.16		0	0			
Method: SW6010B										Batch: R322103
Lab ID: MB-6500DIS190613A	7	Method Blank				Run: ICP203-B_190613A				06/13/19 10:01
Calcium		ND	mg/L	0.07						
Magnesium		ND	mg/L	0.02						
Manganese		ND	mg/L	0.002						
Potassium		ND	mg/L	0.1						
Silicon		ND	mg/L	0.07						
Sodium		ND	mg/L	0.1						
Silica		ND	mg/L	0.2						
Lab ID: LFB-6500DIS190613A	6	Laboratory Fortified Blank				Run: ICP203-B_190613A				06/13/19 10:09
Calcium		49.8	mg/L	1.0	100	80	120			
Magnesium		51.2	mg/L	1.0	102	80	120			
Manganese		4.70	mg/L	0.010	94	80	120			
Potassium		49.9	mg/L	1.0	100	80	120			
Silicon		9.77	mg/L	0.076	98	80	120			
Sodium		49.7	mg/L	1.0	99	80	120			
Lab ID: B19061123-001BDIL	7	Serial Dilution				Run: ICP203-B_190613A				06/13/19 16:31
Calcium		180	mg/L	1.8		0	0	3.4	10	
Magnesium		34.7	mg/L	1.0		0	0	3.8	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/25/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**										Batch: R322103
Lab ID: **B19061123-001BDIL**	7	Serial Dilution				Run: ICP203-B_190613A			06/13/19 16:31	
Manganese		0.399	mg/L	0.054		0	0		10	N
Potassium		4.11	mg/L	3.6		0	0		10	N
Silicon		8.29	mg/L	1.8		0	0			N
Sodium		247	mg/L	4.9		0	0	1.9	10	
Silica		17.7	mg/L	3.9		0	0		10	N
Lab ID: **B19061123-001BMS2**	7	Sample Matrix Spike				Run: ICP203-B_190613A			06/13/19 16:35	
Calcium		411	mg/L	1.0	95	75	125			
Magnesium		274	mg/L	1.0	96	75	125			
Manganese		23.2	mg/L	0.011	91	75	125			
Potassium		245	mg/L	1.0	97	75	125			
Silicon		54.9	mg/L	0.38	94	75	125			
Sodium		484	mg/L	1.0	97	75	125			
Silica		117	mg/L	0.81	94	75	125			
Lab ID: **B19061123-001BMSD**	7	Sample Matrix Spike Duplicate				Run: ICP203-B_190613A			06/13/19 16:39	
Calcium		414	mg/L	1.0	96	75	125	0.7	20	
Magnesium		278	mg/L	1.0	98	75	125	1.3	20	
Manganese		23.4	mg/L	0.011	92	75	125	0.6	20	
Potassium		247	mg/L	1.0	97	75	125	0.7	20	
Silicon		54.9	mg/L	0.38	94	75	125	0.0	20	
Sodium		487	mg/L	1.0	98	75	125	0.6	20	
Silica		117	mg/L	0.81	94	75	125	0.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/25/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B										Analytical Run: ICP203-B_190617A
Lab ID: QCS	7	Initial Calibration Verification Standard								06/17/19 10:36
Calcium		40.7	mg/L	1.0	102	90	110			
Magnesium		40.8	mg/L	1.0	102	90	110			
Manganese		3.90	mg/L	0.010	98	90	110			
Potassium		40.6	mg/L	1.0	102	90	110			
Silicon		8.06	mg/L	0.074	101	90	110			
Sodium		40.7	mg/L	1.0	102	90	110			
Silica		17.2	mg/L	0.16		0	0			
Lab ID: ICSA	7	Interference Check Sample A								06/17/19 10:39
Calcium		456	mg/L	1.0	91	80	120			
Magnesium		501	mg/L	1.0	100	80	120			
Manganese		0.0145	mg/L	0.010						
Potassium		0.0719	mg/L	1.0						
Silicon		0.00512	mg/L	0.074						
Sodium		0.0383	mg/L	1.0						
Silica		0.0110	mg/L	0.16		0	0			
Lab ID: ICSAB	7	Interference Check Sample AB								06/17/19 10:44
Calcium		453	mg/L	1.0	91	80	120			
Magnesium		497	mg/L	1.0	99	80	120			
Manganese		0.443	mg/L	0.010	89	80	120			
Potassium		20.0	mg/L	1.0	100	80	120			
Silicon		9.50	mg/L	0.074	95	80	120			
Sodium		20.0	mg/L	1.0	100	80	120			
Silica		20.3	mg/L	0.16		0	0			
Method: SW6010B										Batch: 134029
Lab ID: MB-134029	7	Method Blank				Run: ICP203-B_190617A				06/17/19 22:46
Calcium		ND	mg/L	0.2						
Magnesium		ND	mg/L	0.02						
Manganese		ND	mg/L	0.004						
Potassium		ND	mg/L	0.2						
Silicon		0.04	mg/L	0.03						
Sodium		ND	mg/L	0.4						
Silica		0.08	mg/L	0.07						
Lab ID: LCS3-134029	7	Laboratory Control Sample				Run: ICP203-B_190617A				06/17/19 22:50
Calcium		25.4	mg/L	1.0	102	80	120			
Magnesium		24.1	mg/L	1.0	96	80	120			
Manganese		2.56	mg/L	0.010	102	80	120			
Potassium		26.2	mg/L	1.0	105	80	120			
Silicon		5.12	mg/L	0.035	102	80	120			
Sodium		27.9	mg/L	1.0	112	80	120			
Silica		11.0	mg/L	0.074	102	80	120			
Lab ID: B19060931-001DDIL	7	Serial Dilution				Run: ICP203-B_190617A				06/17/19 22:58
Calcium		50.8	mg/L	1.6				11	10	R

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/25/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**									Batch: 134029	
Lab ID: **B19060931-001DDIL**	7	Serial Dilution				Run: ICP203-B_190617A			06/17/19 22:58	
Magnesium		20.5	mg/L	1.0				0.9	10	
Manganese		0.117	mg/L	0.028					10	N
Potassium		12.9	mg/L	2.2					10	N
Silicon		6.77	mg/L	0.35				16	10	R
Sodium		290	mg/L	3.1				0.1	10	
Silica		14.5	mg/L	0.74				16	10	R
Lab ID: **B19060931-001DPDS**	7	Post Digestion/Distillation Spike				Run: ICP203-B_190617A			06/17/19 23:02	
Calcium		141	mg/L	1.0	93	75	125			
Magnesium		116	mg/L	1.0	93	75	125			
Manganese		9.42	mg/L	0.0058	90	75	125			
Potassium		114	mg/L	1.0	99	75	125			
Silicon		25.4	mg/L	0.10	95	75	125			
Sodium		392	mg/L	1.0	100	75	125			
Silica		54.3	mg/L	0.21	95	75	125			
Lab ID: **B19060931-001DMS3**	7	Sample Matrix Spike				Run: ICP203-B_190617A			06/17/19 23:06	
Calcium		70.9	mg/L	1.0	102	75	125			
Magnesium		46.1	mg/L	1.0	103	75	125			
Manganese		2.61	mg/L	0.0056	100	75	125			
Potassium		39.6	mg/L	1.0	108	75	125			
Silicon		11.4	mg/L	0.10	113	75	125			
Sodium		317	mg/L	1.0		75	125			A
Silica		24.4	mg/L	0.21	113	75	125			
Lab ID: **B19060931-001DMSD**	7	Sample Matrix Spike Duplicate				Run: ICP203-B_190617A			06/17/19 23:11	
Calcium		70.3	mg/L	1.0	99	75	125	0.9	20	
Magnesium		44.7	mg/L	1.0	97	75	125	3.1	20	
Manganese		2.59	mg/L	0.0056	99	75	125	0.9	20	
Potassium		39.0	mg/L	1.0	106	75	125	1.6	20	
Silicon		11.3	mg/L	0.10	110	75	125	1.1	20	
Sodium		312	mg/L	1.0		75	125	1.4	20	A
Silica		24.2	mg/L	0.21	110	75	125	1.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/25/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Analytical Run: ICPMS206-B_190614A
Lab ID: QCS	4	Initial Calibration Verification Standard								06/14/19 17:20
Aluminum		0.263	mg/L	0.0010	105	90	110			
Manganese		0.268	mg/L	0.0010	107	90	110			
Molybdenum		0.0492	mg/L	0.0010	99	90	110			
Vanadium		0.0464	mg/L	0.0012	93	90	110			
Lab ID: ICSA	4	Interference Check Sample A								06/14/19 18:12
Aluminum		36.0	mg/L	0.0010	90	80	120			
Manganese		0.000292	mg/L	0.0010						
Molybdenum		0.734	mg/L	0.0010	92	80	120			
Vanadium		-0.000476	mg/L	0.0012						
Lab ID: ICSAB	4	Interference Check Sample AB								06/14/19 18:16
Aluminum		35.8	mg/L	0.0010	89	80	120			
Manganese		0.0186	mg/L	0.0010	93	80	120			
Molybdenum		0.714	mg/L	0.0010	89	80	120			
Vanadium		0.0203	mg/L	0.0012	102	80	120			
Method: SW6020										Batch: R322305
Lab ID: B19060753-001CMS	4	Sample Matrix Spike				Run: ICPMS206-B_190614A				06/14/19 21:47
Aluminum		0.0477	mg/L	0.030	95	75	125			
Manganese		0.0808	mg/L	0.0010	84	75	125			
Molybdenum		0.0445	mg/L	0.00010	88	75	125			
Vanadium		0.0479	mg/L	0.010	96	75	125			
Lab ID: B19060753-001CMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS206-B_190614A				06/14/19 21:52
Aluminum		0.0488	mg/L	0.030	98	75	125	2.3	20	
Manganese		0.0842	mg/L	0.0010	90	75	125	4.1	20	
Molybdenum		0.0471	mg/L	0.00010	93	75	125	5.6	20	
Vanadium		0.0484	mg/L	0.010	97	75	125	1.2	20	
Lab ID: LRB	4	Method Blank				Run: ICPMS206-B_190614A				06/14/19 17:39
Aluminum		0.001	mg/L	0.0008						
Manganese		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	0.00005						
Vanadium		ND	mg/L	0.001						
Lab ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS206-B_190614A				06/14/19 17:48
Aluminum		0.0473	mg/L	0.0010	95	85	115			
Manganese		0.0441	mg/L	0.0010	88	85	115			
Molybdenum		0.0429	mg/L	0.0010	86	85	115			
Vanadium		0.0484	mg/L	0.0012	97	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/25/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS206-B_190618A	
Lab ID: QCS	2	Initial Calibration Verification Standard							06/18/19 14:30	
Iron		0.245	mg/L	0.0010	98	90	110			
Uranium		0.0484	mg/L	0.00030	97	90	110			
Lab ID: ICSA	2	Interference Check Sample A							06/18/19 15:07	
Iron		97.6	mg/L	0.0010	98	80	120			
Uranium		4.46E-06	mg/L	0.00030						
Lab ID: ICSAB	2	Interference Check Sample AB							06/18/19 15:12	
Iron		95.7	mg/L	0.0010	96	80	120			
Uranium		-2.67E-06	mg/L	0.00030						
Method: SW6020									Batch: R322464	
Lab ID: B19061123-001BDIL	2	Serial Dilution				Run: ICPMS206-B_190618A			06/18/19 23:45	
Iron		0.0153	mg/L	0.030		0	0		10	N
Uranium		0.0158	mg/L	0.00030		0	0			
Lab ID: B19061123-001BMS	2	Sample Matrix Spike				Run: ICPMS206-B_190618A			06/18/19 23:50	
Iron		3.85	mg/L	0.030	77	75	125			
Uranium		0.0687	mg/L	0.00030	106	75	125			
Lab ID: B19061123-001BMSD	2	Sample Matrix Spike Duplicate				Run: ICPMS206-B_190618A			06/18/19 23:54	
Iron		5.79	mg/L	0.030	116	75	125	40	20	R
Uranium		0.0666	mg/L	0.00030	102	75	125	3.1	20	
Lab ID: LRB	2	Method Blank				Run: ICPMS206-B_190618A			06/18/19 14:53	
Iron		0.002	mg/L	0.001						
Uranium		ND	mg/L	0.00005						
Lab ID: LFB	2	Laboratory Fortified Blank				Run: ICPMS206-B_190618A			06/18/19 15:03	
Iron		5.19	mg/L	0.0010	103	85	115			
Uranium		0.0480	mg/L	0.00030	96	85	115			

Qualifiers:

RL - Analyte reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/25/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS206-B_190621A	
Lab ID: ICSA	3	Interference Check Sample A							06/21/19 14:00	
Aluminum		33.2	mg/L	0.0010	83	80	120			
Molybdenum		0.710	mg/L	0.0010	89	80	120			
Selenium		0.0000948	mg/L	0.0010						
Lab ID: ICSAB	3	Interference Check Sample AB							06/21/19 14:05	
Aluminum		33.2	mg/L	0.0010	83	80	120			
Molybdenum		0.700	mg/L	0.0010	88	80	120			
Selenium		0.00890	mg/L	0.0010	89	80	120			
Lab ID: QCS	3	Initial Calibration Verification Standard							06/21/19 13:28	
Aluminum		0.237	mg/L	0.0010	95	90	110			
Molybdenum		0.0470	mg/L	0.0010	94	90	110			
Selenium		0.0522	mg/L	0.0010	104	90	110			
Method: SW6020									Batch: 134029	
Lab ID: MB-134029	3	Method Blank				Run: ICPMS206-B_190621A			06/21/19 17:00	
Aluminum		0.004	mg/L	0.003						
Molybdenum		ND	mg/L	0.0002						
Selenium		ND	mg/L	0.0006						
Method: SW6020									Batch: R322681	
Lab ID: B19061123-003BDIL		Serial Dilution				Run: ICPMS206-B_190621A			06/21/19 19:36	
Selenium		0.323	mg/L	0.0075		0	0	12	10	R
Lab ID: B19061123-003BMS		Sample Matrix Spike				Run: ICPMS206-B_190621A			06/21/19 19:40	
Selenium		0.506	mg/L	0.0015	56	75	125			S
Lab ID: B19061123-003BMSD		Sample Matrix Spike Duplicate				Run: ICPMS206-B_190621A			06/21/19 20:04	
Selenium		0.518	mg/L	0.0015	61	75	125	2.4	20	S
Lab ID: LRB		Method Blank				Run: ICPMS206-B_190621A			06/21/19 13:46	
Selenium		ND	mg/L	0.0003						
Lab ID: LFB		Laboratory Fortified Blank				Run: ICPMS206-B_190621A			06/21/19 13:56	
Selenium		0.0460	mg/L	0.0010	92	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/25/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS207-B_190617A	
Lab ID: ICSAB	4	Interference Check Sample AB							06/17/19 15:36	
Iron		114	mg/L	0.0012	114	80	120			
Manganese		0.0235	mg/L	0.0010	118	80	120			
Uranium		1.52E-06	mg/L	0.00030						
Vanadium		0.0235	mg/L	0.0013	118	80	120			
Lab ID: QCS	4	Initial Calibration Verification Standard							06/17/19 15:07	
Iron		0.257	mg/L	0.0012	103	90	110			
Manganese		0.263	mg/L	0.0010	105	90	110			
Uranium		0.0500	mg/L	0.00030	100	90	110			
Vanadium		0.0516	mg/L	0.0013	103	90	110			
Lab ID: ICSA	4	Interference Check Sample A							06/18/19 04:00	
Iron		117	mg/L	0.0012	117	80	120			
Manganese		0.000440	mg/L	0.0010						
Uranium		0.0000580	mg/L	0.00030						
Vanadium		4.06E-06	mg/L	0.0013						
Method: SW6020									Batch: 134029	
Lab ID: MB-134029	7	Method Blank				Run: ICPMS207-B_190617A			06/18/19 04:30	
Aluminum		0.007	mg/L	0.003						
Iron		0.01	mg/L	0.005						
Manganese		ND	mg/L	0.0002						
Molybdenum		ND	mg/L	0.0003						
Selenium		ND	mg/L	0.0006						
Uranium		ND	mg/L	0.00008						
Vanadium		ND	mg/L	0.002						
Lab ID: LCS4-134029	7	Laboratory Control Sample				Run: ICPMS207-B_190617A			06/18/19 04:34	
Aluminum		0.448	mg/L	0.030	90	80	120			
Iron		0.419	mg/L	0.030	84	80	120			
Manganese		0.479	mg/L	0.0010	96	80	120			
Molybdenum		0.0998	mg/L	0.0010	100	80	120			
Selenium		0.0914	mg/L	0.0010	91	80	120			
Uranium		0.105	mg/L	0.00030	105	80	120			
Vanadium		0.0952	mg/L	0.010	95	80	120			
Lab ID: B19060931-002DDIL	7	Serial Dilution				Run: ICPMS207-B_190617A			06/18/19 04:51	
Aluminum		0.446	mg/L	0.030				0.5	10	
Iron		3.70	mg/L	0.030				18	10	R
Manganese		0.113	mg/L	0.0011				4.7	10	
Molybdenum		0.135	mg/L	0.0014				1.5	10	
Selenium		0.0266	mg/L	0.0029					10	N
Uranium		0.00182	mg/L	0.00042					10	N
Vanadium		0.0139	mg/L	0.011					10	N
Lab ID: B19060931-002DPDS1	7	Post Digestion/Distillation Spike				Run: ICPMS207-B_190617A			06/18/19 04:55	
Aluminum		0.416	mg/L	0.030		75	125			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/25/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**										Batch: 134029
Lab ID: **B19060931-002DPDS1**	7	Post Digestion/Distillation Spike				Run: ICPMS207-B_190617A				06/18/19 04:55
Iron		8.67	mg/L	0.030	109	75	125			
Manganese		0.165	mg/L	0.0010	112	75	125			
Molybdenum		0.194	mg/L	0.0010	118	75	125			
Selenium		0.0677	mg/L	0.0010	91	75	125			
Uranium		0.0519	mg/L	0.00030	98	75	125			
Vanadium		0.0656	mg/L	0.010	102	75	125			
Lab ID: **B19060931-002DMS4**	7	Sample Matrix Spike				Run: ICPMS207-B_190617A				06/18/19 04:59
Aluminum		0.954	mg/L	0.030	102	75	125			
Iron		5.50	mg/L	0.030		75	125			A
Manganese		0.592	mg/L	0.0010	97	75	125			
Molybdenum		0.232	mg/L	0.0010	99	75	125			
Selenium		0.160	mg/L	0.0010	139	75	125			S
Uranium		0.115	mg/L	0.00030	113	75	125			
Vanadium		0.112	mg/L	0.010	99	75	125			
Lab ID: **B19060931-002DMSD**	7	Sample Matrix Spike Duplicate				Run: ICPMS207-B_190617A				06/18/19 05:03
Aluminum		0.932	mg/L	0.030	98	75	125	2.4	20	
Iron		3.91	mg/L	0.030		75	125	34	20	AR
Manganese		0.629	mg/L	0.0010	104	75	125	6.0	20	
Molybdenum		0.246	mg/L	0.0010	113	75	125	6.1	20	
Selenium		0.114	mg/L	0.0010	93	75	125	33	20	R
Uranium		0.115	mg/L	0.00030	113	75	125	0.3	20	
Vanadium		0.119	mg/L	0.010	106	75	125	6.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060385 **Report Date:** 06/22/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0										Batch: RA-U-ISO-0881
Lab ID: MB-RA-U-ISO-0881	9	Method Blank				Run: EGG-ORTEC_190618A				06/20/19 12:54
Uranium 234		0.2	pCi/L							
Uranium 234 precision (±)		0.2	pCi/L							
Uranium 234 MDC		0.2	pCi/L							
Uranium 235		-0.01	pCi/L							U
Uranium 235 precision (±)		0.07	pCi/L							
Uranium 235 MDC		0.2	pCi/L							
Uranium 238		0.10	pCi/L							U
Uranium 238 precision (±)		0.09	pCi/L							
Uranium 238 MDC		0.1	pCi/L							
Lab ID: LCS-RA-U-ISO-0881	2	Laboratory Control Sample				Run: EGG-ORTEC_190618A				06/20/19 12:54
Uranium 234		12	pCi/L		101	80	120			
Uranium 238		12	pCi/L		97	80	120			
Lab ID: C19060385-001GMS	2	Sample Matrix Spike				Run: EGG-ORTEC_190618A				06/20/19 12:54
Uranium 234		42	pCi/L		104	70	130			
Uranium 238		37	pCi/L		96	70	130			
Lab ID: C19060385-001GMSD	2	Sample Matrix Spike Duplicate				Run: EGG-ORTEC_190618A				06/20/19 12:54
Uranium 234		35	pCi/L		75	70	130	18	20	
Uranium 238		33	pCi/L		79	70	130	12	20	

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration

Work Order Receipt Checklist

Homestake Mining Co

C19060385

Login completed by:	Casie C. Peppersack	Date Received:	6/11/2019
Reviewed by:	Kasey Vidick	Received by:	met
Reviewed Date:	6/11/2019	Carrier name:	NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	13.0°C Melted Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Page _____ of _____

Account Information (Billing information)

Company/Name	Honeywell Mining Company of California
Contact	Adam Arguello
Phone	505 285 1041
Mailing Address	PO Box 98
City, State, Zip	Grants, NM 87020
Email	aarguello@bmrc.com
Receive Invoice	☒ Hard Copy ☒ Email
Receive Report	☒ Hard Copy ☒ Email
Purchase Order	
Quote	5573
Bottle Order	58275

Report Information (if different than Account Information)

Company/Name	Shannon Ulrich
Contact	Arcadis
Phone	865 771 2347
Mailing Address	11001 W. 120th Ave Suite 200
City, State, Zip	Broomfield, CO 80021
Email	shannon.ulrich@arcadis.com
Receive Report	☐ Hard Copy ☒ Email
Special Report/Formats:	☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

Comments

Project Information

Project Name, PWSID, Permit, etc.	Grants
Sampler Name	Adam Arguello
Sampler Phone	5052851041
Sample Origin State	NM
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type.
☒ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

Analysis Requested

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Field pH	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	BKIf	6/10/19	922	8	W	7.88	X		C19060385
2	BKIc	6/10/19	1148	8	W	7.83	X		
3									
4									
5									
6									
7									
8									
9									
10									

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Adam Arguello	6/10/19 1700				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Mario Martinez	6/11/19 1500	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

BOTTLE ORDER 58275

C19060385

SHIPPED TO: Homestake Mining Co

Contact: Adam Arguello
Hwy 605

Grants NM 87020

Phone:

Project: For HMC to sample new Arcadis Wells

Order Created by: Tracey Archer
Shipped From: Casper, WY

Ship Date: 5/8/2019
VIA: Ground
Quote Used: 5573

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
Background/Upgradient Water (5 Sets)							
1 Liter Plastic	1	A2320 B	Alkalinity				1
		E300.0	Anions by Ion Chromatography				
		A4500-NO2 B	Nitrogen, Nitrite	48.00 hrs			
250 mL Plastic	1	E6010.20	Metals by ICP/ICPMS, Dissolved		■ HNO3	Filter before preservation	1
250 mL Plastic	1	E6010.20	Metals by ICP/ICPMS, Total		■ HNO3		1
500 mL Plastic	1	E353.2	Nitrogen, Nitrate + Nitrite		☐ H2SO4		1
		E353.2	Nitrogen, Nitrate as N				
		E350.1	Nitrogen, Ammonia				
		E365.1	Phosphorus, Total				
		Calculation	Phosphate, Total				

250 mL Amber Glass	1	A5310 C	Carbon, Dissolved Organic		☐ H3PO4	Filter before preservation	1
250 mL Amber Glass	1	A5310 C	Carbon, Total Organic		☐ H3PO4		1
2 Liter Plastic	2	E908.0	Uranium, Isotopic, Total		■ HNO3		1

Comments

Please mark the top of the coolers with the following note:
For HMC to sample new Arcadis Wells!!

Bag in sets, send COC's, Custody Seals and NDA Retrun Labels.

■ HNO3 - Nitric Acid ■ H2SO4 - Sulfuric Acid ■ NaOH - Sodium Hydroxide

■ ZnAc - Zinc Acetate ■ HCl - Hydrochloric Acid ☐ H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

C19060385

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

ANALYTICAL SUMMARY REPORT

July 02, 2019

Homestake Mining Co
Hwy 605
Grants, NM 87020

Work Order: C19060386 Quote ID: C5573

Project Name: Grants

Energy Laboratories, Inc. Casper WY received the following 3 samples for Homestake Mining Co on 6/11/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C19060386-001	BK2F	06/10/19 13:35	06/11/19	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Cancelled Sample Carbon, Dissolved Organic Carbon, Total Organic Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrite Nitrogen, Nitrate + Nitrite Nitrogen, Nitrate as N Digestion, Total Metals Digestion, Total P Phosphate, Total Phosphorus, Total Uranium, Isotopic, Total
C19060386-002	BK2C	06/10/19 15:20	06/11/19	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Carbon, Dissolved Organic Carbon, Total Organic Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrite Nitrogen, Nitrate + Nitrite Nitrogen, Nitrate as N Digestion, Total Metals Digestion, Total P Phosphate, Total Phosphorus, Total Uranium, Isotopic, Total
C19060386-003	GW-DUP	06/10/19 15:30	06/11/19	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager .

Report Approved By:

CLIENT: Homestake Mining Co
Project: Grants
Work Order: C19060386

Report Date: 07/02/19

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060386-001
Client Sample ID: BK2F

Report Date: 07/02/19
Collection Date: 06/10/19 13:35
Date Received: 06/11/19
Matrix: Aqueous

	Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS								
175	Alkalinity, Total as CaCO3	191	mg/L		5		A2320 B	06/12/19 18:28 / dmb
206	Carbonate as CO3	<5	mg/L		5		A2320 B	06/12/19 18:28 / dmb
505	Bicarbonate as HCO3	233	mg/L		5		A2320 B	06/12/19 18:28 / dmb
007	Chloride	47	mg/L		1		E300.0	06/13/19 17:56 / ljl
031	Fluoride	0.5	mg/L	D	0.2		E300.0	06/13/19 17:56 / ljl
108	Sulfate	878	mg/L	D	2		E300.0	06/13/19 17:56 / ljl
	Calcium	174	mg/L		1		SW6010B	06/13/19 16:27 / eli-b
	Magnesium	33	mg/L		1		SW6010B	06/13/19 16:27 / eli-b
003	Potassium	4	mg/L		1		SW6010B	06/13/19 16:27 / eli-b
	Silica	16.6	mg/L	D	0.7		SW6010B	06/13/19 16:27 / eli-b
004	Sodium	242	mg/L		1		SW6010B	06/13/19 16:27 / eli-b
NON-METALS								
072	Organic Carbon, Dissolved (DOC)	1.3	mg/L		0.5		A5310 C	06/18/19 06:02 / kjp
NUTRIENTS								
139	Nitrogen, Nitrate as N	1.36	mg/L		0.01		E353.2	06/14/19 11:42 / tjp
150	Nitrogen, Nitrite as N	0.02	mg/L		0.01		A4500-NO2 B	06/11/19 16:15 / kjp
310	Nitrogen, Nitrate+Nitrite as N	1.38	mg/L		0.01		E353.2	06/12/19 15:07 / dmb
	Nitrogen, Ammonia as N	0.06	mg/L		0.05		E350.1	06/14/19 13:35 / dmb
	Nitrogen, Ammonium	0.08	mg/L		0.06		E350.1	06/14/19 13:35 / dmb
152	Phosphate, Total	0.04	mg/L		0.03		Calculation	06/21/19 14:47 / sec
146	Phosphorus, Total as P	0.014	mg/L		0.005		E365.1	06/18/19 09:43 / dmb
METALS, DISSOLVED								
022	Aluminum	<0.03	mg/L		0.03		SW6020	06/18/19 23:40 / eli-b
	Iron	<0.02	mg/L		0.02		SW6020	06/14/19 23:54 / eli-b
	Manganese	0.38	mg/L	D	0.01		SW6010B	06/13/19 16:27 / eli-b
	Molybdenum	0.006	mg/L		0.001		SW6020	06/14/19 23:54 / eli-b
040	Selenium	0.039	mg/L		0.001		SW6020	06/18/19 23:40 / eli-b
015	Uranium	0.0155	mg/L		0.0003		SW6020	06/18/19 23:40 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/14/19 23:54 / eli-b
METALS, TOTAL								
	Aluminum	0.26	mg/L	D	0.06		SW6010B	06/17/19 23:31 / eli-b
	Calcium	182	mg/L		1		SW6010B	06/17/19 23:31 / eli-b
	Iron	0.2	mg/L	D	0.1		SW6010B	06/17/19 23:31 / eli-b
	Magnesium	34	mg/L		1		SW6010B	06/17/19 23:31 / eli-b
	Manganese	0.41	mg/L	D	0.01		SW6010B	06/17/19 23:31 / eli-b
	Molybdenum	0.006	mg/L		0.001		SW6020	06/25/19 21:41 / eli-b
103	Potassium	4	mg/L		1		SW6010B	06/17/19 23:31 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060386-001
Client Sample ID: BK2F

Report Date: 07/02/19
Collection Date: 06/10/19 13:35
Date Received: 06/11/19
Matrix: Aqueous

Analyses		Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL								
140	Selenium	0.038	mg/L		0.001		SW6020	06/25/19 21:41 / eli-b
	Silica	19.0	mg/L	D	0.4		SW6010B	06/17/19 23:31 / eli-b
104	Sodium	265	mg/L	D	2		SW6010B	06/17/19 23:31 / eli-b
115	Uranium	0.0159	mg/L		0.0003		SW6020	06/25/19 21:41 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/18/19 05:40 / eli-b
RADIONUCLIDES, TOTAL								
	Uranium 234	8.7	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 234 precision (±)	1.7	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 234 MDC	0.3	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235	0.3	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235 precision (±)	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238	5.9	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238 precision (±)	1.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060386-002
Client Sample ID: BK2C

Report Date: 07/02/19
Collection Date: 06/10/19 15:20
Date Received: 06/11/19
Matrix: Aqueous

	Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS								
175	Alkalinity, Total as CaCO3	155	mg/L		5		A2320 B	06/12/19 18:36 / dmb
206	Carbonate as CO3	<5	mg/L		5		A2320 B	06/12/19 18:36 / dmb
505	Bicarbonate as HCO3	189	mg/L		5		A2320 B	06/12/19 18:36 / dmb
007	Chloride	53	mg/L		1		E300.0	06/13/19 18:15 / ljl
031	Fluoride	0.5	mg/L	D	0.2		E300.0	06/13/19 18:15 / ljl
108	Sulfate	1130	mg/L	D	2		E300.0	06/13/19 18:15 / ljl
	Calcium	248	mg/L		1		SW6010B	06/13/19 16:43 / eli-b
	Magnesium	42	mg/L		1		SW6010B	06/13/19 16:43 / eli-b
003	Potassium	5	mg/L		1		SW6010B	06/13/19 16:43 / eli-b
	Silica	17.4	mg/L	D	0.7		SW6010B	06/13/19 16:43 / eli-b
004	Sodium	263	mg/L		1		SW6010B	06/13/19 16:43 / eli-b
NON-METALS								
072	Organic Carbon, Dissolved (DOC)	1.6	mg/L		0.5		A5310 C	06/18/19 06:22 / kjp
172	Organic Carbon, Total (TOC)	1.4	mg/L		0.5		A5310 C	06/17/19 14:44 / kjp
NUTRIENTS								
139	Nitrogen, Nitrate as N	10.8	mg/L	D	0.05		E353.2	06/22/19 17:13 / sec
150	Nitrogen, Nitrite as N	0.04	mg/L		0.01		A4500-NO2 B	06/11/19 16:15 / kjp
310	Nitrogen, Nitrate+Nitrite as N	10.8	mg/L	D	0.05		E353.2	06/14/19 11:03 / dmb
	Nitrogen, Ammonia as N	0.06	mg/L		0.05		E350.1	06/14/19 13:36 / dmb
	Nitrogen, Ammonium	0.07	mg/L		0.06		E350.1	06/14/19 13:36 / dmb
152	Phosphate, Total	<0.03	mg/L		0.03		Calculation	06/21/19 14:47 / sec
146	Phosphorus, Total as P	0.008	mg/L		0.005		E365.1	06/18/19 09:44 / dmb
METALS, DISSOLVED								
022	Aluminum	<0.03	mg/L		0.03		SW6020	06/19/19 00:22 / eli-b
	Iron	<0.02	mg/L		0.02		SW6020	06/19/19 00:22 / eli-b
	Manganese	0.26	mg/L	D	0.01		SW6010B	06/13/19 16:43 / eli-b
	Molybdenum	0.008	mg/L		0.001		SW6020	06/14/19 23:58 / eli-b
040	Selenium	0.318	mg/L	D	0.004		SW6020	06/21/19 19:26 / eli-b
015	Uranium	0.0212	mg/L		0.0003		SW6020	06/19/19 00:22 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/14/19 23:58 / eli-b
METALS, TOTAL								
	Aluminum	<0.03	mg/L		0.03		SW6020	06/18/19 05:44 / eli-b
	Calcium	259	mg/L		1		SW6010B	06/17/19 23:35 / eli-b
	Iron	0.05	mg/L	D	0.03		SW6020	06/18/19 05:44 / eli-b
	Magnesium	43	mg/L		1		SW6010B	06/17/19 23:35 / eli-b
	Manganese	0.27	mg/L	D	0.01		SW6010B	06/17/19 23:35 / eli-b
	Molybdenum	0.008	mg/L		0.001		SW6020	06/25/19 21:45 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060386-002
Client Sample ID: BK2C

Report Date: 07/02/19
Collection Date: 06/10/19 15:20
Date Received: 06/11/19
Matrix: Aqueous

Analyses		Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL								
103	Potassium	5	mg/L		1		SW6010B	06/17/19 23:35 / eli-b
140	Selenium	0.323	mg/L		0.001		SW6020	06/25/19 21:45 / eli-b
	Silica	19.1	mg/L	D	0.4		SW6010B	06/17/19 23:35 / eli-b
104	Sodium	290	mg/L	D	2		SW6010B	06/17/19 23:35 / eli-b
115	Uranium	0.0219	mg/L		0.0003		SW6020	06/25/19 21:45 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/18/19 05:44 / eli-b
RADIONUCLIDES, TOTAL								
	Uranium 234	10.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 234 precision (±)	2.0	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 234 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235	0.4	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235 precision (±)	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238	7.1	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238 precision (±)	1.4	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060386-003
Client Sample ID: GW-DUP

Report Date: 07/02/19
Collection Date: 06/10/19 15:30
Date Received: 06/11/19
Matrix: Aqueous

Analyses		Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS								
175	Alkalinity, Total as CaCO3	152	mg/L		5		A2320 B	06/12/19 18:43 / dmb
206	Carbonate as CO3	<5	mg/L		5		A2320 B	06/12/19 18:43 / dmb
505	Bicarbonate as HCO3	186	mg/L		5		A2320 B	06/12/19 18:43 / dmb
007	Chloride	53	mg/L		1		E300.0	06/13/19 19:13 / ljl
031	Fluoride	0.5	mg/L	D	0.2		E300.0	06/13/19 19:13 / ljl
108	Sulfate	1120	mg/L	D	2		E300.0	06/13/19 19:13 / ljl
	Calcium	248	mg/L		1		SW6010B	06/13/19 16:47 / eli-b
	Magnesium	42	mg/L		1		SW6010B	06/13/19 16:47 / eli-b
003	Potassium	5	mg/L		1		SW6010B	06/13/19 16:47 / eli-b
	Silica	17.4	mg/L	D	0.7		SW6010B	06/13/19 16:47 / eli-b
004	Sodium	259	mg/L		1		SW6010B	06/13/19 16:47 / eli-b
NON-METALS								
072	Organic Carbon, Dissolved (DOC)	1.5	mg/L		0.5		A5310 C	06/18/19 06:43 / kjp
172	Organic Carbon, Total (TOC)	1.4	mg/L		0.5		A5310 C	06/17/19 15:05 / kjp
NUTRIENTS								
139	Nitrogen, Nitrate as N	10.8	mg/L	D	0.05		E353.2	06/14/19 11:42 / tjp
150	Nitrogen, Nitrite as N	0.02	mg/L		0.01		A4500-NO2 B	06/11/19 16:15 / kjp
310	Nitrogen, Nitrate+Nitrite as N	10.8	mg/L	D	0.05		E353.2	06/12/19 15:12 / dmb
	Nitrogen, Ammonia as N	0.06	mg/L		0.05		E350.1	06/14/19 13:37 / dmb
	Nitrogen, Ammonium	0.07	mg/L		0.06		E350.1	06/14/19 13:37 / dmb
152	Phosphate, Total	<0.03	mg/L		0.03		Calculation	06/21/19 14:47 / sec
146	Phosphorus, Total as P	0.007	mg/L		0.005		E365.1	06/18/19 09:45 / dmb
METALS, DISSOLVED								
022	Aluminum	<0.03	mg/L		0.03		SW6020	06/19/19 00:27 / eli-b
	Iron	<0.02	mg/L		0.02		SW6020	06/19/19 00:27 / eli-b
	Manganese	0.25	mg/L	D	0.01		SW6010B	06/13/19 16:47 / eli-b
	Molybdenum	0.007	mg/L		0.001		SW6020	06/15/19 00:03 / eli-b
040	Selenium	0.365	mg/L	D	0.004		SW6020	06/21/19 19:31 / eli-b
015	Uranium	0.0210	mg/L		0.0003		SW6020	06/19/19 00:27 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/15/19 00:03 / eli-b
METALS, TOTAL								
	Aluminum	<0.03	mg/L		0.03		SW6020	06/18/19 05:48 / eli-b
	Calcium	260	mg/L		1		SW6010B	06/17/19 23:39 / eli-b
	Iron	<0.03	mg/L	D	0.03		SW6020	06/18/19 05:48 / eli-b
	Magnesium	44	mg/L		1		SW6010B	06/17/19 23:39 / eli-b
	Manganese	0.27	mg/L	D	0.01		SW6010B	06/17/19 23:39 / eli-b
	Molybdenum	0.008	mg/L		0.001		SW6020	06/25/19 21:49 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Homestake Mining Co
Project: Grants
Lab ID: C19060386-003
Client Sample ID: GW-DUP

Report Date: 07/02/19
Collection Date: 06/10/19 15:30
Date Received: 06/11/19
Matrix: Aqueous

Analyses		Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL								
103	Potassium	5	mg/L		1		SW6010B	06/17/19 23:39 / eli-b
140	Selenium	0.324	mg/L		0.001		SW6020	06/25/19 21:49 / eli-b
	Silica	19.2	mg/L	D	0.4		SW6010B	06/17/19 23:39 / eli-b
104	Sodium	294	mg/L	D	2		SW6010B	06/17/19 23:39 / eli-b
115	Uranium	0.0218	mg/L		0.0003		SW6020	06/25/19 21:49 / eli-b
	Vanadium	<0.01	mg/L		0.01		SW6020	06/18/19 05:48 / eli-b
RADIONUCLIDES, TOTAL								
	Uranium 234	10.7	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 234 precision (±)	2.1	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 234 MDC	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235	0.3	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235 precision (±)	0.2	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 235 MDC	0.1	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238	7.0	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238 precision (±)	1.4	pCi/L				E908.0	06/20/19 12:54 / dmf
	Uranium 238 MDC	0.1	pCi/L				E908.0	06/20/19 12:54 / dmf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/18/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B									Analytical Run: MANTECH_190613A	
Lab ID: ICV		Initial Calibration Verification Standard							06/12/19 10:21	
pH		6.88	s.u.	0.010	100	98	102			
Method: A2320 B									Batch: R247705	
Lab ID: MBLK		Method Blank				Run: MANTECH_190613A			06/12/19 17:01	
Alkalinity, Total as CaCO3		ND	mg/L	2						
Lab ID: LCS		Laboratory Control Sample				Run: MANTECH_190613A			06/12/19 17:09	
Alkalinity, Total as CaCO3		260	mg/L	5.0	104	90	110			
Lab ID: C19060386-003ADUP		Sample Duplicate				Run: MANTECH_190613A			06/12/19 18:51	
Alkalinity, Total as CaCO3		152	mg/L	5.0				0.1	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/18/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NO2 B										Batch: R247629
Lab ID: MBLK		Method Blank				Run: SPECC-101_190611A				06/11/19 16:15
Nitrogen, Nitrite as N		ND	mg/L	0.002						
Lab ID: LCS		Laboratory Control Sample				Run: SPECC-101_190611A				06/11/19 16:15
Nitrogen, Nitrite as N		0.0540	mg/L	0.011	103	90	110			
Lab ID: C19060324-001AMS		Sample Matrix Spike				Run: SPECC-101_190611A				06/11/19 16:15
Nitrogen, Nitrite as N		0.0673	mg/L	0.011	100	90	110			
Lab ID: C19060324-001AMSD		Sample Matrix Spike Duplicate				Run: SPECC-101_190611A				06/11/19 16:15
Nitrogen, Nitrite as N		0.0689	mg/L	0.011	103	90	110	2.4	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/18/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A5310 C										Analytical Run: TOC3-C_190617A
Lab ID: CCV-10666		Continuing Calibration Verification Standard								06/17/19 13:18
Organic Carbon, Total (TOC)		4.74	mg/L	0.50	95	90	110			
Lab ID: CCV-10666		Continuing Calibration Verification Standard								06/18/19 04:35
Organic Carbon, Dissolved (DOC)		4.87	mg/L	0.50	97	90	110			
Method: A5310 C										Batch: R247869
Lab ID: LCS-10553		Laboratory Control Sample				Run: TOC3-C_190617A				06/17/19 12:28
Organic Carbon, Total (TOC)		4.86	mg/L	0.50	97	90	110			
Lab ID: MBLK		Method Blank				Run: TOC3-C_190617A				06/17/19 13:02
Organic Carbon, Total (TOC)		ND	mg/L	0.2						
Lab ID: C19060385-001FMS		Sample Matrix Spike				Run: TOC3-C_190617A				06/17/19 13:54
Organic Carbon, Total (TOC)		6.71	mg/L	0.50	99	85	115			
Lab ID: C19060385-001FMSD		Sample Matrix Spike Duplicate				Run: TOC3-C_190617A				06/17/19 14:09
Organic Carbon, Total (TOC)		6.60	mg/L	0.50	97	85	115	1.7	20	
Lab ID: LCS-10553		Laboratory Control Sample				Run: TOC3-C_190617A				06/18/19 04:04
Organic Carbon, Dissolved (DOC)		4.82	mg/L	0.50	96	90	110			
Lab ID: MBLK		Method Blank				Run: TOC3-C_190617A				06/18/19 04:19
Organic Carbon, Dissolved (DOC)		ND	mg/L	0.5						
Lab ID: C19060385-001EMS		Sample Matrix Spike				Run: TOC3-C_190617A				06/18/19 05:10
Organic Carbon, Dissolved (DOC)		6.91	mg/L	0.50	100	85	115			
Lab ID: C19060385-001EMSD		Sample Matrix Spike Duplicate				Run: TOC3-C_190617A				06/18/19 05:26
Organic Carbon, Dissolved (DOC)		6.98	mg/L	0.50	101	85	115	1.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/18/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC3-C_190613A	
Lab ID: ICV	3	Initial Calibration Verification Standard							06/13/19 13:28	
Chloride		9.98	mg/L	1.0	100	90	110			
Fluoride		4.94	mg/L	0.10	99	90	110			
Sulfate		40.6	mg/L	1.0	101	90	110			
Method: E300.0									Batch: R247834	
Lab ID: ICB	3	Method Blank				Run: IC3-C_190613A			06/13/19 13:47	
Chloride		ND	mg/L	0.05						
Fluoride		ND	mg/L	0.02						
Sulfate		ND	mg/L	0.1						
Lab ID: LFB	3	Laboratory Fortified Blank				Run: IC3-C_190613A			06/13/19 14:06	
Chloride		10.4	mg/L	1.0	104	90	110			
Fluoride		5.14	mg/L	0.10	103	90	110			
Sulfate		41.8	mg/L	1.0	105	90	110			
Lab ID: C19060386-003AMS	3	Sample Matrix Spike				Run: IC3-C_190613A			06/13/19 19:32	
Chloride		104	mg/L	1.0	104	80	120			
Fluoride		25.5	mg/L	0.26	100	80	120			
Sulfate		1350	mg/L	2.1		80	120			A
Lab ID: C19060386-003AMSD	3	Sample Matrix Spike Duplicate				Run: IC3-C_190613A			06/13/19 19:51	
Chloride		102	mg/L	1.0	100	80	120	1.9	20	
Fluoride		25.6	mg/L	0.26	100	80	120	0.5	20	
Sulfate		1290	mg/L	2.1		80	120	4.4	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/18/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E350.1										Analytical Run: FIA201-C_190614B
Lab ID: ICV		Initial Calibration Verification Standard								06/14/19 13:24
Nitrogen, Ammonia as N		1.07	mg/L	0.050	107	90	110			
Method: E350.1										Batch: R247816
Lab ID: MBLK		Method Blank				Run: FIA201-C_190614B				06/14/19 13:23
Nitrogen, Ammonia as N		ND	mg/L	0.03						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA201-C_190614B				06/14/19 13:25
Nitrogen, Ammonia as N		0.962	mg/L	0.050	97	90	110			
Lab ID: C19060350-001CMS		Sample Matrix Spike				Run: FIA201-C_190614B				06/14/19 13:28
Nitrogen, Ammonia as N		0.872	mg/L	0.050	84	90	110			S
Lab ID: C19060350-001CMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_190614B				06/14/19 13:29
Nitrogen, Ammonia as N		0.843	mg/L	0.050	81	90	110	3.3	10	S

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/18/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2										Analytical Run: FIA201-C_190612A
Lab ID: ICV		Initial Calibration Verification Standard								06/12/19 14:45
Nitrogen, Nitrate+Nitrite as N		0.980	mg/L	0.010	98	90	110			
Method: E353.2										Batch: R247673
Lab ID: MBLK		Method Blank				Run: FIA201-C_190612A				06/12/19 14:47
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.010						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA201-C_190612A				06/12/19 14:48
Nitrogen, Nitrate+Nitrite as N		0.982	mg/L	0.010	99	90	110			
Lab ID: C19060386-001DMS		Sample Matrix Spike				Run: FIA201-C_190612A				06/12/19 15:08
Nitrogen, Nitrate+Nitrite as N		2.37	mg/L	0.010	99	90	110			
Lab ID: C19060386-001DMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_190612A				06/12/19 15:09
Nitrogen, Nitrate+Nitrite as N		2.33	mg/L	0.010	95	90	110	1.7	10	
Method: E353.2										Analytical Run: FIA201-C_190614A
Lab ID: ICV		Initial Calibration Verification Standard								06/14/19 10:53
Nitrogen, Nitrate+Nitrite as N		0.981	mg/L	0.010	98	90	110			
Method: E353.2										Batch: R247791
Lab ID: MBLK		Method Blank				Run: FIA201-C_190614A				06/14/19 10:55
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.010						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA201-C_190614A				06/14/19 10:56
Nitrogen, Nitrate+Nitrite as N		0.987	mg/L	0.010	100	90	110			
Lab ID: C19060353-001BMS		Sample Matrix Spike				Run: FIA201-C_190614A				06/14/19 10:59
Nitrogen, Nitrate+Nitrite as N		9.24	mg/L	0.050	96	90	110			
Lab ID: C19060353-001BMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_190614A				06/14/19 11:01
Nitrogen, Nitrate+Nitrite as N		9.09	mg/L	0.050	93	90	110	1.7	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/18/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E365.1										Analytical Run: FIA201-C_190618A
Lab ID: ICV-54131		Initial Calibration Verification Standard								06/18/19 09:32
Phosphorus, Total as P		0.508	mg/L	0.0050	102	90	110			
Method: E365.1										Batch: 54131
Lab ID: MB-54131		Method Blank				Run: FIA201-C_190618A				06/18/19 09:30
Phosphorus, Total as P		ND	mg/L	0.005						
Lab ID: LCS-54131		Laboratory Control Sample				Run: FIA201-C_190618A				06/18/19 09:31
Phosphorus, Total as P		0.431	mg/L	0.0050	108	90	110			
Lab ID: C19060350-001CMS		Sample Matrix Spike				Run: FIA201-C_190618A				06/18/19 09:36
Phosphorus, Total as P		0.472	mg/L	0.0050	107	90	110			
Lab ID: C19060350-001CMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_190618A				06/18/19 09:37
Phosphorus, Total as P		0.470	mg/L	0.0050	106	90	110	0.4	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/28/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**								Analytical Run: ICP203-B_190613A	
Lab ID: **QCS**	Initial Calibration Verification Standard							06/13/19 10:13	
Calcium	40.8	mg/L	1.0	102	90	110			
Magnesium	41.5	mg/L	1.0	104	90	110			
Manganese	3.88	mg/L	0.010	97	90	110			
Potassium	40.6	mg/L	1.0	101	90	110			
Silicon	7.99	mg/L	0.074	100	90	110			
Sodium	40.6	mg/L	1.0	102	90	110			
Lab ID: **ICSA**	Interference Check Sample A							06/13/19 10:17	
Calcium	462	mg/L	1.0	92	80	120			
Magnesium	503	mg/L	1.0	101	80	120			
Manganese	0.0107	mg/L	0.010						
Potassium	0.0693	mg/L	1.0						
Silicon	0.0467	mg/L	0.074						
Sodium	0.0575	mg/L	1.0						
Lab ID: **ICSAB**	Interference Check Sample AB							06/13/19 10:22	
Calcium	454	mg/L	1.0	91	80	120			
Magnesium	493	mg/L	1.0	99	80	120			
Manganese	0.433	mg/L	0.010	87	80	120			
Potassium	19.9	mg/L	1.0	99	80	120			
Silicon	9.49	mg/L	0.074	95	80	120			
Sodium	19.8	mg/L	1.0	99	80	120			
Method: **SW6010B**								Batch: R322103	
Lab ID: **MB-6500DIS190613A**	Method Blank				Run: ICP203-B_190613A			06/13/19 10:01	
Calcium	ND	mg/L	0.07						
Magnesium	ND	mg/L	0.02						
Manganese	ND	mg/L	0.002						
Potassium	ND	mg/L	0.1						
Silicon	ND	mg/L	0.07						
Sodium	ND	mg/L	0.1						
Lab ID: **LFB-6500DIS190613A**	Laboratory Fortified Blank				Run: ICP203-B_190613A			06/13/19 10:09	
Calcium	49.8	mg/L	1.0	100	80	120			
Magnesium	51.2	mg/L	1.0	102	80	120			
Manganese	4.70	mg/L	0.010	94	80	120			
Potassium	49.9	mg/L	1.0	100	80	120			
Silicon	9.77	mg/L	0.076	98	80	120			
Sodium	49.7	mg/L	1.0	99	80	120			
Lab ID: **C19060386-001BDIL**	Serial Dilution				Run: ICP203-B_190613A			06/13/19 16:31	
Calcium	180	mg/L	1.8		0	0	3.4	10	
Magnesium	34.7	mg/L	1.0		0	0	3.8	10	
Manganese	0.399	mg/L	0.054		0	0		10	N
Potassium	4.11	mg/L	3.6		0	0		10	N

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/28/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**									Batch: R322103
Lab ID: **C19060386-001BDIL**	Serial Dilution				Run: ICP203-B_190613A				06/13/19 16:31
Silicon	8.29	mg/L	1.8		0	0			N
Sodium	247	mg/L	4.9		0	0	1.9	10	
Lab ID: **C19060386-001BMS2**	Sample Matrix Spike				Run: ICP203-B_190613A				06/13/19 16:35
Calcium	411	mg/L	1.0	95	75	125			
Magnesium	274	mg/L	1.0	96	75	125			
Manganese	23.2	mg/L	0.011	91	75	125			
Potassium	245	mg/L	1.0	97	75	125			
Silicon	54.9	mg/L	0.38	94	75	125			
Sodium	484	mg/L	1.0	97	75	125			
Lab ID: **C19060386-001BMSD2**	Sample Matrix Spike Duplicate				Run: ICP203-B_190613A				06/13/19 16:39
Calcium	414	mg/L	1.0	96	75	125	0.7	20	
Magnesium	278	mg/L	1.0	98	75	125	1.3	20	
Manganese	23.4	mg/L	0.011	92	75	125	0.6	20	
Potassium	247	mg/L	1.0	97	75	125	0.7	20	
Silicon	54.9	mg/L	0.38	94	75	125	0.0	20	
Sodium	487	mg/L	1.0	98	75	125	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/28/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**								Analytical Run: ICP203-B_190617A	
Lab ID: **QCS**	Initial Calibration Verification Standard							06/17/19 10:36	
Aluminum	4.08	mg/L	0.10	102	90	110			
Calcium	40.7	mg/L	1.0	102	90	110			
Iron	4.03	mg/L	0.030	101	90	110			
Magnesium	40.8	mg/L	1.0	102	90	110			
Manganese	3.90	mg/L	0.010	98	90	110			
Potassium	40.6	mg/L	1.0	102	90	110			
Silicon	8.06	mg/L	0.074	101	90	110			
Sodium	40.7	mg/L	1.0	102	90	110			
Lab ID: **ICSA**	Interference Check Sample A							06/17/19 10:39	
Aluminum	486	mg/L	0.10	97	80	120			
Calcium	456	mg/L	1.0	91	80	120			
Iron	175	mg/L	0.11	87	80	120			
Magnesium	501	mg/L	1.0	100	80	120			
Manganese	0.0145	mg/L	0.010						
Potassium	0.0719	mg/L	1.0						
Silicon	0.00512	mg/L	0.074						
Sodium	0.0383	mg/L	1.0						
Lab ID: **ICSAB**	Interference Check Sample AB							06/17/19 10:44	
Aluminum	483	mg/L	0.10	97	80	120			
Calcium	453	mg/L	1.0	91	80	120			
Iron	173	mg/L	0.11	86	80	120			
Magnesium	497	mg/L	1.0	99	80	120			
Manganese	0.443	mg/L	0.010	89	80	120			
Potassium	20.0	mg/L	1.0	100	80	120			
Silicon	9.50	mg/L	0.074	95	80	120			
Sodium	20.0	mg/L	1.0	100	80	120			
Lab ID: **ICSAB**	Interference Check Sample AB							06/17/19 16:15	
Aluminum	465	mg/L	0.10	93	80	120			
Calcium	443	mg/L	1.0	89	80	120			
Iron	168	mg/L	0.11	84	80	120			
Magnesium	484	mg/L	1.0	97	80	120			
Manganese	0.439	mg/L	0.010	88	80	120			
Potassium	19.2	mg/L	1.0	96	80	120			
Silicon	9.27	mg/L	0.074	93	80	120			
Sodium	19.2	mg/L	1.0	96	80	120			
Silica	19.8	mg/L	0.16		0	0			
Method: **SW6010B**								Batch: 134029	
Lab ID: **MB-134029**	Method Blank				Run: ICP203-B_190617A			06/17/19 22:46	
Aluminum	ND	mg/L	0.01						
Calcium	ND	mg/L	0.2						
Iron	ND	mg/L	0.02						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/28/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**									Batch: 134029
Lab ID: **MB-134029**	Method Blank				Run: ICP203-B_190617A				06/17/19 22:46
Magnesium	ND	mg/L	0.02						
Manganese	ND	mg/L	0.004						
Potassium	ND	mg/L	0.2						
Silicon	0.04	mg/L	0.03						
Sodium	ND	mg/L	0.4						
Lab ID: **LCS3-134029**	Laboratory Control Sample				Run: ICP203-B_190617A				06/17/19 22:50
Aluminum	2.57	mg/L	0.10	103	80	120			
Calcium	25.4	mg/L	1.0	102	80	120			
Iron	2.60	mg/L	0.030	104	80	120			
Magnesium	24.1	mg/L	1.0	96	80	120			
Manganese	2.56	mg/L	0.010	102	80	120			
Potassium	26.2	mg/L	1.0	105	80	120			
Silicon	5.12	mg/L	0.035	102	80	120			
Sodium	27.9	mg/L	1.0	112	80	120			
Lab ID: **B19060931-001DDIL**	Serial Dilution				Run: ICP203-B_190617A				06/17/19 22:58
Aluminum	0.638	mg/L	0.12					10	N
Calcium	50.8	mg/L	1.6				11	10	R
Iron	2.30	mg/L	0.21				2.5	10	
Magnesium	20.5	mg/L	1.0				0.9	10	
Manganese	0.117	mg/L	0.028					10	N
Potassium	12.9	mg/L	2.2					10	N
Silicon	6.77	mg/L	0.35				16	10	R
Sodium	290	mg/L	3.1				0.1	10	
Lab ID: **B19060931-001DPDS**	Post Digestion/Distillation Spike				Run: ICP203-B_190617A				06/17/19 23:02
Aluminum	10.8	mg/L	0.030	99	75	125			
Calcium	141	mg/L	1.0	93	75	125			
Iron	12.0	mg/L	0.043	95	75	125			
Magnesium	116	mg/L	1.0	93	75	125			
Manganese	9.42	mg/L	0.0058	90	75	125			
Potassium	114	mg/L	1.0	99	75	125			
Silicon	25.4	mg/L	0.10	95	75	125			
Sodium	392	mg/L	1.0	100	75	125			
Lab ID: **B19060931-001DMS3**	Sample Matrix Spike				Run: ICP203-B_190617A				06/17/19 23:06
Aluminum	3.55	mg/L	0.030	116	75	125			
Calcium	70.9	mg/L	1.0	102	75	125			
Iron	4.87	mg/L	0.042	105	75	125			
Magnesium	46.1	mg/L	1.0	103	75	125			
Manganese	2.61	mg/L	0.0056	100	75	125			
Potassium	39.6	mg/L	1.0	108	75	125			
Silicon	11.4	mg/L	0.10	113	75	125			
Sodium	317	mg/L	1.0		75	125			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/28/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**								Batch: 134029	
Lab ID: **B19060931-001DMSD3**	Sample Matrix Spike Duplicate				Run: ICP203-B_190617A			06/17/19 23:11	
Aluminum	3.48	mg/L	0.030	114	75	125	1.9	20	
Calcium	70.3	mg/L	1.0	99	75	125	0.9	20	
Iron	4.79	mg/L	0.042	102	75	125	1.6	20	
Magnesium	44.7	mg/L	1.0	97	75	125	3.1	20	
Manganese	2.59	mg/L	0.0056	99	75	125	0.9	20	
Potassium	39.0	mg/L	1.0	106	75	125	1.6	20	
Silicon	11.3	mg/L	0.10	110	75	125	1.1	20	
Sodium	312	mg/L	1.0		75	125	1.4	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/28/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**								Analytical Run: ICPMS206-B_190614A	
Lab ID: **QCS**	Initial Calibration Verification Standard							06/14/19 17:20	
Aluminum	0.263	mg/L	0.0010	105	90	110			
Iron	0.236	mg/L	0.0016	94	90	110			
Molybdenum	0.0492	mg/L	0.0010	99	90	110			
Vanadium	0.0464	mg/L	0.0012	93	90	110			
Lab ID: **ICSA**	Interference Check Sample A							06/14/19 18:12	
Aluminum	36.0	mg/L	0.0010	90	80	120			
Iron	79.5	mg/L	0.0010	80	80	120			
Molybdenum	0.734	mg/L	0.0010	92	80	120			
Vanadium	-0.000476	mg/L	0.0012						
Lab ID: **ICSAB**	Interference Check Sample AB							06/14/19 18:16	
Aluminum	35.8	mg/L	0.0010	89	80	120			
Iron	86.5	mg/L	0.0010	87	80	120			
Molybdenum	0.714	mg/L	0.0010	89	80	120			
Vanadium	0.0203	mg/L	0.0012	102	80	120			
Method: **SW6020**								Batch: R322305	
Lab ID: **B19060753-001CMS**	Sample Matrix Spike				Run: ICPMS206-B_190614A			06/14/19 21:47	
Aluminum	0.0477	mg/L	0.030	95	75	125			
Iron	4.33	mg/L	0.030	86	75	125			
Molybdenum	0.0445	mg/L	0.00010	88	75	125			
Vanadium	0.0479	mg/L	0.010	96	75	125			
Lab ID: **B19060753-001CMSD**	Sample Matrix Spike Duplicate				Run: ICPMS206-B_190614A			06/14/19 21:52	
Aluminum	0.0488	mg/L	0.030	98	75	125	2.3	20	
Iron	4.82	mg/L	0.030	96	75	125	11	20	
Molybdenum	0.0471	mg/L	0.00010	93	75	125	5.6	20	
Vanadium	0.0484	mg/L	0.010	97	75	125	1.2	20	
Lab ID: **LRB**	Method Blank				Run: ICPMS206-B_190614A			06/14/19 17:39	
Aluminum	0.001	mg/L	0.0008						
Iron	ND	mg/L	0.001						
Molybdenum	ND	mg/L	0.00005						
Vanadium	ND	mg/L	0.001						
Lab ID: **LFB**	Laboratory Fortified Blank				Run: ICPMS206-B_190614A			06/14/19 17:48	
Aluminum	0.0473	mg/L	0.0010	95	85	115			
Iron	4.69	mg/L	0.0010	93	85	115			
Molybdenum	0.0429	mg/L	0.0010	86	85	115			
Vanadium	0.0484	mg/L	0.0012	97	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/28/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**								Analytical Run: ICPMS206-B_190618A	
Lab ID: **QCS**	Initial Calibration Verification Standard							06/18/19 14:30	
Iron	0.245	mg/L	0.0010	98	90	110			
Selenium	0.0527	mg/L	0.0010	105	90	110			
Uranium	0.0484	mg/L	0.00030	97	90	110			
Lab ID: **ICSA**	Interference Check Sample A							06/18/19 15:07	
Iron	97.6	mg/L	0.0010	98	80	120			
Selenium	0.0000244	mg/L	0.0010						
Uranium	4.46E-06	mg/L	0.00030						
Lab ID: **ICSAB**	Interference Check Sample AB							06/18/19 15:12	
Iron	95.7	mg/L	0.0010	96	80	120			
Selenium	0.0110	mg/L	0.0010	110	80	120			
Uranium	-2.67E-06	mg/L	0.00030						
Method: **SW6020**								Batch: R322464	
Lab ID: **C19060386-001BDIL**	Serial Dilution				Run: ICPMS206-B_190618A			06/18/19 23:45	
Iron	0.0153	mg/L	0.030		0	0		10	N
Selenium	0.0384	mg/L	0.0015		0	0	1.6	10	
Uranium	0.0158	mg/L	0.00030		0	0			
Lab ID: **C19060386-001BMS**	Sample Matrix Spike				Run: ICPMS206-B_190618A			06/18/19 23:50	
Iron	3.85	mg/L	0.030	77	75	125			
Selenium	0.0984	mg/L	0.0010	119	75	125			
Uranium	0.0687	mg/L	0.00030	106	75	125			
Lab ID: **C19060386-001BMSD**	Sample Matrix Spike Duplicate				Run: ICPMS206-B_190618A			06/18/19 23:54	
Iron	5.79	mg/L	0.030	116	75	125	40	20	R
Selenium	0.144	mg/L	0.0010	210	75	125	38	20	SR
Uranium	0.0666	mg/L	0.00030	102	75	125	3.1	20	
Lab ID: **LRB**	Method Blank				Run: ICPMS206-B_190618A			06/18/19 14:53	
Iron	0.002	mg/L	0.001						
Selenium	ND	mg/L	0.0003						
Uranium	ND	mg/L	0.00005						
Lab ID: **LFB**	Laboratory Fortified Blank				Run: ICPMS206-B_190618A			06/18/19 15:03	
Iron	5.19	mg/L	0.0010	103	85	115			
Selenium	0.0548	mg/L	0.0010	110	85	115			
Uranium	0.0480	mg/L	0.00030	96	85	115			

Qualifiers:

RL - Analyte reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/28/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**								Analytical Run: ICPMS206-B_190621A	
Lab ID: **ICSA**	Interference Check Sample A							06/21/19 14:00	
Selenium	0.0000948	mg/L	0.0010						
Lab ID: **ICSAB**	Interference Check Sample AB							06/21/19 14:05	
Selenium	0.00890	mg/L	0.0010	89	80	120			
Lab ID: **QCS**	Initial Calibration Verification Standard							06/21/19 13:28	
Selenium	0.0522	mg/L	0.0010	104	90	110			
Method: **SW6020**								Batch: R322681	
Lab ID: **C19060386-003BDIL**	Serial Dilution				Run: ICPMS206-B_190621A			06/21/19 19:36	
Selenium	0.323	mg/L	0.0075		0	0	12	10	R
Lab ID: **C19060386-003BMS**	Sample Matrix Spike				Run: ICPMS206-B_190621A			06/21/19 19:40	
Selenium	0.506	mg/L	0.0015	56	75	125			S
Lab ID: **C19060386-003BMSD**	Sample Matrix Spike Duplicate				Run: ICPMS206-B_190621A			06/21/19 20:04	
Selenium	0.518	mg/L	0.0015	61	75	125	2.4	20	S
Lab ID: **LRB**	Method Blank				Run: ICPMS206-B_190621A			06/21/19 13:46	
Selenium	ND	mg/L	0.0003						
Lab ID: **LFB**	Laboratory Fortified Blank				Run: ICPMS206-B_190621A			06/21/19 13:56	
Selenium	0.0460	mg/L	0.0010	92	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/28/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**								Analytical Run: ICPMS207-B_190617A	
Lab ID: **QCS**	Initial Calibration Verification Standard							06/17/19 15:07	
Aluminum	0.260	mg/L	0.0010	104	90	110			
Iron	0.257	mg/L	0.0012	103	90	110			
Vanadium	0.0516	mg/L	0.0013	103	90	110			
Lab ID: **ICSA**	Interference Check Sample A							06/18/19 07:43	
Aluminum	46.7	mg/L	0.0010	117	80	120			
Iron	102	mg/L	0.0012	102	80	120			
Vanadium	4.72E-06	mg/L	0.0013						
Lab ID: **ICSA**	Interference Check Sample A							06/18/19 04:00	
Aluminum	55.2	mg/L	0.0010	138	80	120			S
Iron	117	mg/L	0.0012	117	80	120			
Vanadium	4.06E-06	mg/L	0.0013						
Method: **SW6020**								Batch: 134029	
Lab ID: **MB-134029**	Method Blank				Run: ICPMS207-B_190617A			06/18/19 04:30	
Aluminum	0.007	mg/L	0.003						
Iron	0.01	mg/L	0.005						
Molybdenum	ND	mg/L	0.0003						
Selenium	ND	mg/L	0.0006						
Uranium	ND	mg/L	0.00008						
Vanadium	ND	mg/L	0.002						
Lab ID: **LCS4-134029**	Laboratory Control Sample				Run: ICPMS207-B_190617A			06/18/19 04:34	
Aluminum	0.448	mg/L	0.030	90	80	120			
Iron	0.419	mg/L	0.030	84	80	120			
Molybdenum	0.0998	mg/L	0.0010	100	80	120			
Selenium	0.0914	mg/L	0.0010	91	80	120			
Uranium	0.105	mg/L	0.00030	105	80	120			
Vanadium	0.0952	mg/L	0.010	95	80	120			
Lab ID: **B19060931-002DDIL**	Serial Dilution				Run: ICPMS207-B_190617A			06/18/19 04:51	
Aluminum	0.446	mg/L	0.030				0.5	10	
Iron	3.70	mg/L	0.030				18	10	R
Molybdenum	0.135	mg/L	0.0014				1.5	10	
Selenium	0.0266	mg/L	0.0029					10	N
Uranium	0.00182	mg/L	0.00042					10	N
Vanadium	0.0139	mg/L	0.011					10	N
Lab ID: **B19060931-002DPDS1**	Post Digestion/Distillation Spike				Run: ICPMS207-B_190617A			06/18/19 04:55	
Aluminum	0.416	mg/L	0.030		75	125			A
Iron	8.67	mg/L	0.030	109	75	125			
Molybdenum	0.194	mg/L	0.0010	118	75	125			
Selenium	0.0677	mg/L	0.0010	91	75	125			
Uranium	0.0519	mg/L	0.00030	98	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Homestake Mining Co **Work Order:** C19060386 **Report Date:** 06/28/19

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6020**									Batch: 134029
Lab ID: **B19060931-002DPDS1**	Post Digestion/Distillation Spike				Run: ICPMS207-B_190617A				06/18/19 04:55
Vanadium	0.0656	mg/L	0.010	102	75	125			
Lab ID: **B19060931-002DMS4**	Sample Matrix Spike				Run: ICPMS207-B_190617A				06/18/19 04:59
Aluminum	0.954	mg/L	0.030	102	75	125			
Iron	5.50	mg/L	0.030		75	125			A
Molybdenum	0.232	mg/L	0.0010	99	75	125			
Selenium	0.160	mg/L	0.0010	139	75	125			S
Uranium	0.115	mg/L	0.00030	113	75	125			
Vanadium	0.112	mg/L	0.010	99	75	125			
Lab ID: **B19060931-002DMSD4**	Sample Matrix Spike Duplicate				Run: ICPMS207-B_190617A				06/18/19 05:03
Aluminum	0.932	mg/L	0.030	98	75	125	2.4	20	
Iron	3.91	mg/L	0.030		75	125	34	20	AR
Molybdenum	0.246	mg/L	0.0010	113	75	125	6.1	20	
Selenium	0.114	mg/L	0.0010	93	75	125	33	20	R
Uranium	0.115	mg/L	0.00030	113	75	125	0.3	20	
Vanadium	0.119	mg/L	0.010	106	75	125	6.3	20	
Method: **SW6020**									Analytical Run: ICPMS207-B_190625A
Lab ID: **QCS**	Initial Calibration Verification Standard								06/26/19 00:46
Molybdenum	0.0487	mg/L	0.0010	97	90	110			
Selenium	0.0527	mg/L	0.0010	105	90	110			
Uranium	0.0506	mg/L	0.00030	101	90	110			
Lab ID: **ICSA**	Interference Check Sample A								06/25/19 11:53
Molybdenum	0.853	mg/L	0.0010	107	80	120			
Selenium	0.0000437	mg/L	0.0010						
Uranium	0.0000177	mg/L	0.00030						
Lab ID: **ICSAB**	Interference Check Sample AB								06/25/19 11:57
Molybdenum	0.845	mg/L	0.0010	106	80	120			
Selenium	0.0106	mg/L	0.0010	106	80	120			
Uranium	-9.20E-07	mg/L	0.00030						
Method: **SW6020**									Batch: 134029
Lab ID: **MB-134029**	Method Blank				Run: ICPMS207-B_190625A				06/25/19 21:12
Molybdenum	ND	mg/L	0.0003						
Selenium	ND	mg/L	0.0006						
Uranium	ND	mg/L	0.00008						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

R - RPD exceeds advisory limit.

Work Order Receipt Checklist

Homestake Mining Co

C19060386

Login completed by:	Dorian Quis	Date Received:	6/11/2019
Reviewed by:	Kasey Vidick	Received by:	met
Reviewed Date:	6/12/2019	Carrier name:	NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☐	No ☑	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	12.5°C Melted Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

Sample BK2F TOC bottle was received broken.

ENERGY
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Page _____ of _____

Account Information (Billing information)

Company/Name	Homestake Mining Company of California
Contact	Adam Arguello
Phone	505 285 1041
Mailing Address	PO Box 90
City, State, Zip	Grants NM 87020
Email	arguello@bamick.com
Receive Invoice	☒ Hard Copy ☒ Email
Receive Report	☒ Hard Copy ☒ Email
Purchase Order	
Quote	5573
Bottle Order	58275

Report Information (if different than Account Information)

Company/Name	Arcadis
Contact	Shannon Ulrich
Phone	303 471 3465
Mailing Address	11001 W. 120th Ave. Suite 200
City, State, Zip	Broomfield CO 80021
Email	shannon.ulrich@arcadis.com
Receive Report	☐ Hard Copy ☒ Email

Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	Grants
Sampler Name	Adam Arguello
Sampler Phone	505 285 1041
Sample Origin State	NM
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type.
☒ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Field pH	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	BK2f	6/10/19	1335	8	W	8.13	X		C19061038-6
2	BK2c	6/10/19	1520	8	W	8.12	X		
3	GW-DUP	6/10/19	1530	8	W	8.12	X		
4									
5									
6									
7									
8									
9									
10									

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Adam Arguello	6/10/19 1700				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print) MARK TRAVER	Date/Time 6/11/19 1130	Signature

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

BOTTLE ORDER 58275

SHIPPED TO: Homestake Mining Co

Contact: Adam Arguello
Hwy 605

Grants NM 87020

Phone:

Project: For HMC to sample new Arcadis Wells

Order Created by: Tracey Archer
Shipped From: Casper, WY

Ship Date: 5/8/2019
VIA: Ground
Quote Used: 5573

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
Background/Upgradient Water (5 Sets)							
1 Liter Plastic	1	A2320 B	Alkalinity				1
		E300.0	Anions by Ion Chromatography				
		A4500-NO2 B	Nitrogen, Nitrite	48.00 hrs			
250 mL Plastic	1	E6010.20	Metals by ICP/ICPMS, Dissolved		■ HNO3	Filter before preservation	1
250 mL Plastic	1	E6010.20	Metals by ICP/ICPMS, Total		■ HNO3		1
500 mL Plastic	1	E353.2	Nitrogen, Nitrate + Nitrite		☐ H2SO4		1
		E353.2	Nitrogen, Nitrate as N				
		E350.1	Nitrogen, Ammonia				
		E365.1	Phosphorus, Total				
		Calculation	Phosphate, Total				

DCM SCIENCE LABORATORY, INC.

July 11, 2019

Ms. Tracey Archer
Energy Laboratories, Inc.
400 W. Boxelder Rd.
Gillette, WY 82718

Dear Ms. Archer:

We have performed petrographic analysis on your ten Grants soil samples (**BK1-39-40-052119, BK1-47-48-52119, BK1-51-52-052119, BK1-52-53-052119, BK1-55.5-56.5-052219, BK2-35-36-051519, BK2-63.5-64.5-051619, BK2-77-77.5-051619, BK3-42.5-43.5-052219** and **BK3-47.5-48.5-052219**). The results are outlined in the following report.

Thank you for the opportunity to provide this service. If you have any questions, please call.

Sincerely,

Ron Schott
Laboratory Director

12421 W. 49th Ave. ● Unit 6 ● Wheat Ridge, Colorado 80033
303-463-8270 ● Fax 303-463-8267 ● 800-852-7340
www.dcmsciencelab.com

12421 W. 49th Avenue, Unit #6
Wheat Ridge, CO 80033 - (303) 463-8270

Petrographic Analysis

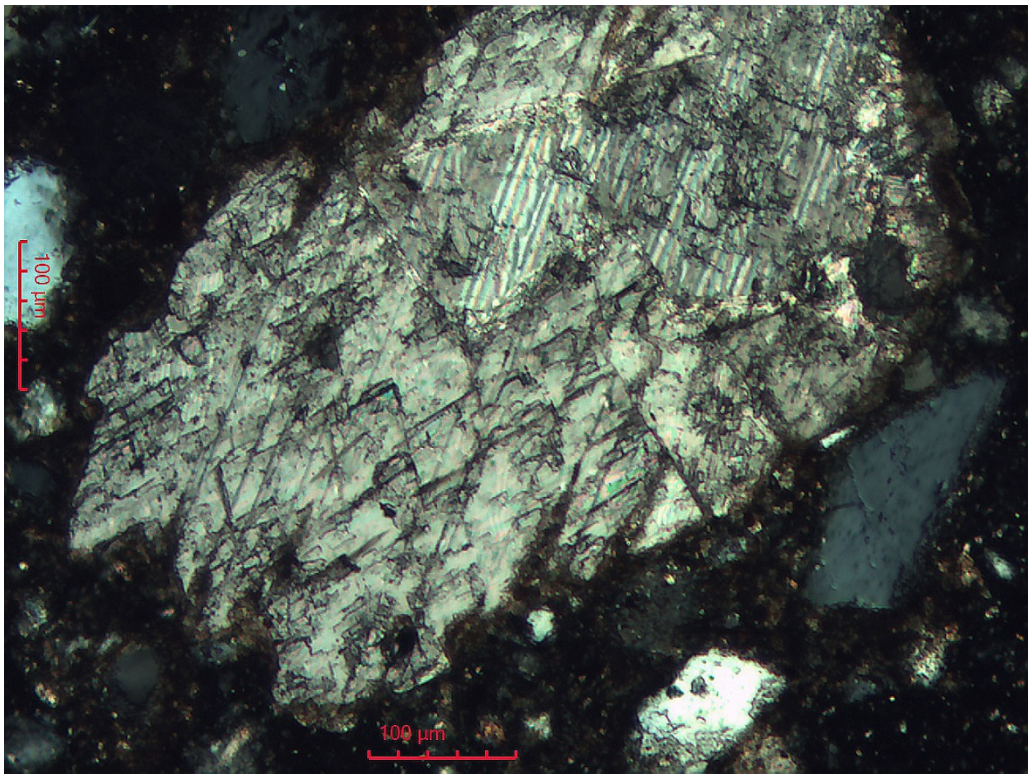
Client:
Energy Laboratories, Inc.
400 W. Boxelder Rd.
Gillette, WY 82718

Analysis Date:	7-10-19
Reporting Date:	7-11-19
Receipt Date:	6-17-19
Client Job No.:	CO000120.1901
Project Title:	HMC Grants Supp Bkgd Investigation
DCMSL Project:	ELAB49

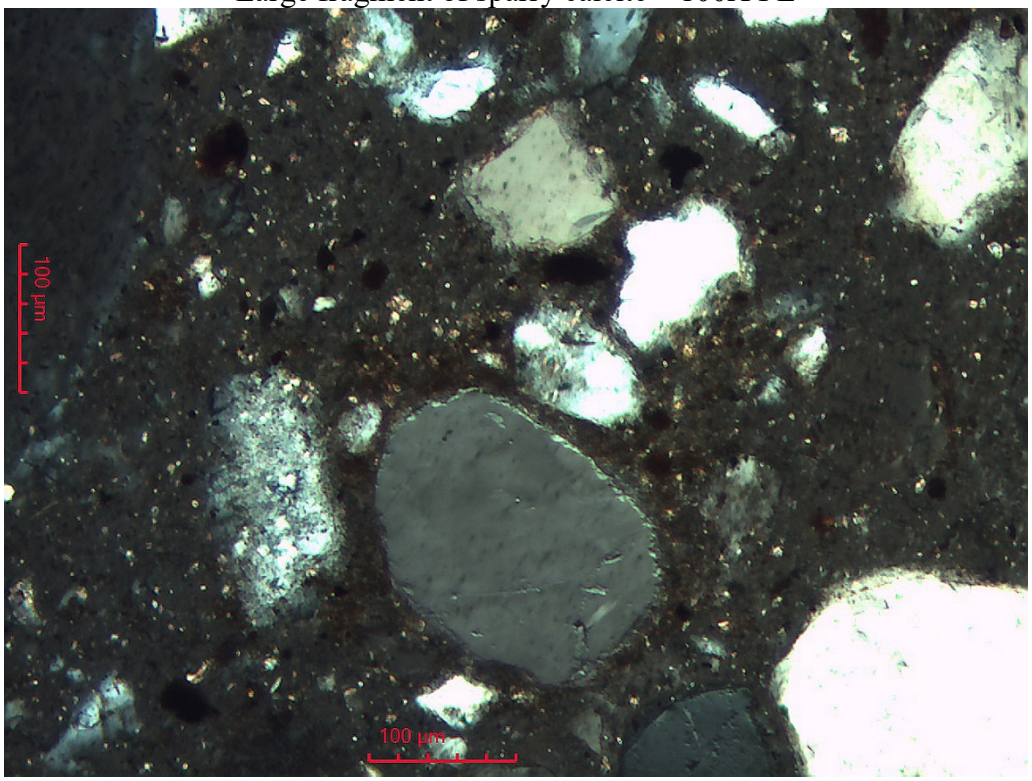
The objective of this study is to characterize the bulk mineralogy of ten Grants soil samples (client samples no. **BK1-39-40-052119, BK1-47-48-052119, BK1-51-52-052119, BK1-52-53-052119, BK1-55.5-56.5-052219, BK2-35-36-051519, BK2-63.5-64.5-051619, BK2-77-77.5-051619, BK3-42.5-43.5-052219** and **BK3-47.5-48.5-052219**). Each sample was prepared as a standard polished thin section or a polished billet for study by reflected polarized light microscopy (RL) and transmitted polarized light microscopy (PL). Approximate mineral concentrations in this report were determined with a combination of XRD and petrographic studies. Color photomicrographs are included for documentation of relevant features.

Client Sample No.: **BK1-39-40-052119**

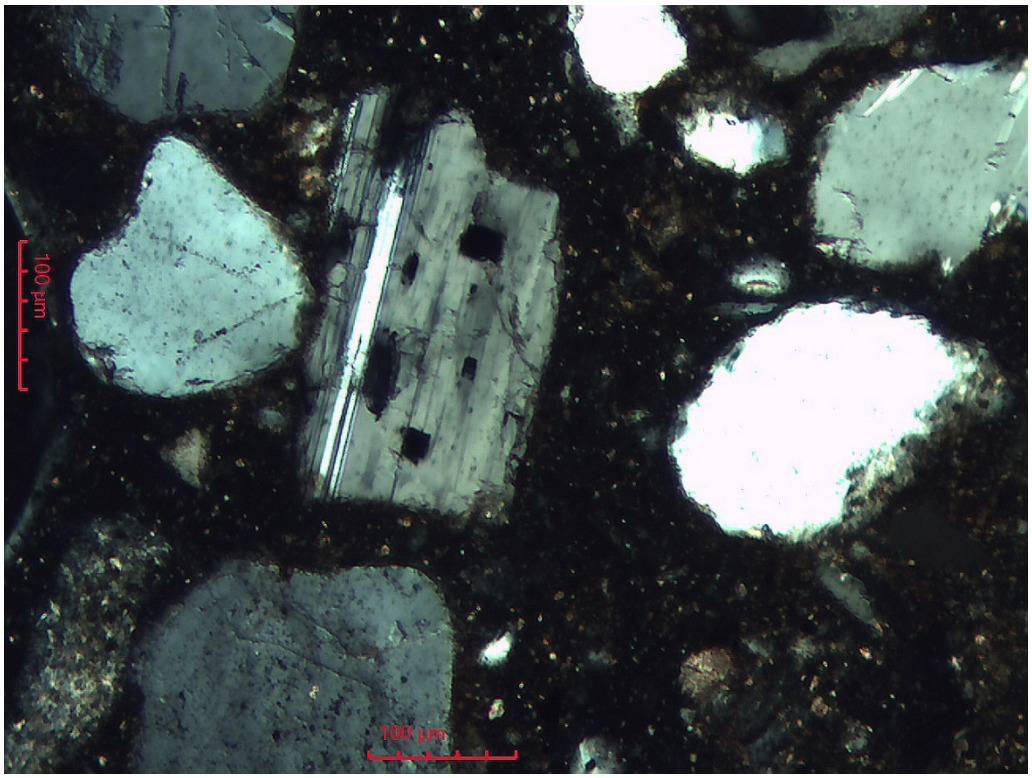
This sample is an unconsolidated, brown colored very fine to coarse sandy silt. Petrographic studies and XRD phase analysis reveal the sediment is primarily composed of hard silicates. Quartz (72%) is the dominant phase and occurs as angular to well rounded clasts that vary greatly in size from 2µm to over 1mm. Most grains tend to fall in the 100µm to 500µm range. Some well rounded grains of microcrystalline chert are also present. Collectively feldspar accounts for 19% of the sample. Potassium feldspar is the dominant type and occurs as angular fragments of orthoclase and minor microcline with a grain size of 2µm to 900µm. Plagioclase (oligoclase/andesine) occurs as angular fragments up to 300µm. Some grains show minor to moderate seritization and minor dissolution. Calcite is present in low amounts and occurs as fine grained aggregates, small grains mixed with clay and as large liberated fragments. Grain size varies significantly from approximately 2µm to 1mm. Although XRD failed to detect clay mineralogy, clay assumed to be illite, smectite and kaolinite is present at around 3-4%. Clay is generally seen as thin rinds around silicates or as small iron stained aggregates with numerous inclusions of opaque carbon. Iron oxide (3%) is frequently mixed with clay and is seen cementing small clasts of quartz/feldspar. Sulfide mineralogy is rare, however, a few small cubes are present as inclusions in quartz.



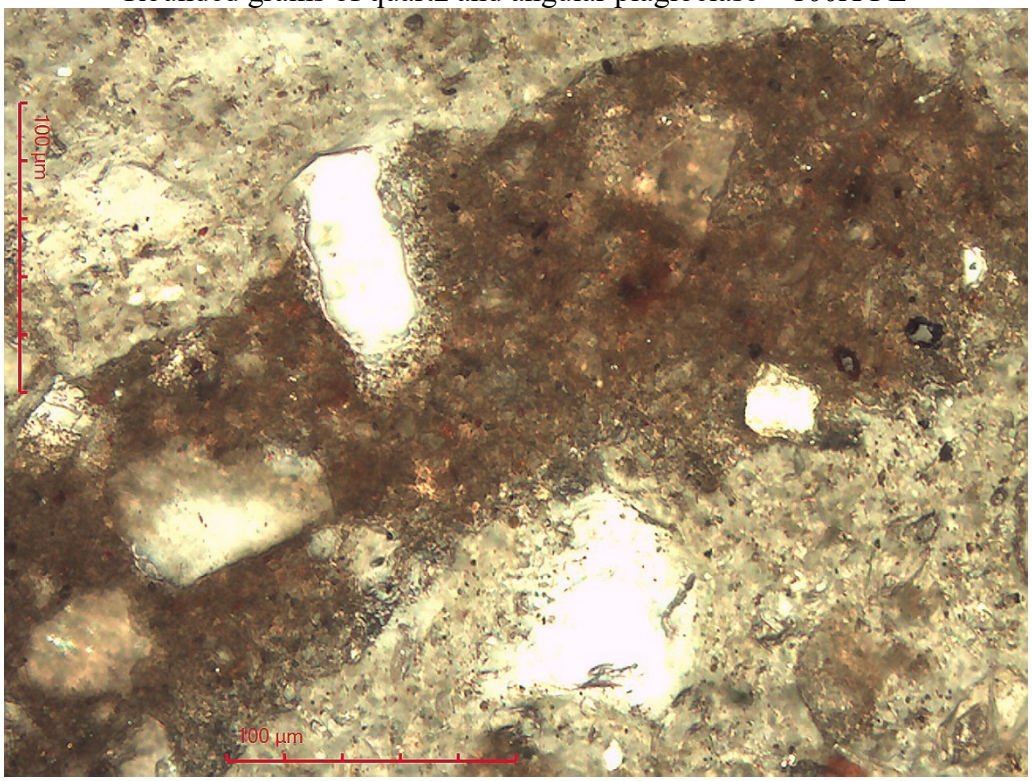
Client Sample No.: **BK1-39-40-052119**
Large fragment of sparry calcite – 100X PL



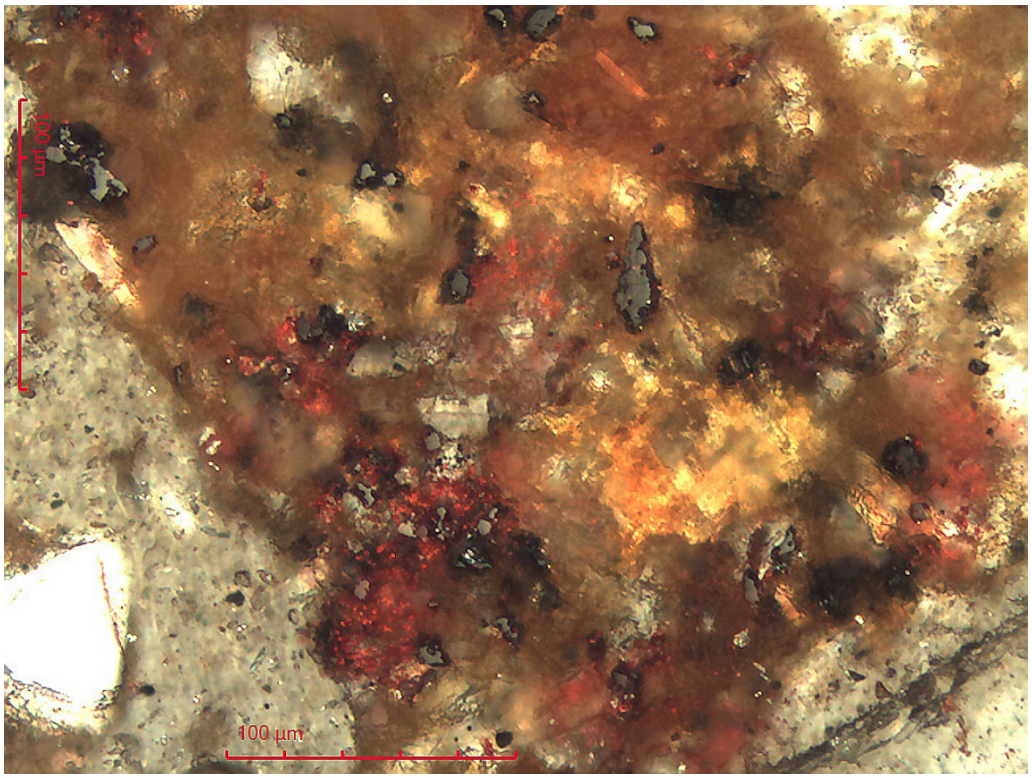
Client Sample No.: **BK1-39-40-052119**
Grains of quartz/feldspar with clay coatings – 100X PL



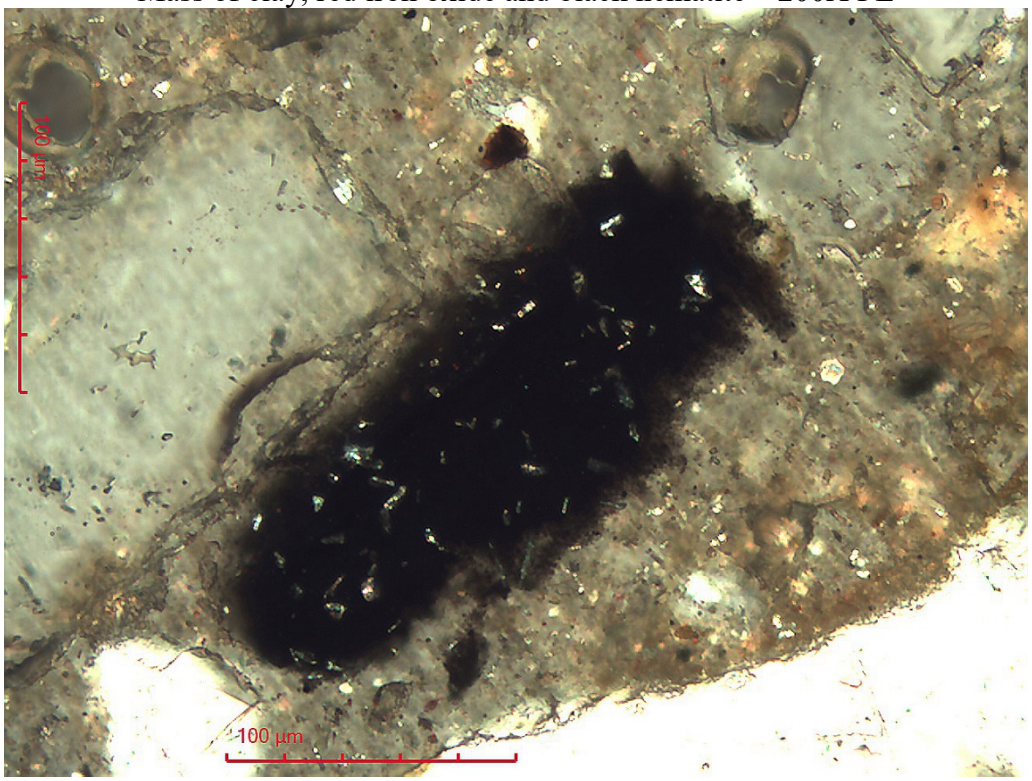
Client Sample No.: **BK1-39-40-052119**
Rounded grains of quartz and angular plagioclase – 100X PL



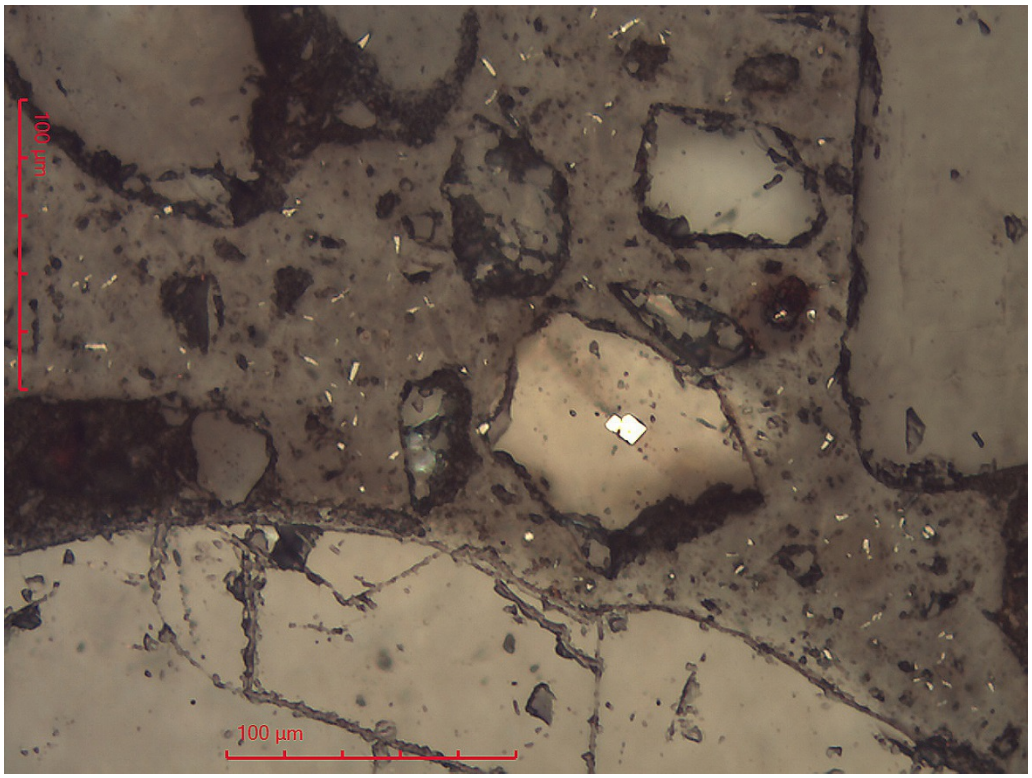
Client Sample No.: **BK1-39-40-052119**
Mass of clay cementing quartz/feldspar – 200X PL



Client Sample No.: **BK1-39-40-052119**
Mass of clay, red iron oxide and black hematite – 200X PL



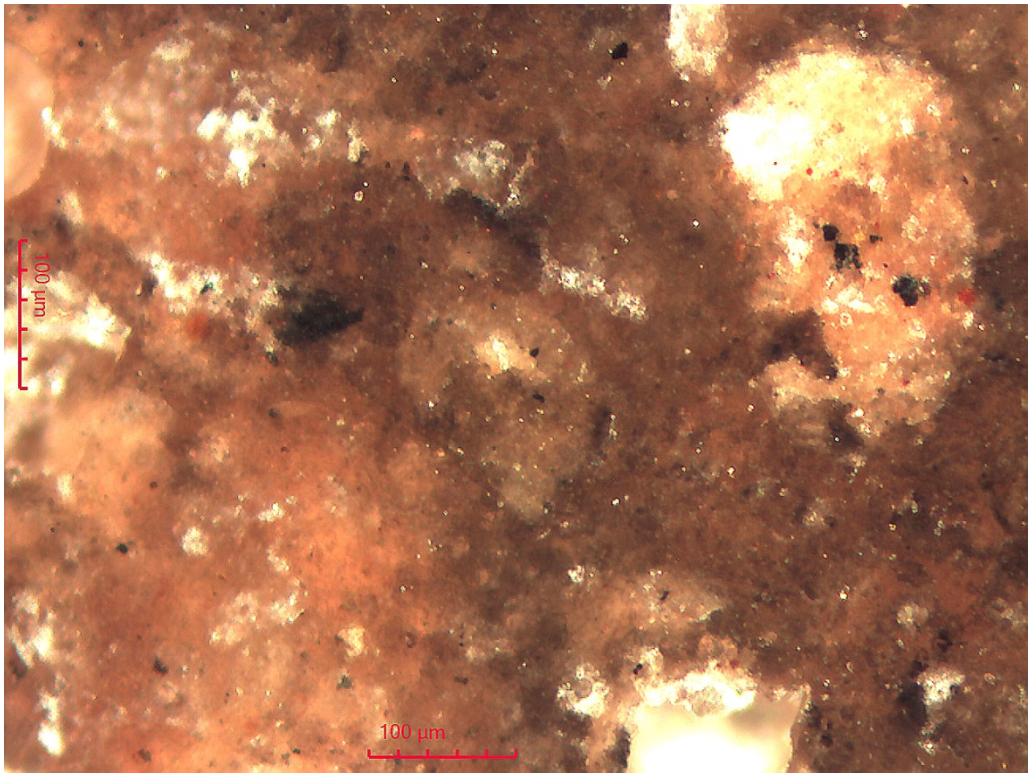
Client Sample No.: **BK1-39-40-052119**
Black carbon with quartz/feldspar – 200X PL



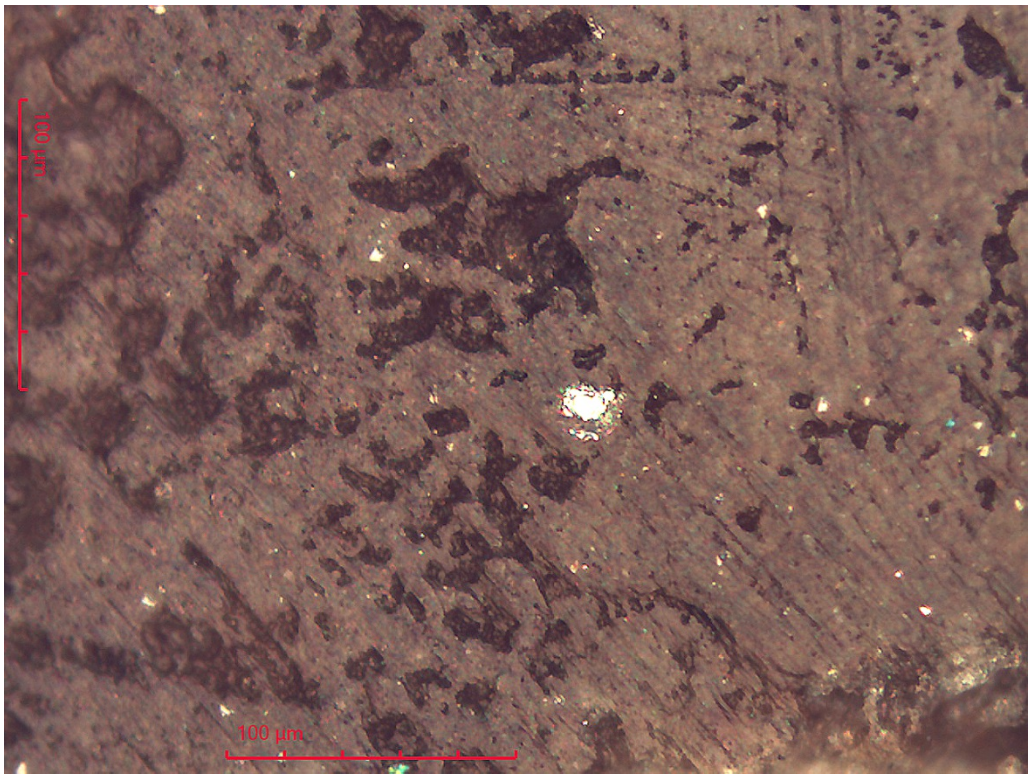
Client Sample No.: **BK1-39-40-052119**
Small cubes of bright pyrite in quartz – 200X PL

Client Sample No.: **BK1-47-48-052119**

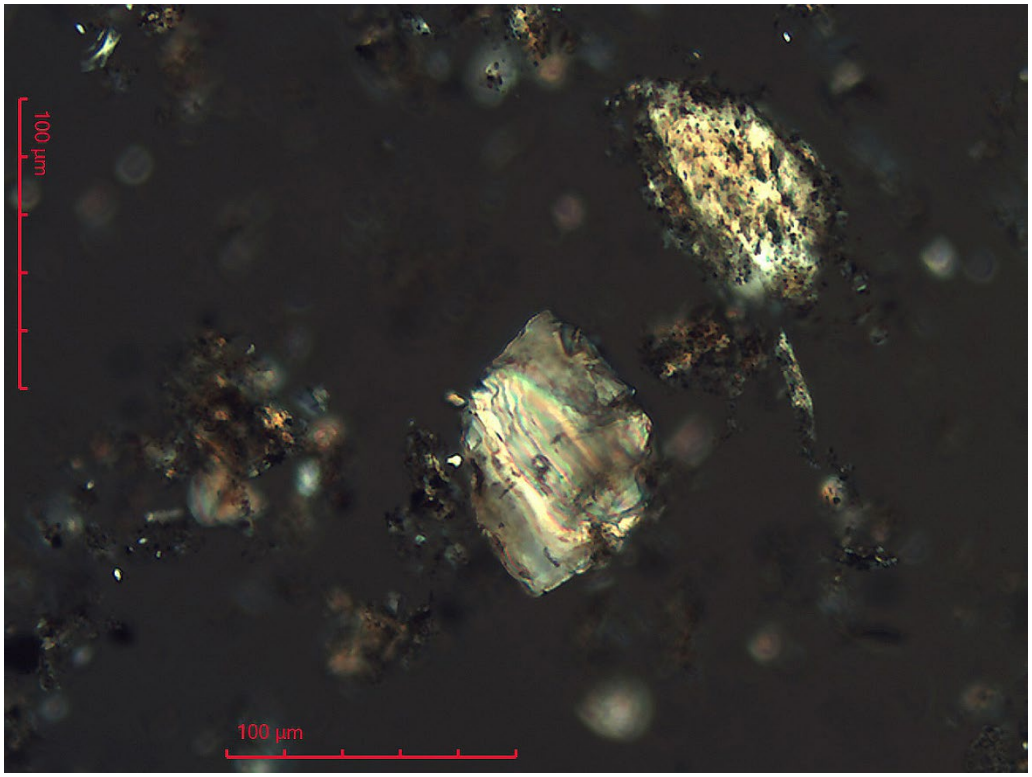
Due to the high clay content a standard thin section could not be prepared, therefore, reflected light microscopy was done on a polished billet and transmitted light microscopy was achieved using grain mounts. This sample is a brown colored, very fine sandy clay with a clay sand ratio of approximately 1:1. Clay predominates slightly and accounts for ~53% of the sample's total mass. XRD indicates the clay is primarily swelling smectite (~31%) and lesser amounts of kaolinite (15%) and illite (8%). The clay carries numerous small 1µm to 5µm grains of opaque carbon and reddish orange iron oxide. Collectively, hard silicates account for approximately 42% of the sample's mass. Quartz (30%) is the main type and occurs as angular to rounded clasts that vary greatly in size from 2µm to maximum of 250µm. Plagioclase and potassium feldspar are present in like amounts. Plagioclase (6%) occurs as angular to sub-angular grains of oligoclase/andesine in the silt to fine sand size ranging from 3µm to 75µm. Although most grains are water clear, some show mild seritization and dissolution. Potassium feldspar (6%) occurs as angular to sub-rounded grains of orthoclase and microcline with a similar size range to the plagioclase. Calcite (5%) is finely disseminated throughout the clay matrix and occurs as small 2µm to 75µm grains. Pyrite is present as a trace and occurs as small 10µm grains in clay.



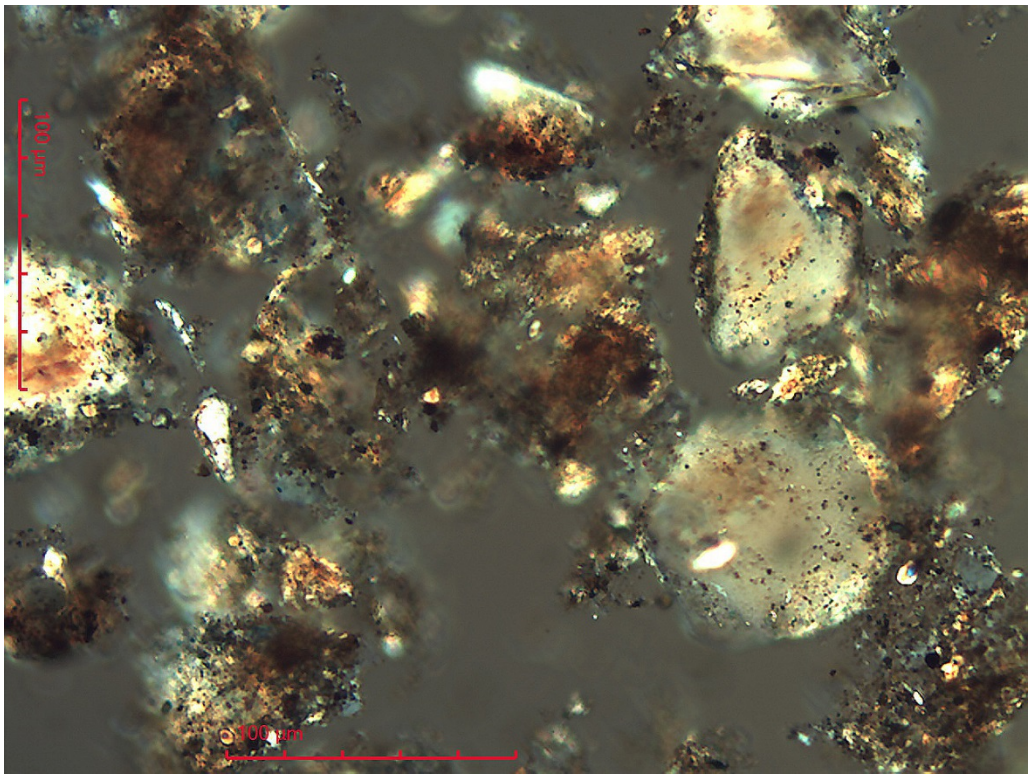
Client Sample No.: **BK1-47-48-052119**
Massive clay with opaque flecks of carbon – 100X RL



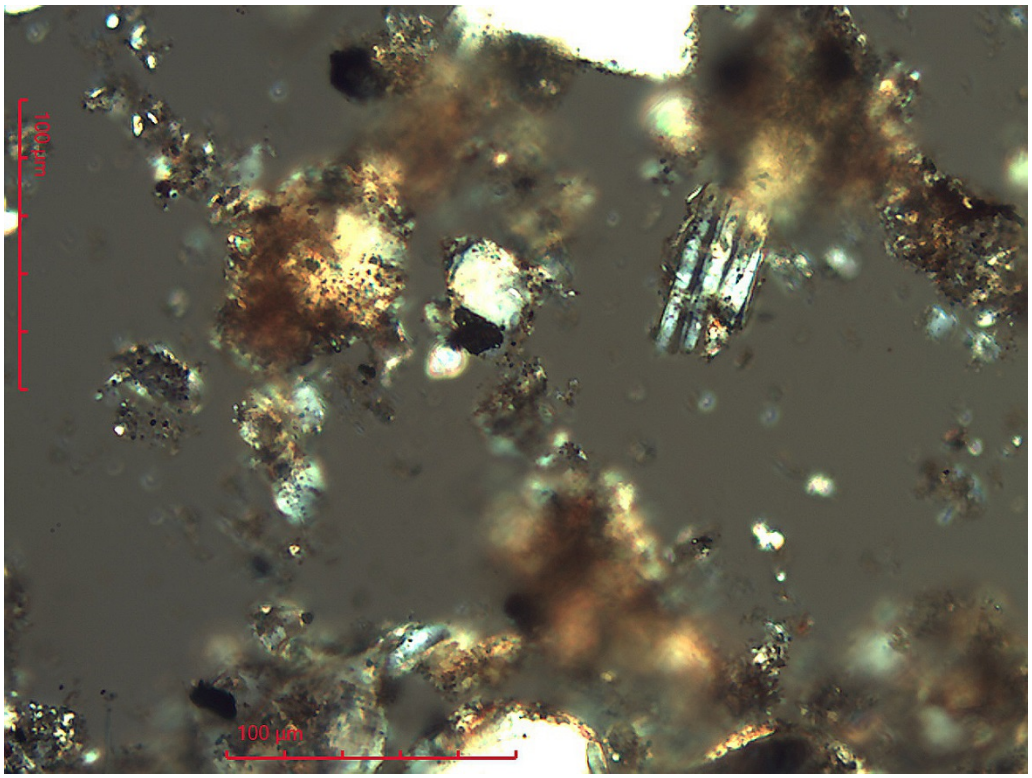
Client Sample No.: **BK1-47-48-052119**
Clay with bright grain of pyrite – 200X PL



Client Sample No.: **BK1-47-48-052119**
Angular grain of K-spar and colorful calcite – 200X PL



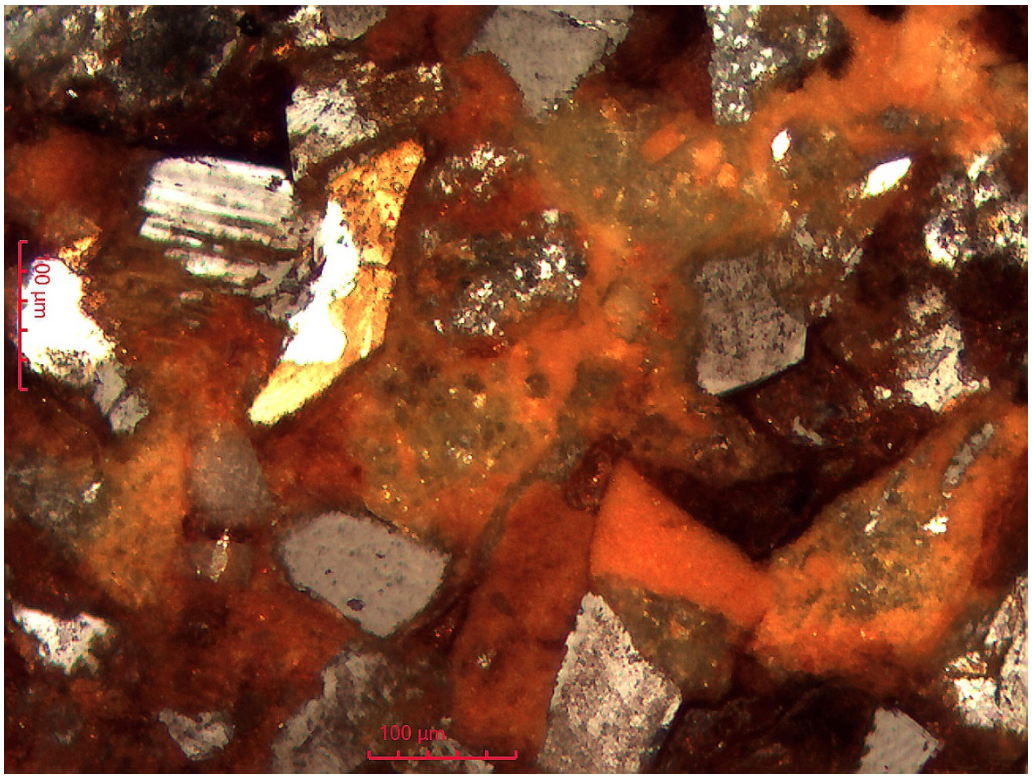
Client Sample No.: **BK1-47-48-052119**
Clay coated fragments of quartz/feldspar – 200X PL



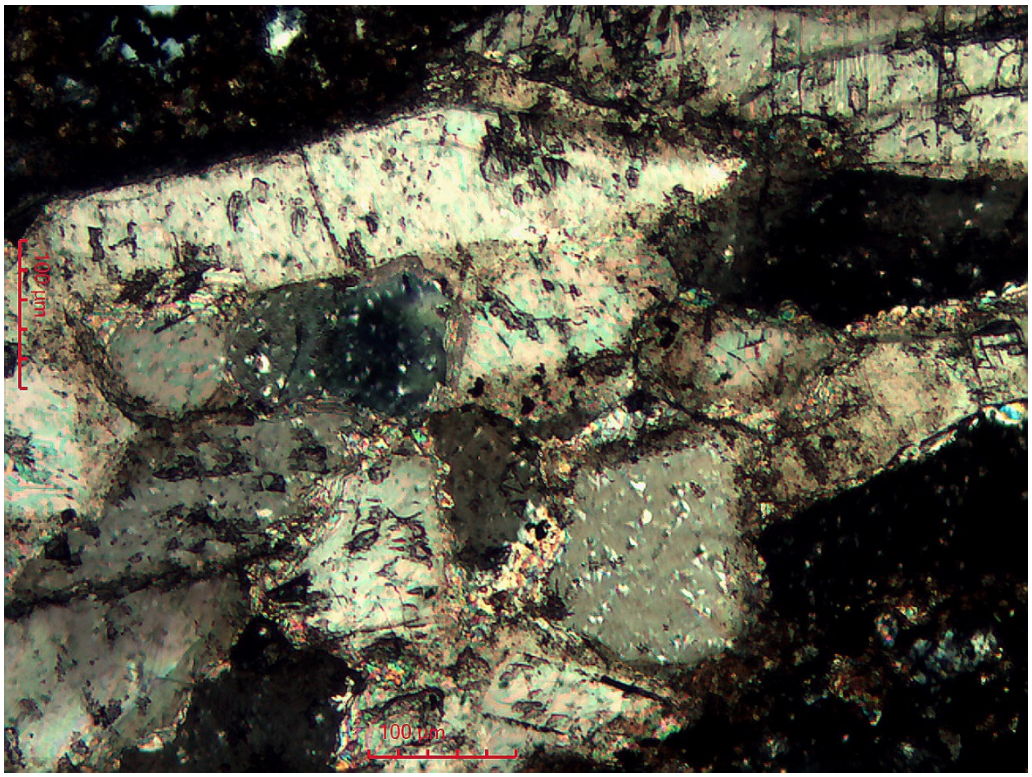
Client Sample No.: **BK1-47-48-052119**
Clay coated fragments of quartz/feldspar – 200X PL

Client Sample No.: **BK1-51-52-052119**

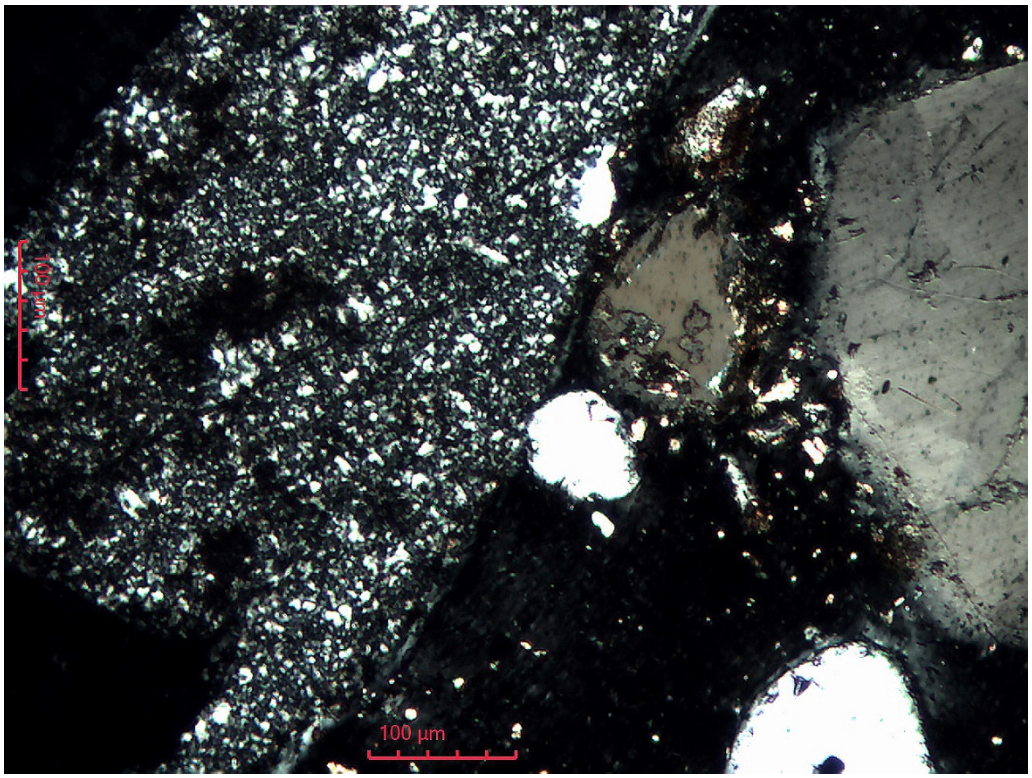
This sediment a brown colored, coarse to very coarse gravelly sand that contains igneous lithic fragments >1cm in size and quartz/felspar sandstone consolidated by clay, iron oxide and calcite. Quartz (53%) is the primary hard silicate and occurs as angular fragments and very well rounded grains that vary significantly in size from 2µm to over 1mm. Quartz is also present as anhedral grains in granitic rock fragments and as chert with a microcrystalline texture. Tuff fragments showing moderate to strong quartz replacement and devitrification are also present. Plagioclase and potassium feldspar are present in like amounts. K-spar (9%) occurs as angular to rounded grains of orthoclase and grid twinned microcline that vary in size from 2µm to over 1mm. K-spar is also a major component of granitic rock fragments where it is associated with biotite mica. Plagioclase (8%) generally occurs as liberated angular to rounded grains of oligoclase/andesine with a similar grain size to the K-spar. The majority of grains show little in the way of alteration. Labradorite is also present and is confined to basalt fragments contained in the sample. The labradorite occurs as small, lath shaped microlites associated with moderate to strongly altered olivine, pyroxene and hematite replaced magnetite. Calcite (16%) occurs as small fragments and large rounded aggregates several millimeters in size. Individual calcite grains range from 5µm up to 500µm. It is not unusual to see aggregates of quartz/feldspar cemented by secondary carbonate. Clay mineralogy is detectable by XRD. Kaolinite (6%) is the primary type with lesser amounts of illite/smectite at around 3-5%. In thin section the clays are seen as brown colored aggregates and patches that contain numerous inclusions of opaque carbon (<1%) and reddish orange goethite/hematite (2%). Clay and iron oxide are commonly seen cementing clasts of fine grained quartz/feldspar. Pyrite is present as a trace and is generally seen as small inclusions in chert, quartz and carbonate with a grain size up to 10µm. A small population of pyrite shows complete replacement by goethite. Small grains of zircon and honey colored rutile are present as a trace.



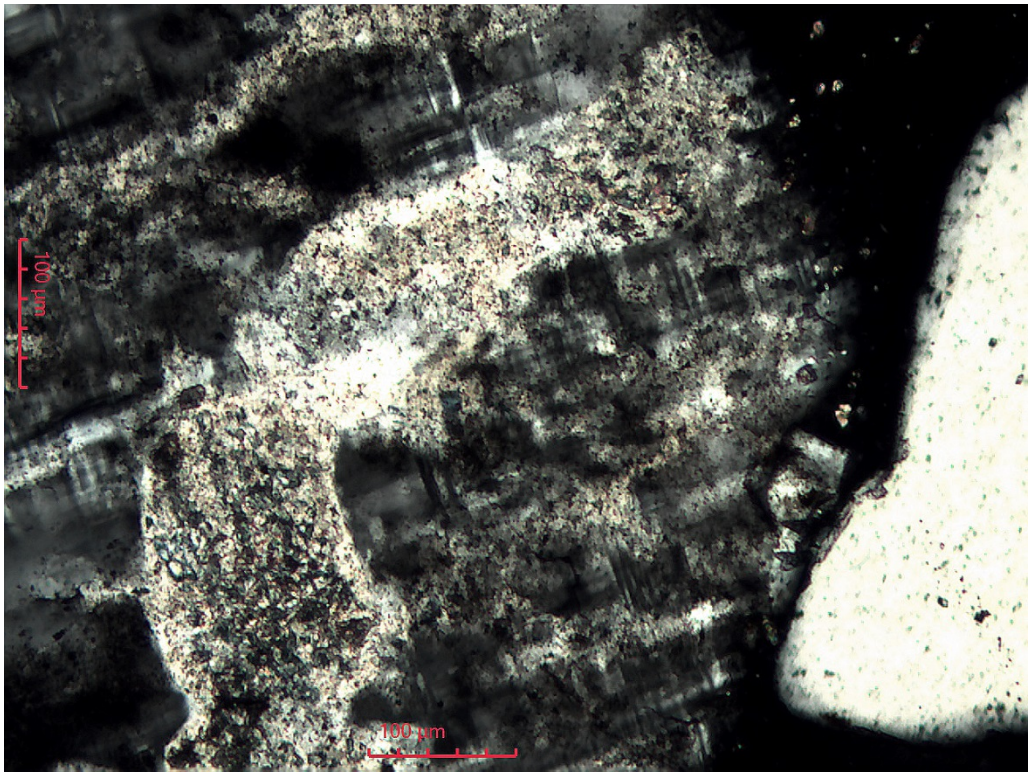
Client Sample No.: **BK1-51-52-052119**
Clay and iron oxide cementing quartz/feldspar – 100X RL



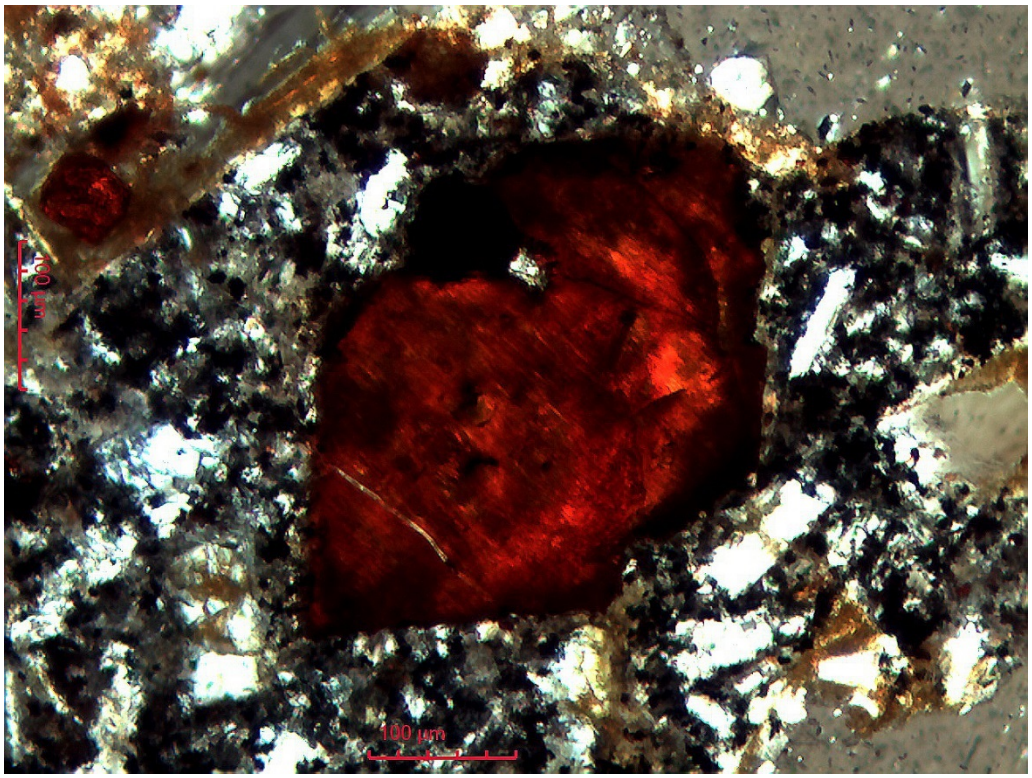
Client Sample No.: **BK1-51-52-052119**
Aggregate of coarse sparry calcite – 100X PL



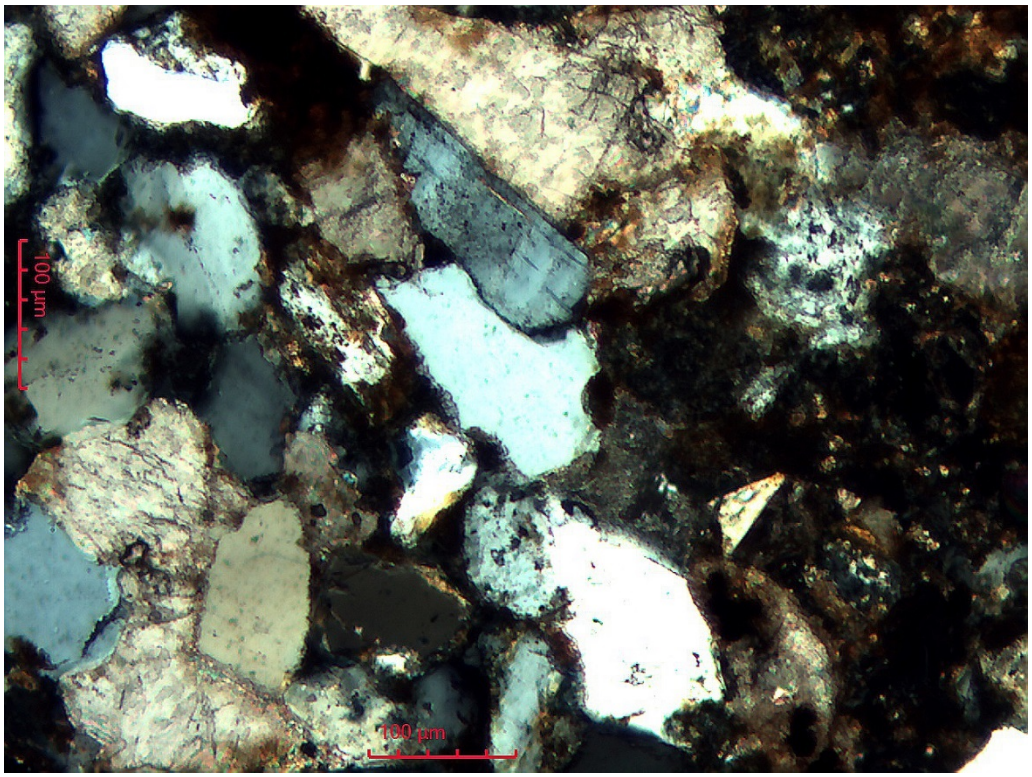
Client Sample No.: **BK1-51-52-052119**
Microcrystalline chert and rounded quartz – 100X PL



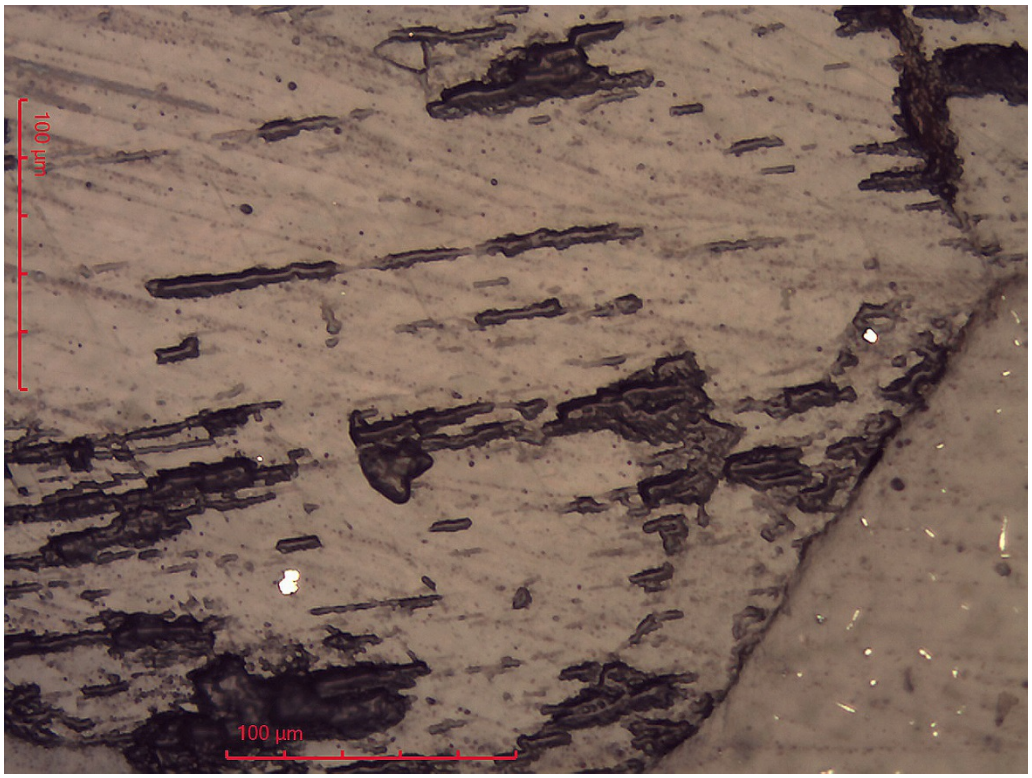
Client Sample No.: **BK1-51-52-052119**
Large grain of perthitic microcline and quartz – 100X PL



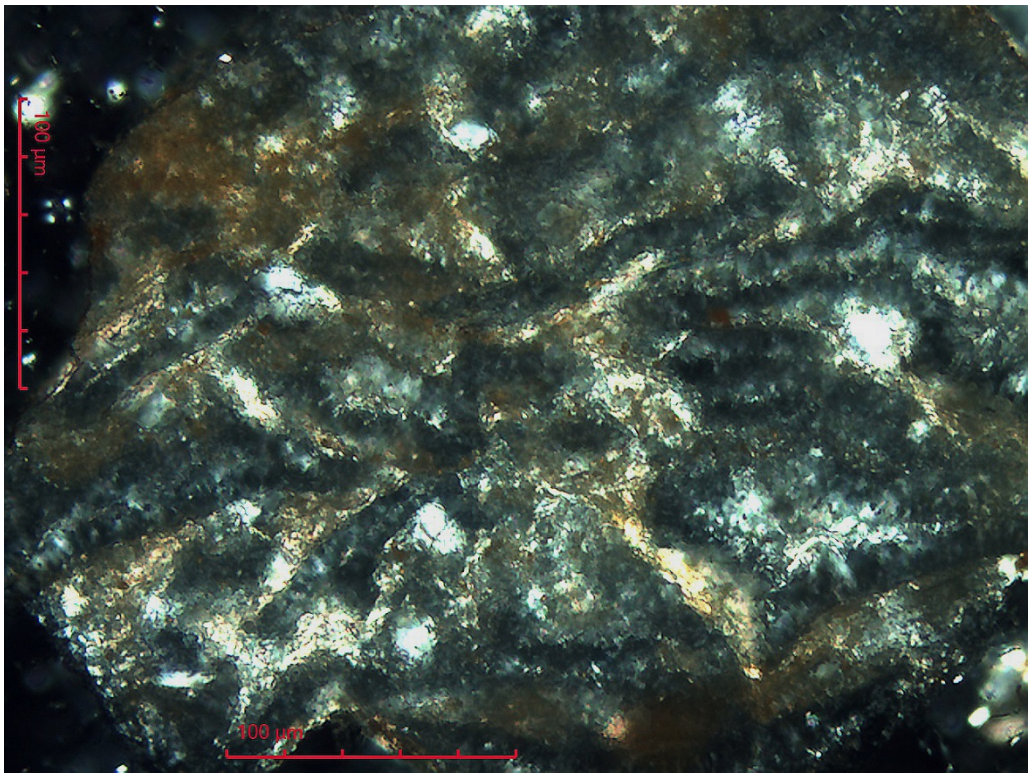
Client Sample No.: **BK1-51-52-052119**
Basalt fragment with lath shaped labradorite and iddingsite altered olivine – 100X PL



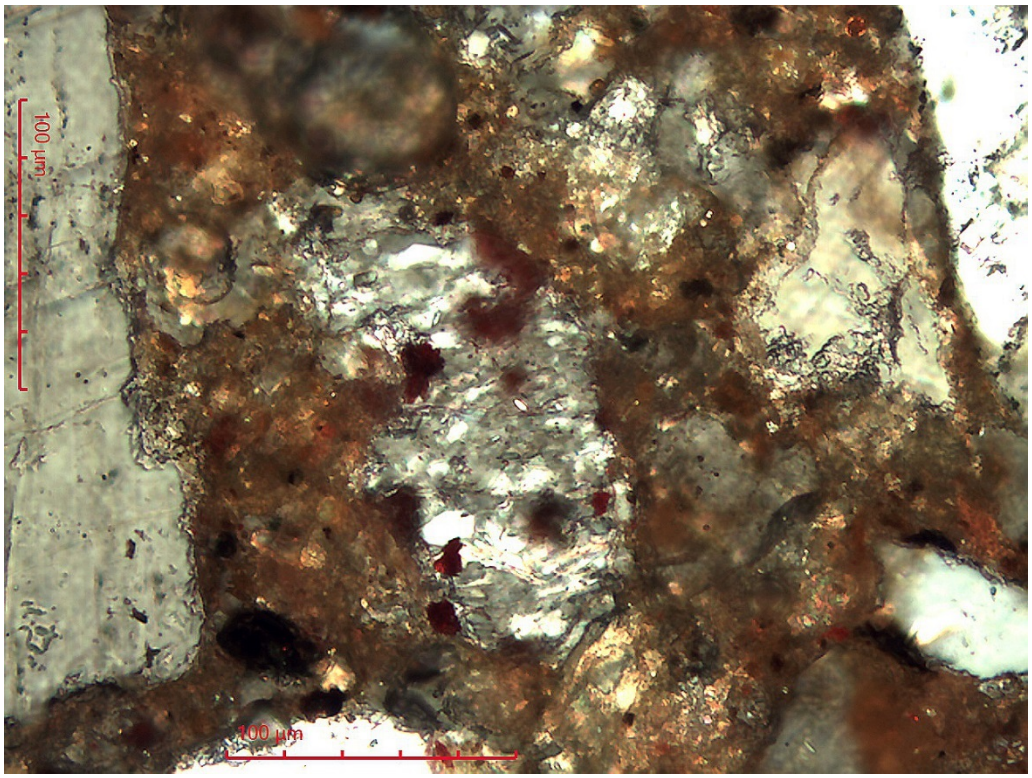
Client Sample No.: **BK1-51-52-052119**
Fragment of calcite cemented arkose – 100X PL



Client Sample No.: **BK1-51-52-052119**
Bright pyrite grains in calcite – 200X RL



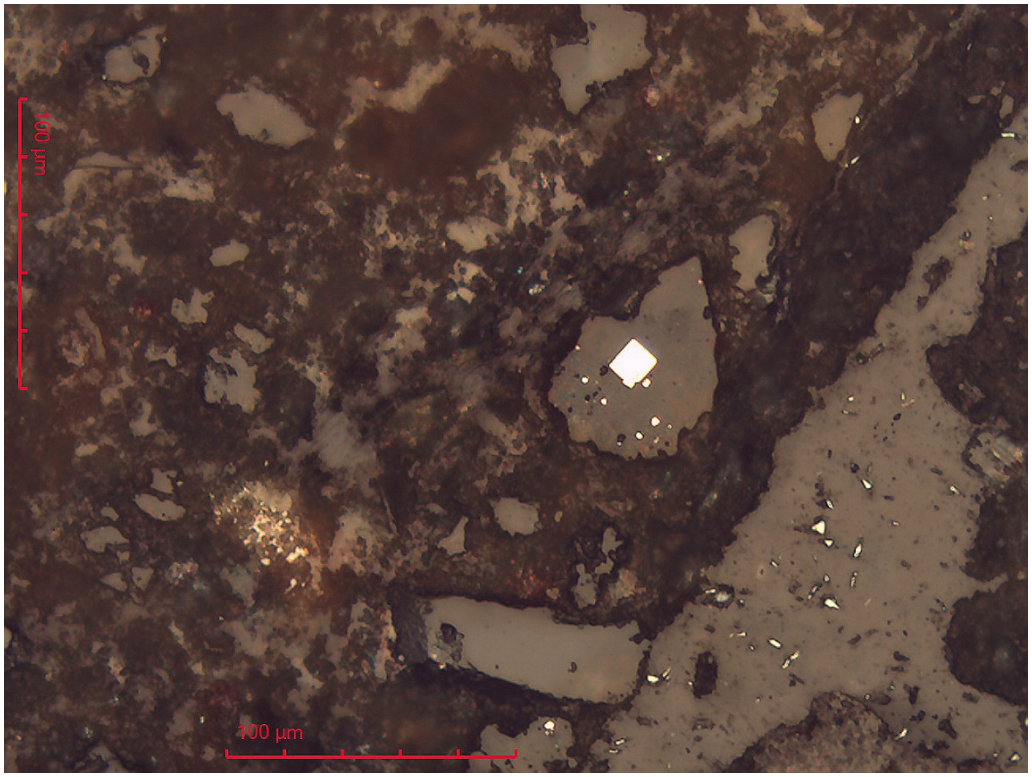
Client Sample No.: **BK1-51-52-052119**
Devitrified fragment of tuff – 200X PL



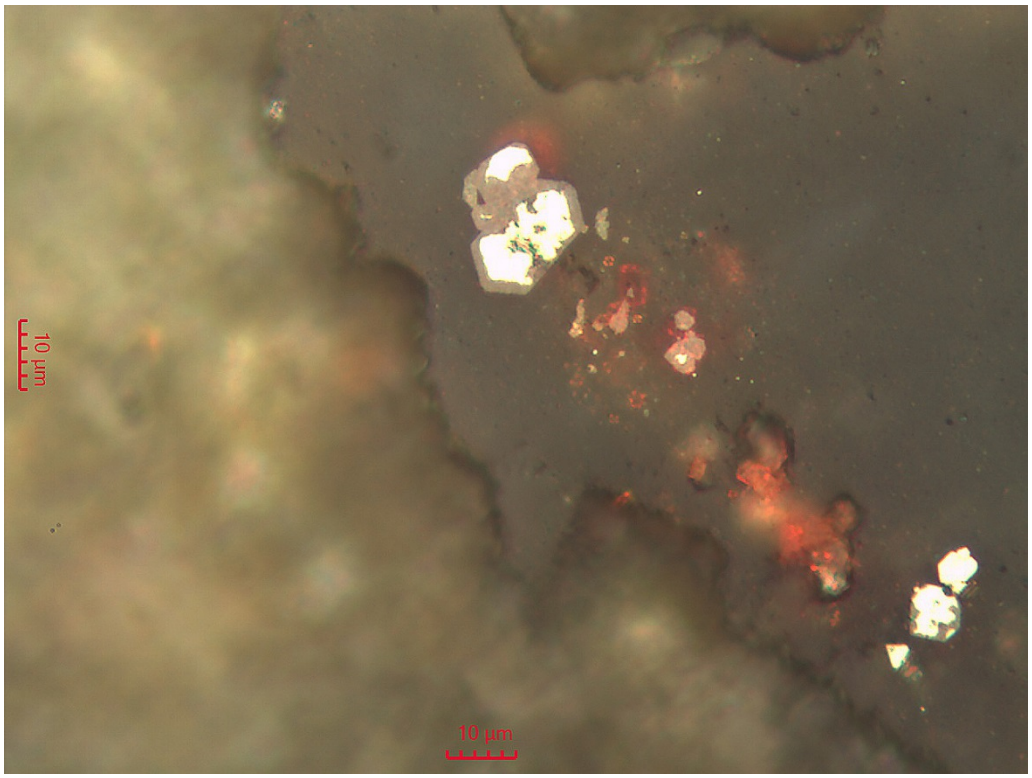
Client Sample No.: **BK1-51-52-052119**
Clay cemented quartz/feldspar – 200X PL

Client Sample No.: **BK1-52-53-052119**

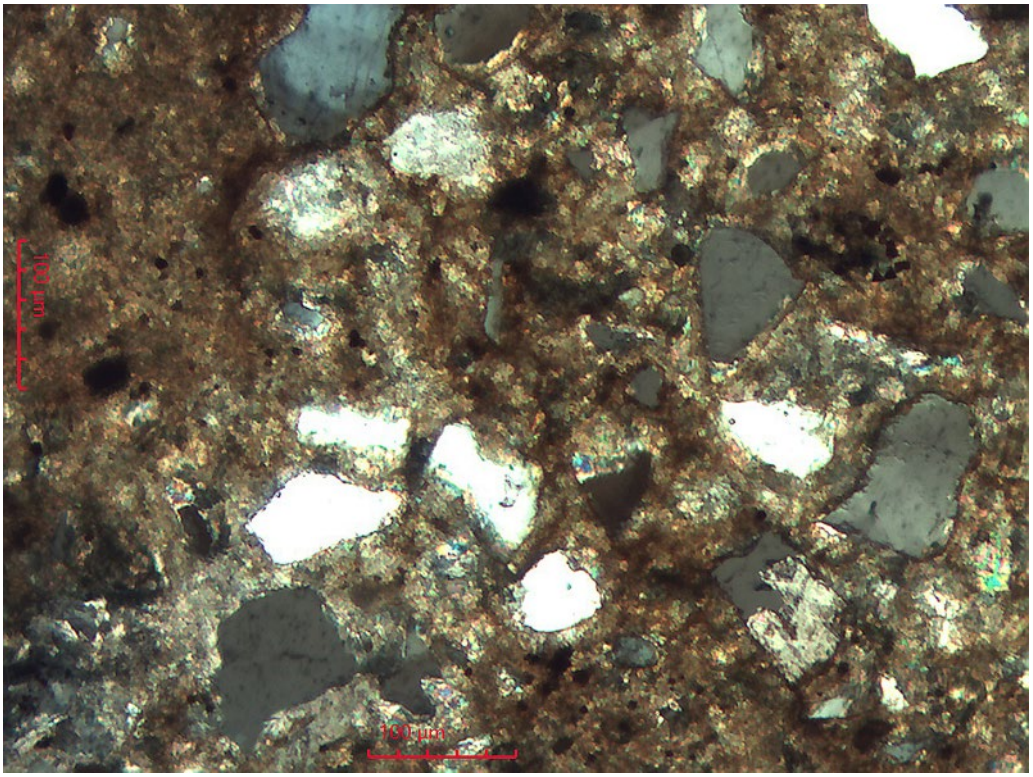
This sample is a tan colored, fine to very coarse sandy clay with approximately 2-3% rounded gravel. Total clay accounts for around 37% of the sediment's mass. XRD indicates swelling smectite (20%) is the primary type with lesser concentrations of kaolinite (12%) and illite (5%). The majority of the clay occurs as thick, brown colored mats intermixed with iron oxide, fine grained calcite and small flecks of opaque carbon. The clay commonly coats silica clasts and cements aggregates of quartz/feldspar. In one area of the section, a small aggregate of quartz/feldspar is cemented by white vermicular kaolinite. Discrete calcite (7%) occurs as fine grained aggregates with individual grains measuring up to 20µm. Goethite/hematite (3%) occurs as small rosettes and large masses that cement silicates. Collectively, hard silicates account for greater than 50% of the total sample with quartz (40%) as the primary type. Quartz occurs as angular to well rounded clasts that vary from 5µm to over 1.5mm. Quartz in the form of well rounded grains of microcrystalline chert and fibrous chalcedony is present in low amounts. Plagioclase and potassium feldspar are present in similar amounts. K-spar (7%) occurs as angular to sub-rounded grains of orthoclase and grid twinned microcline. Individual clasts vary greatly in size from 2µm up to 1mm. Plagioclase (6%) occurs as angular to sub-rounded grains of oligoclase/andesine up to 1.5mm in size. Although some of the plagioclase shows some minor weathering, the feldspars are generally unaltered and water clear. Pyrite is present as a trace and occurs as small cubes included in quartz with a grain size of 1µm to approximately 10µm. Some of the pyrite shows minor to moderate goethite replacement. Other trace minerals include zircon, rutile and a few grains of hematite altered magnetite.



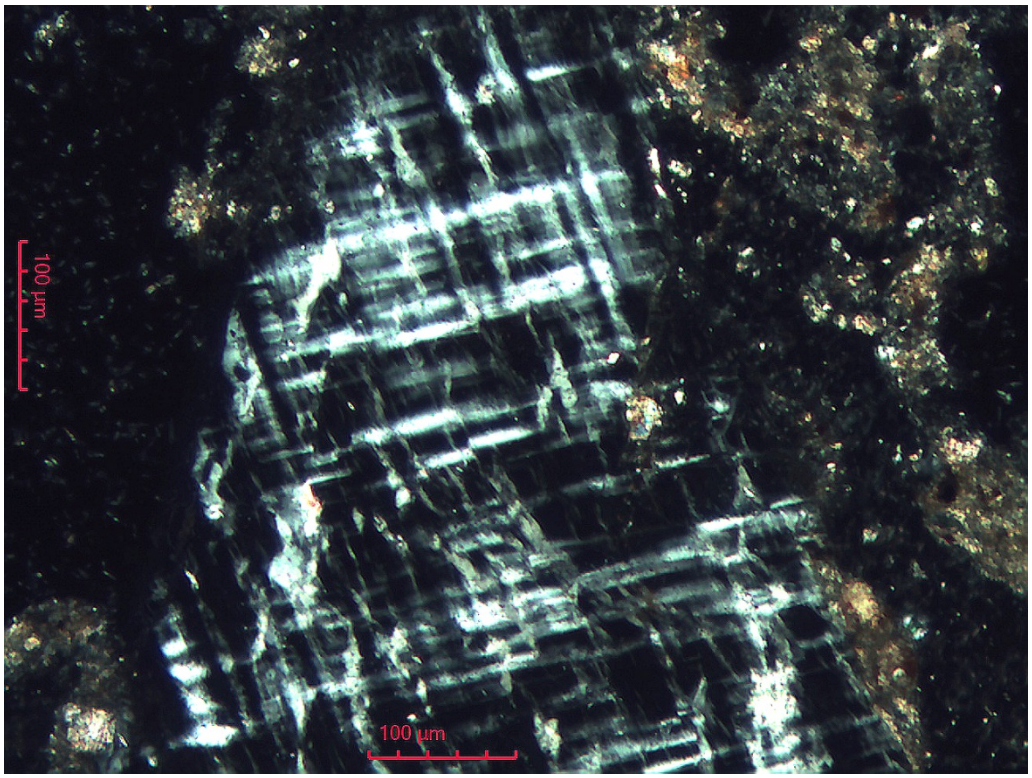
Client Sample No.: **BK1-52-53-052119**
Small cubes of pyrite included in quartz – 200X RL



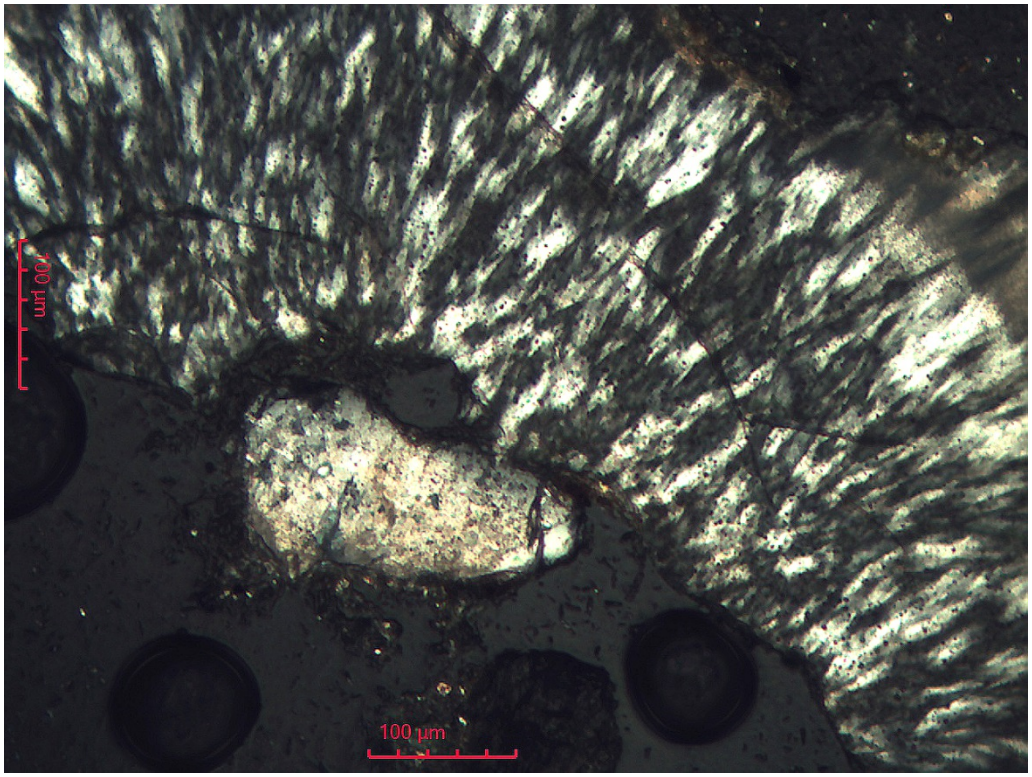
Client Sample No.: **BK1-52-53-052119**
Pyrite in quartz showing partial to complete replacement by goethite – 500X RL



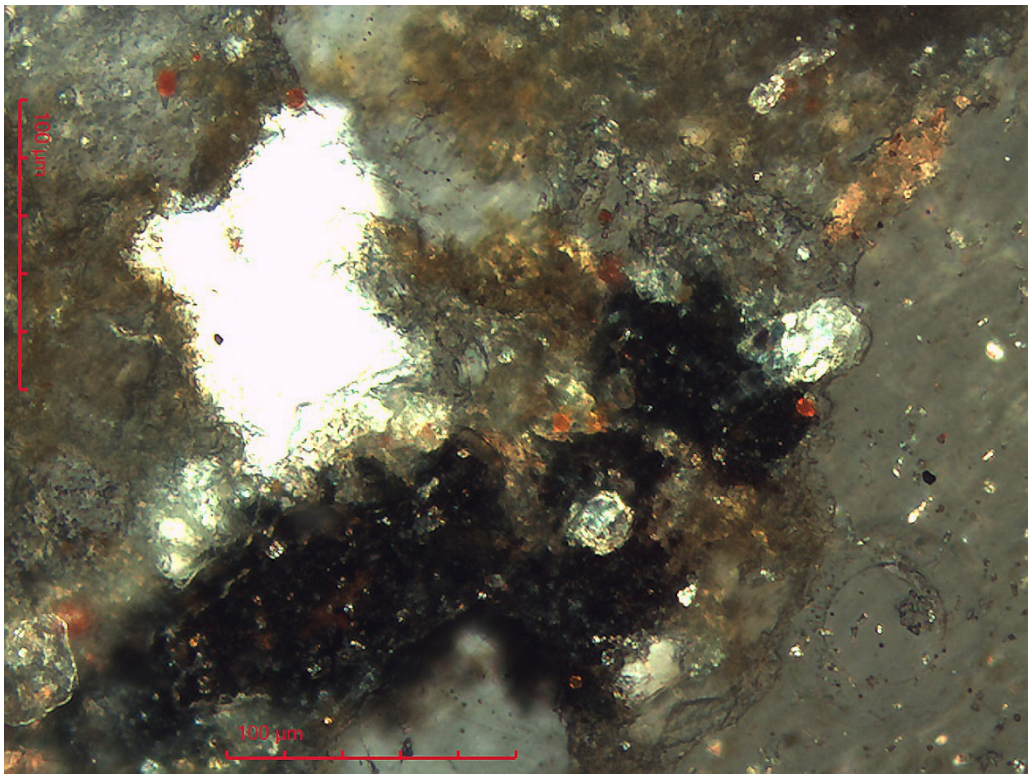
Client Sample No.: **BK1-52-53-052119**
Calcite cemented quartz/feldspar – 100X PL



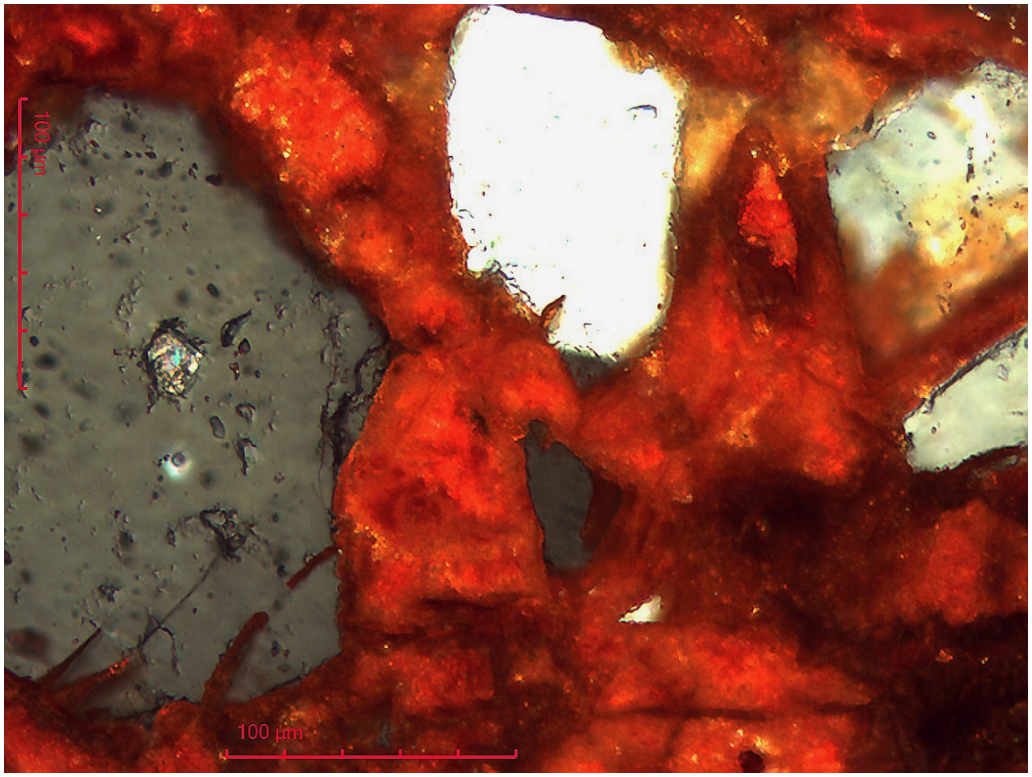
Client Sample No.: **BK1-52-53-052119**
Large fragment of microcline with brown clay – 100X PL



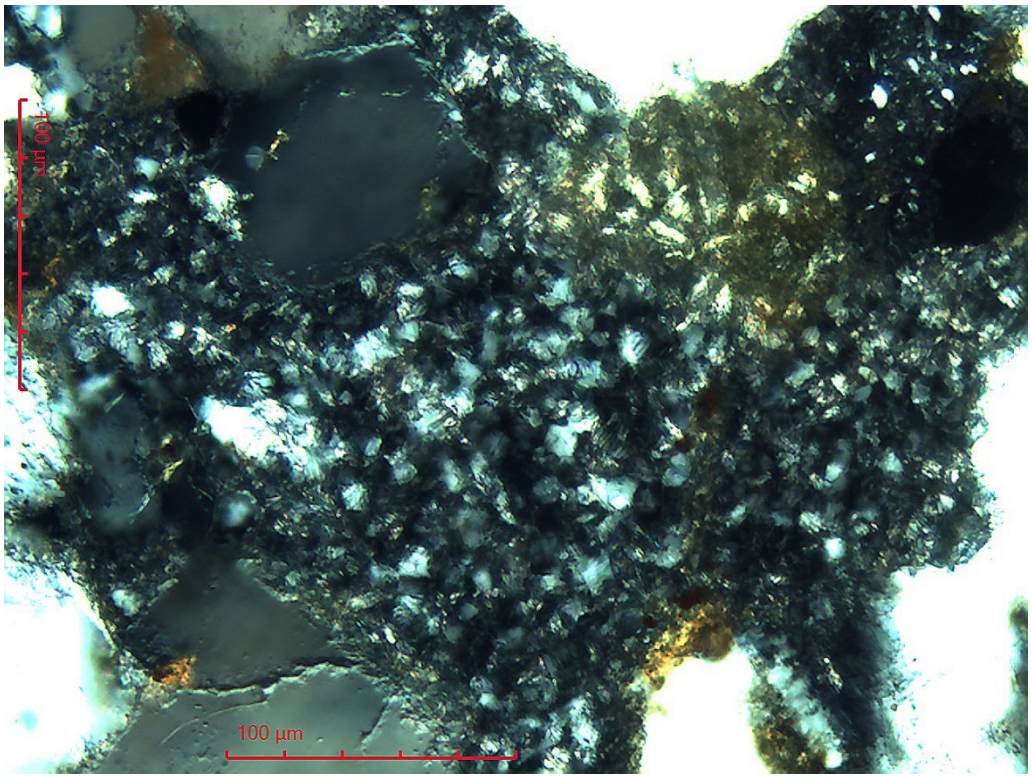
Client Sample No.: **BK1-52-53-052119**
Fragment of fibrous looking chalcedony – 100X PL



Client Sample No.: **BK1-52-53-052119**
Large mass of carbon with clay and white quartz – 200X PL



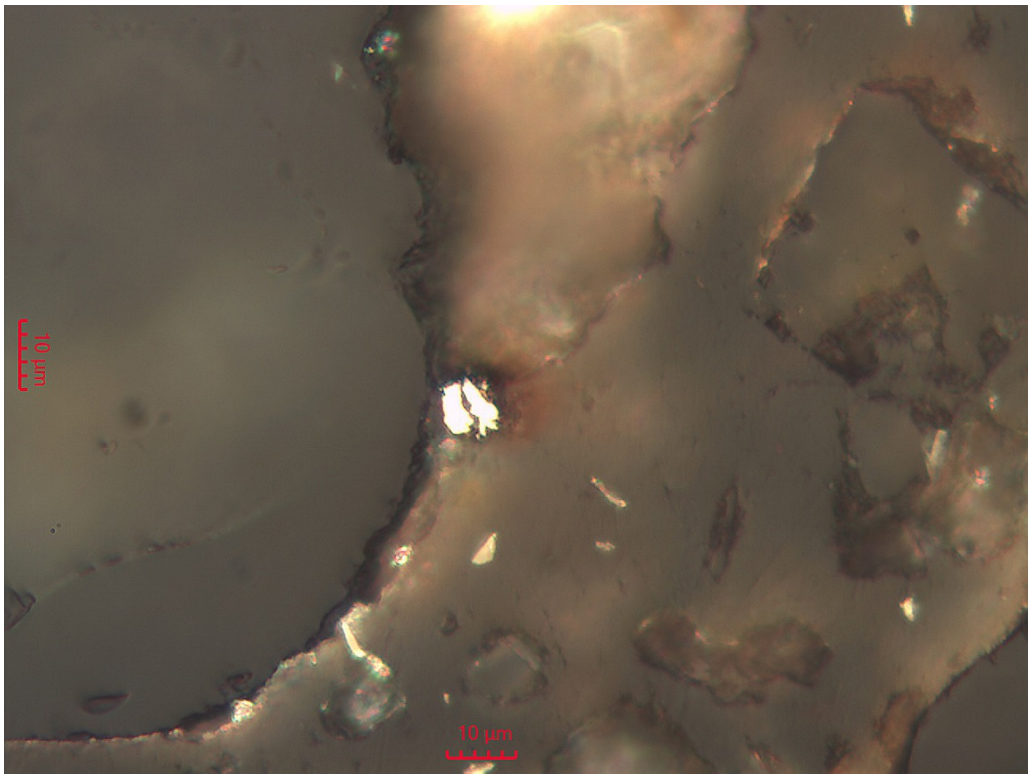
Client Sample No.: **BK1-52-53-052119**
Iron oxide cementing quartz fragments – 200X RL



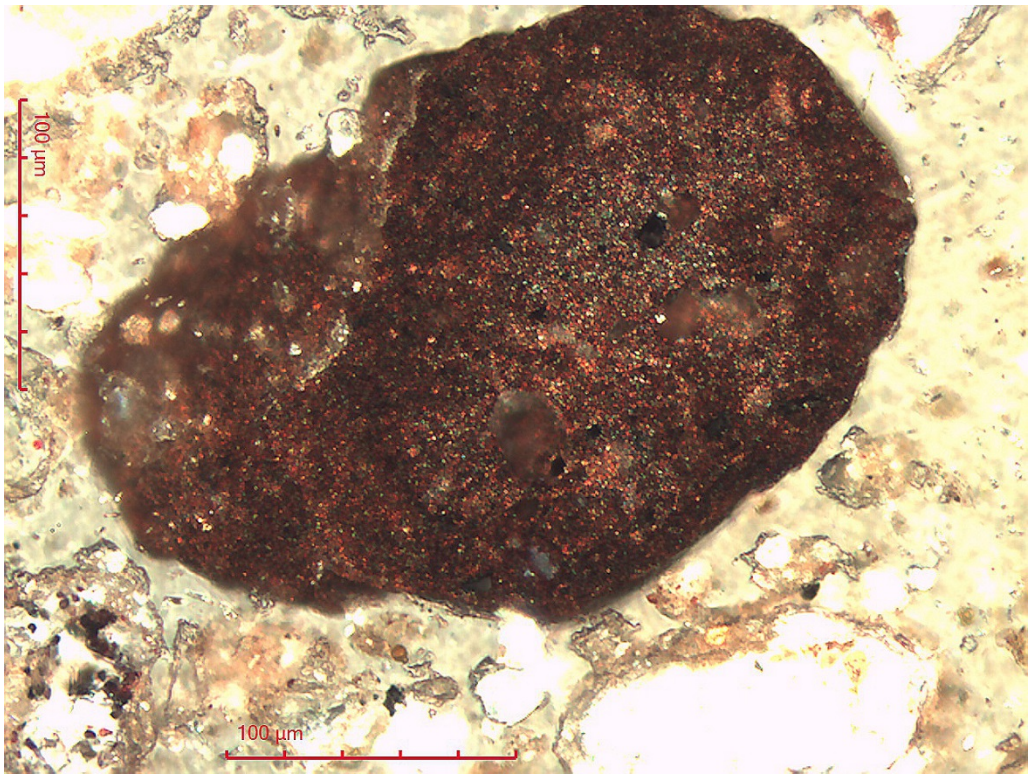
Client Sample No.: **BK1-52-53-052119**
Interstitial pocket of vermicular kaolinite between quartz/feldspar – 200X PL

Client Sample No.: **BK1-55.5-56.5-052219**

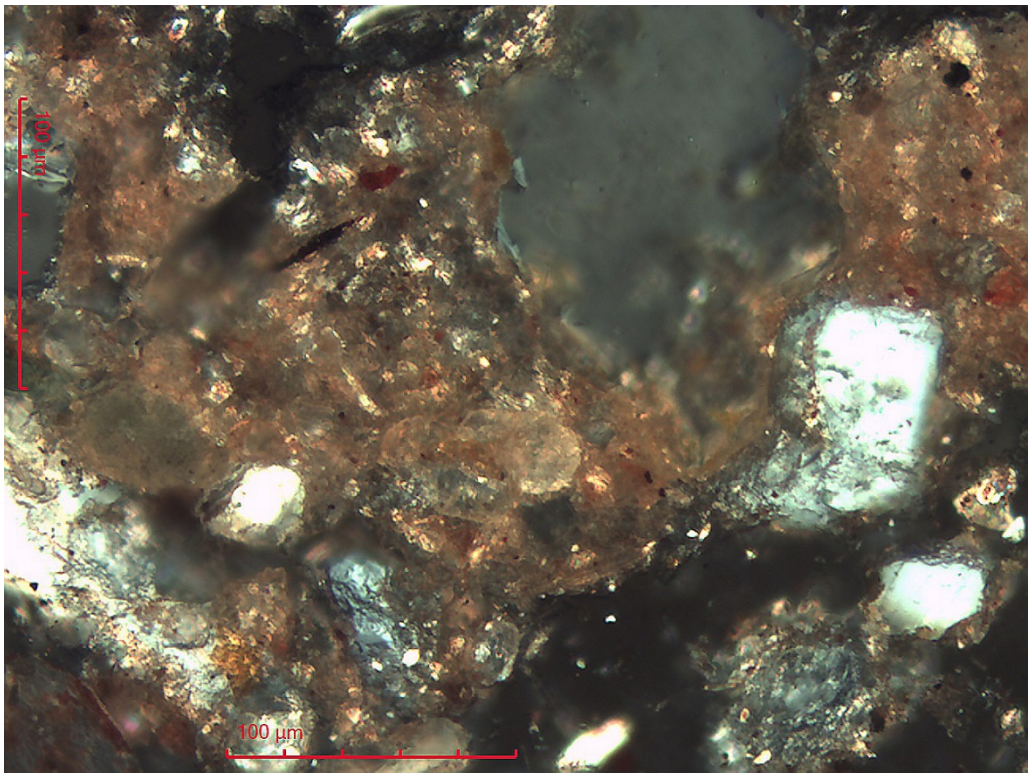
This sediment is a reddish brown colored clayey, fine grained sandy silt. Although the hand sample appears to be primarily clay, XRD analysis estimates a clay content of approximately 22% of the total sample. The primary clay type is swelling smectite (13%) followed by illite (5%) and kaolinite (4%). The clay is brown in color and occurs as thin rinds on silicates and as a weak cement that consolidates aggregates of quartz/feldspar. The clay carries small flecks and strings of opaque carbon. The sample is mostly composed of silt and fine grained sand sized hard silicates. Quartz (51%) occurs as very angular silt to well rounded sand with a grain size of 2µm to 125µm. A few small grains of chert and chalcedony are also present. Plagioclase (8%) is the dominant feldspar and occurs as angular fragments of oligoclase/andesine with a grain size of 2µm up to ~75µm. Although most grains are water clear, a small population shows mild seritization. K-spar (6%) occurs as small angular fragments of cloudy orthoclase and clear grid twinned microcline with measurements up to 75µm. Calcite (7%) and lesser dolomite (3%) are both present. Calcite tends to occur as fine grained aggregates with an individual grain size of 2µm to 80µm. Dolomite occurs as small, rhomb shaped grains intermixed with clay that measure up to 25µm. Goethite/hematite is present in low amounts and occur as small bright red rosettes, thin streaks in clay and as large masses up to 200µm. Trace minerals include zircon, ribbons of muscovite, honey colored rutile and hematite altered magnetite.



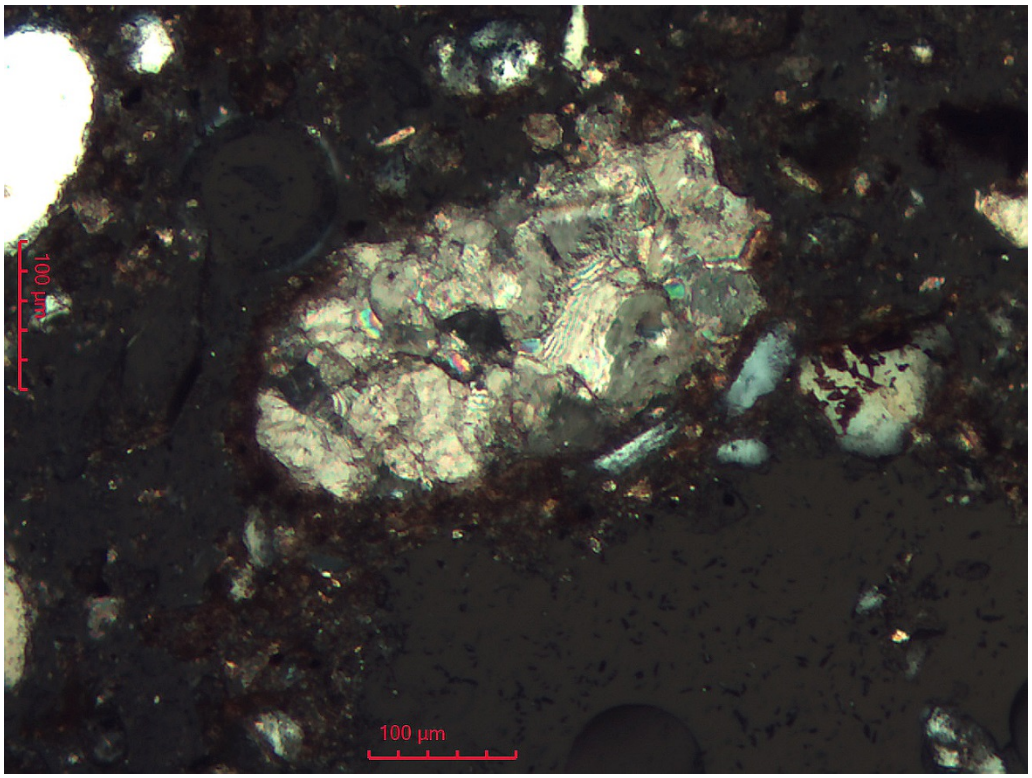
Client Sample No.: **BK1-55.5-56.5-052219**
Bright pyrite attached to quartz showing minor iron oxide alteration – 500XRL



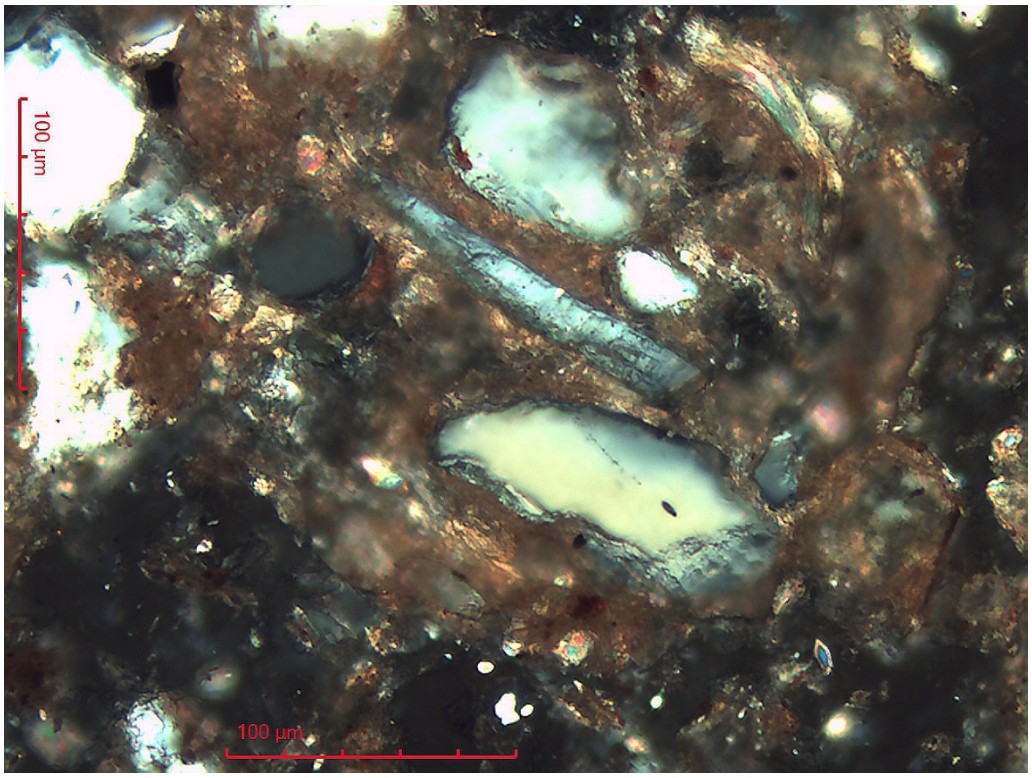
Client Sample No.: **BK1-55.5-56.5-052219**
Large mass of iron oxide – 200X RL



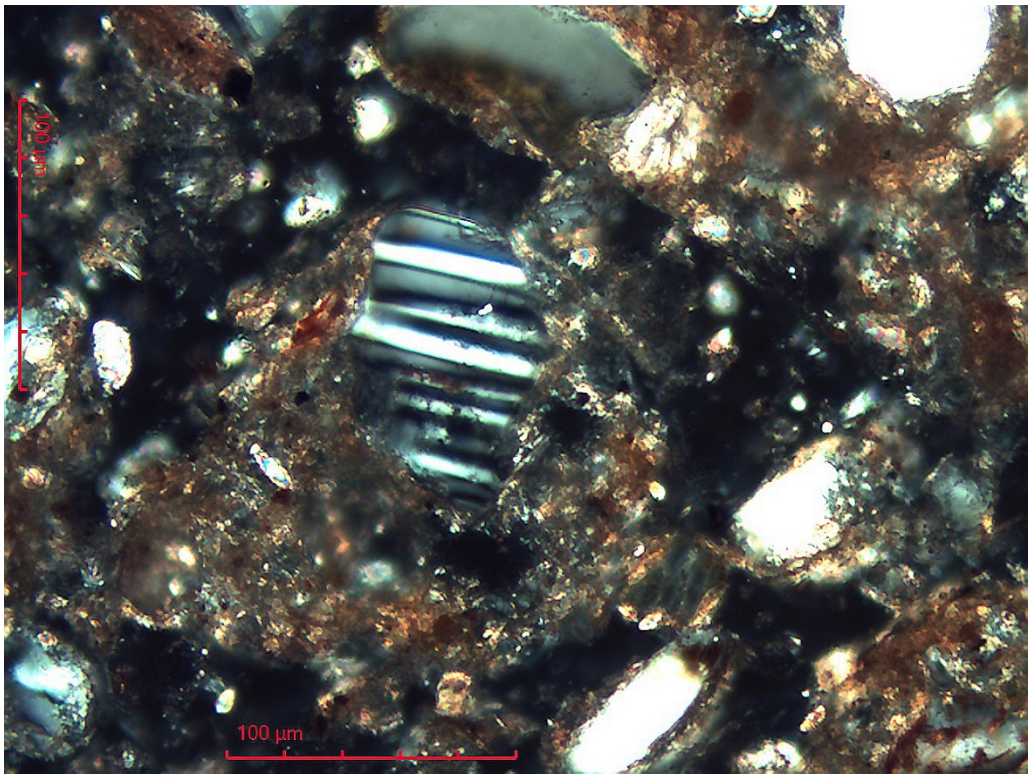
Client Sample No.: **BK1-55.5-56.5-052219**
Clay cemented aggregate of quartz/feldspar – 200X PL



Client Sample No.: **BK1-55.5-56.5-052219**
Aggregate of coarse calcite – 100X PL



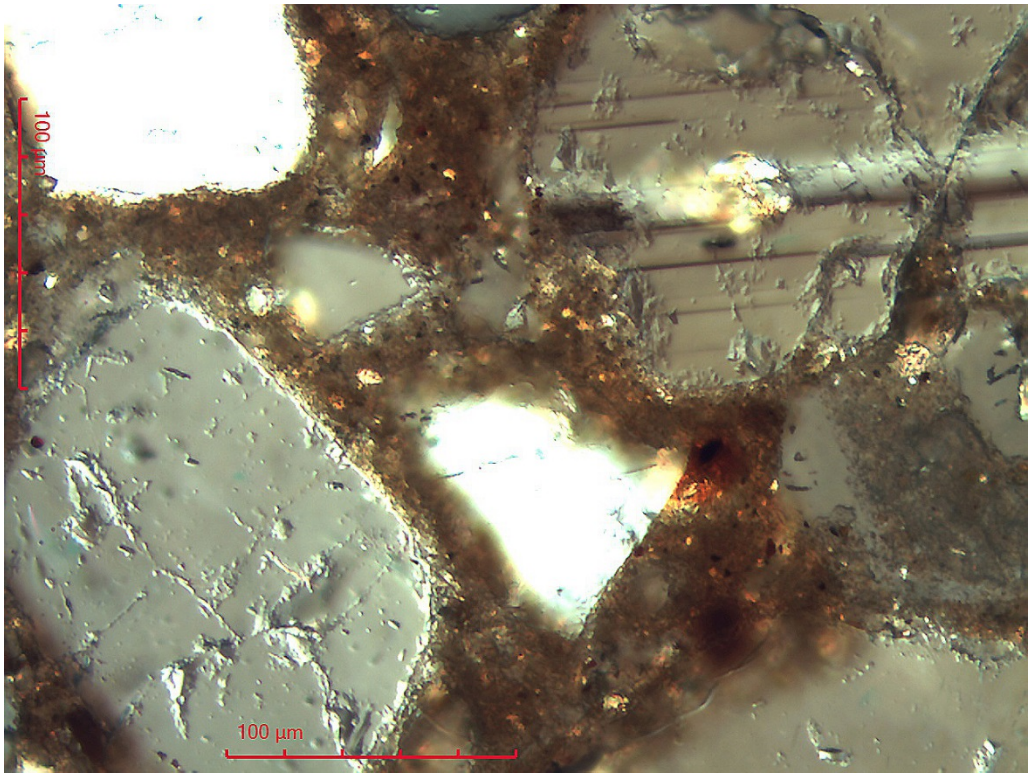
Client Sample No.: **BK1-55.5-56.5-052219**
Quartz/feldspar aggregate cemented by clay – 200X PL



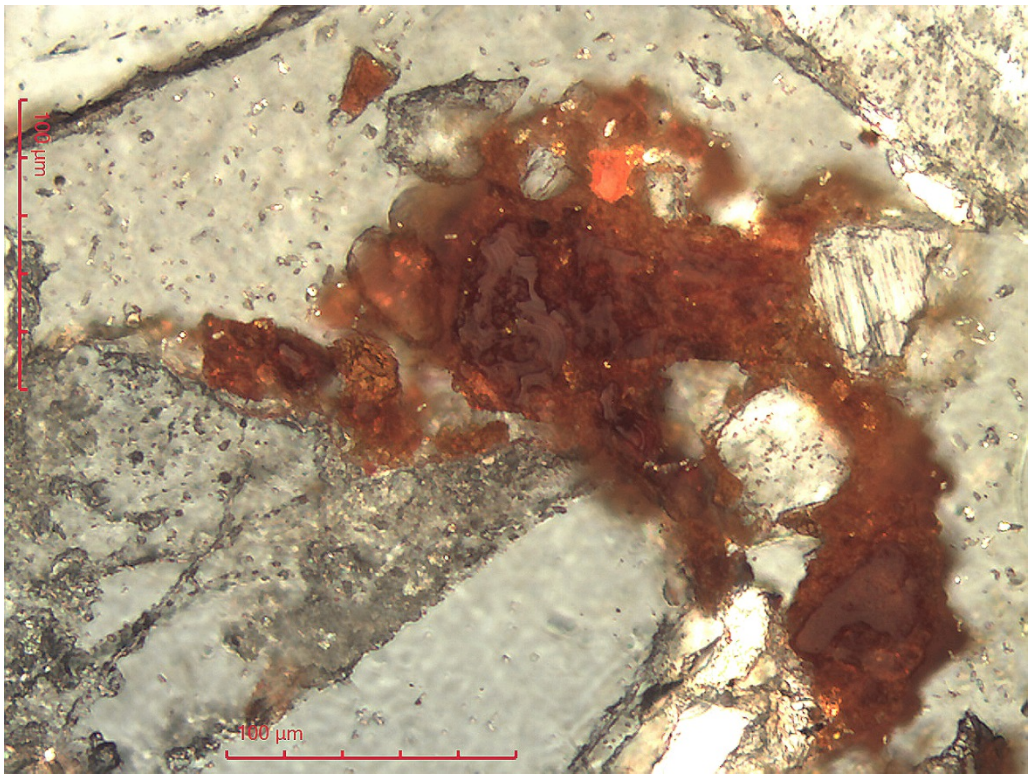
Client Sample No.: **BK1-55.5-56.5-052219**
Quartz and plagioclase feldspar cemented by clay – 200X PL

Client Sample No.: **BK2-35-36-051519**

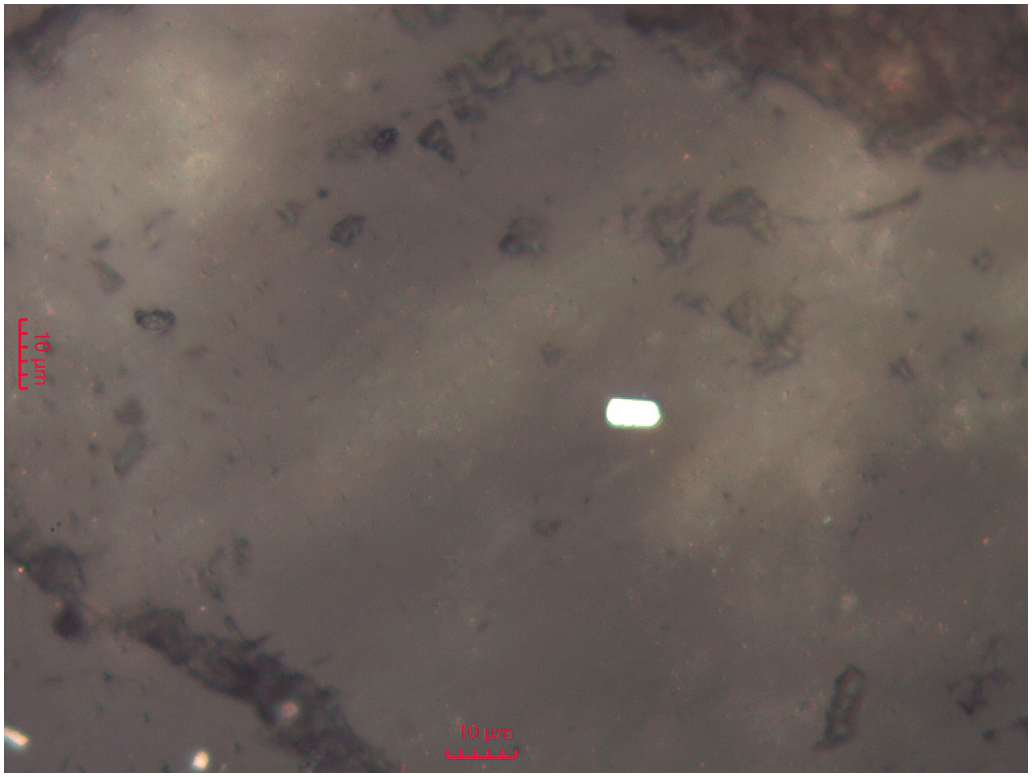
This sediment is a brown colored, unconsolidated, very fine to coarse grained sand with some silt/clay content. Petrographic and XRD studies reveal the sample is primarily composed of quartz (76%). Individual quartz grains occur as sub-rounded to well rounded grains that vary significantly in size from 10µm to 750µm. Fibrous grains of chalcedony and dirty looking microcrystalline chert up to 500µm are common. Collectively, feldspars account for around 14% of the sediment's mass. K-spar (9%) is the primary type and occurs as sub-rounded to rounded grid twinned microcline and cloudy orthoclase with a grain size up to 500µm. Plagioclase (5%) occurs as sub-rounded to rounded oligoclase/andesine with measurements up to 400µm. A few rounded grains of basalt carry small lath shaped grains of labradorite. Although plagioclase shows some minimal seritization, most grains are water clear. Calcite (2%) occurs as small liberated grains and aggregates with individual grain measurements of 2µm to 100µm. Some of the larger aggregates cement numerous small fragments of quartz/feldspar. Goethite/hematite (1%) occurs as small red rosettes, exotic banded forms and masses. Larger masses cement sand sized grains of quartz/feldspar. Although XRD identifies low amounts of illite (2%) and kaolinite (2%), swelling smectite was not detectable. However, smectite is strongly suspected. The clay is brown in color and some clay masses have a sinuous appearance. The clay is intermixed with iron oxide, small grains of carbonate and flecks of opaque carbon. Pyrite is present as a trace and occurs as small inclusions in quartz and feldspar with a grain size that varies from 2µm to around 10µm. The sulfide shows no apparent decay to iron oxide. Accessory minerals include a trace of rutile, zircon and thin ribbons of muscovite.



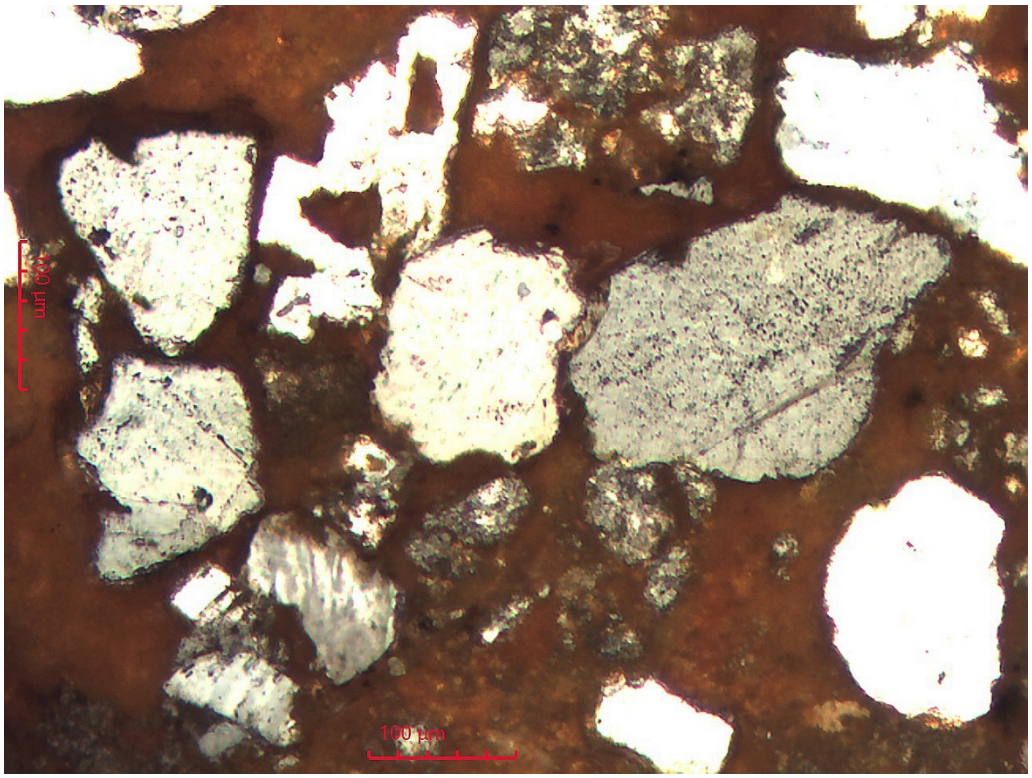
Client Sample No.: **BK2-35-36-051519**
Brown clay cements clasts of quartz/feldspar – 200X PL



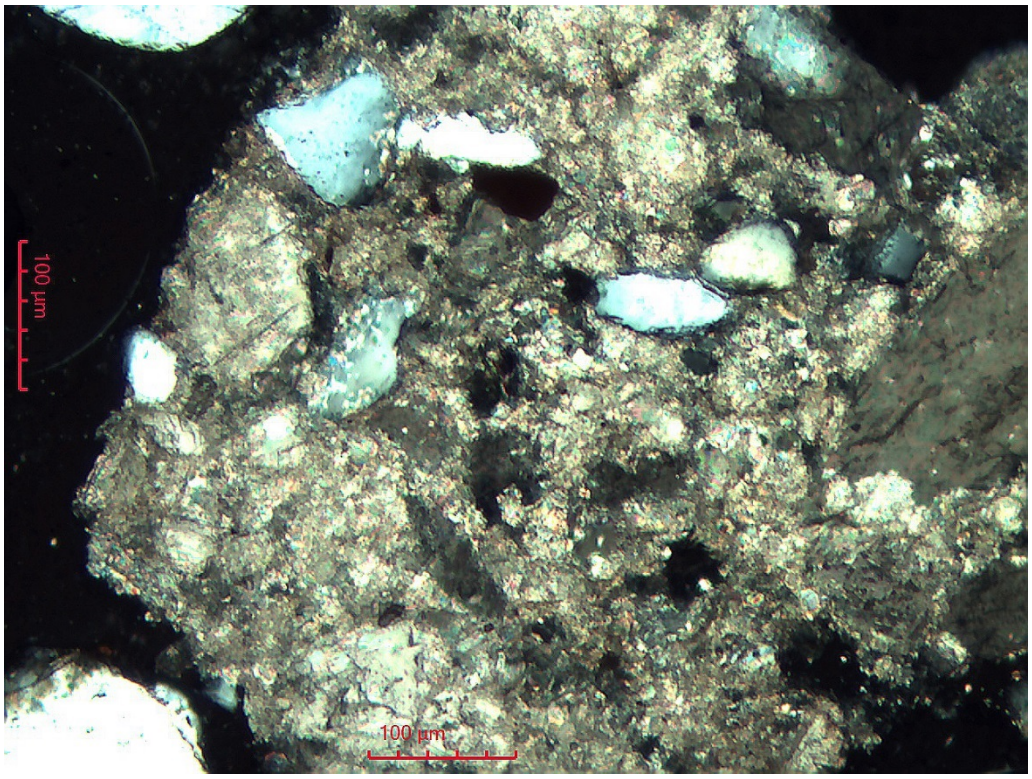
Client Sample No.: **BK2-35-36-051519**
Patch of iron oxide with quartz/feldspar – 200X RL



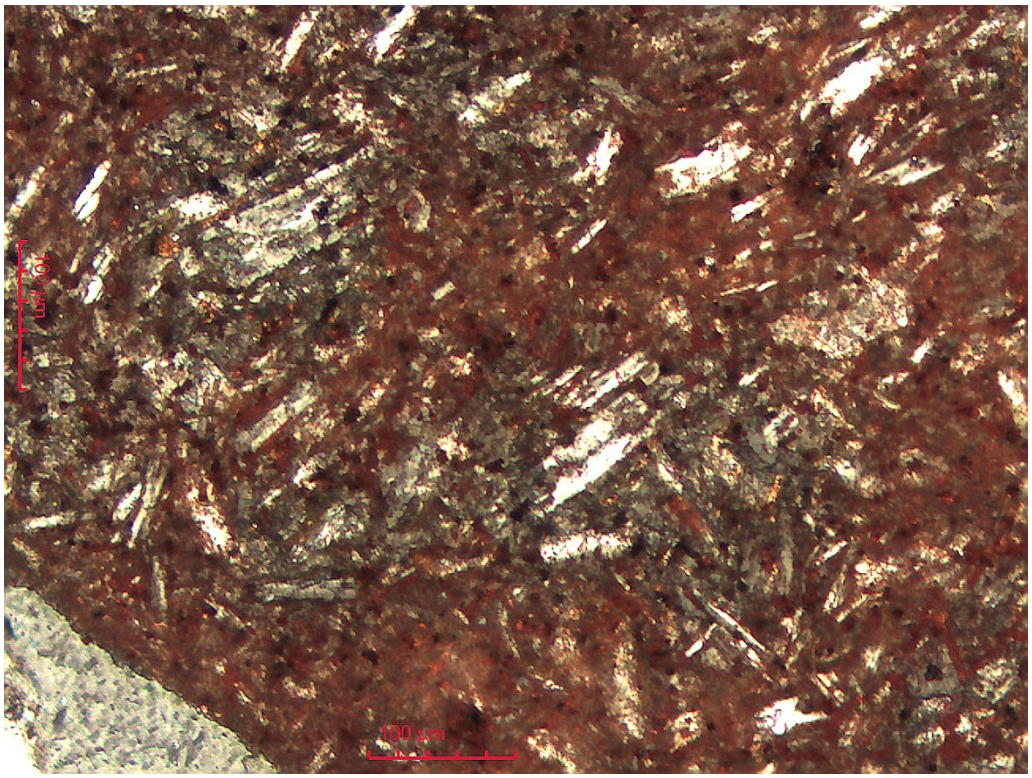
Client Sample No.: **BK2-35-36-051519**
Small grain of pyrite included in plagioclase – 500X RL



Client Sample No.: **BK2-35-36-051519**
Iron oxide cementing quartz/feldspar – 100X PL



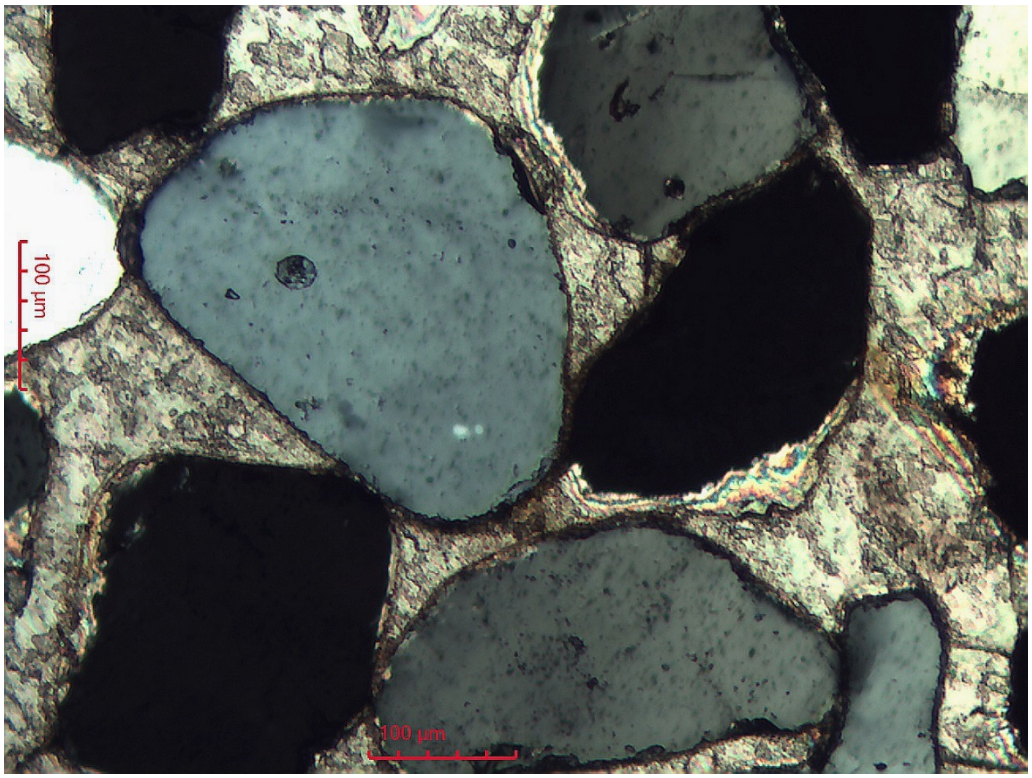
Client Sample No.: **BK2-35-36-051519**
Aggregate of quartz and calcite – 100X PL



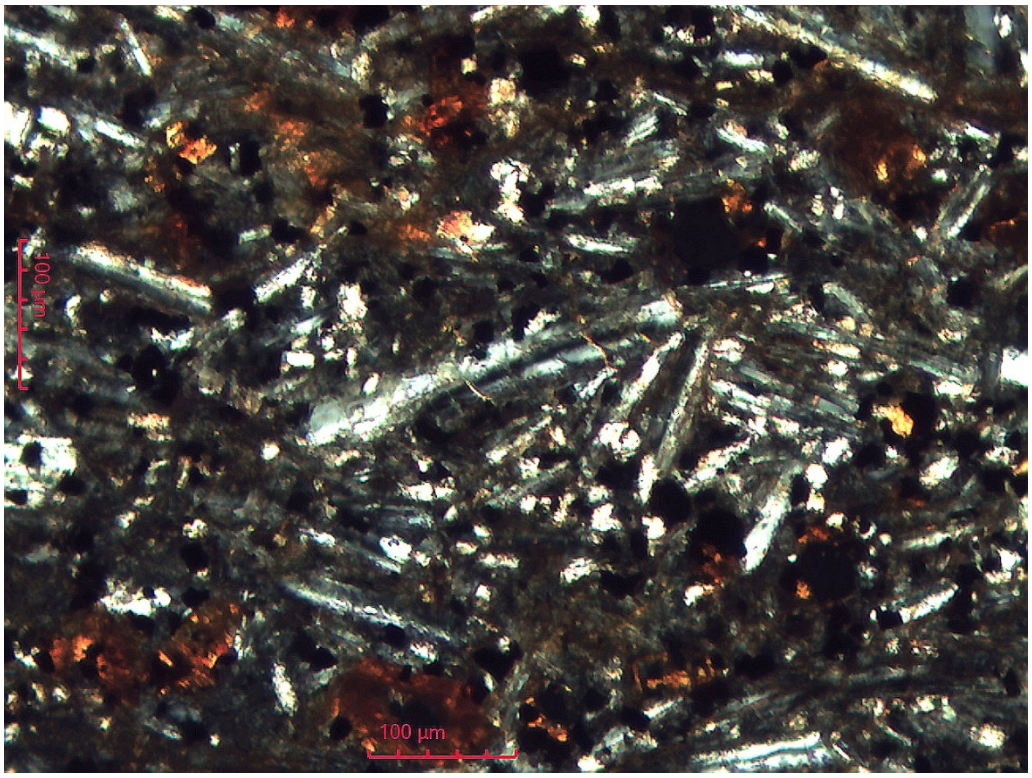
Client Sample No.: **BK2-35-36-051519**
Fragment of iron stained basalt showing plagioclase microlites – 100X PL

Client Sample No.: **BK2-63.5-64.5-051619**

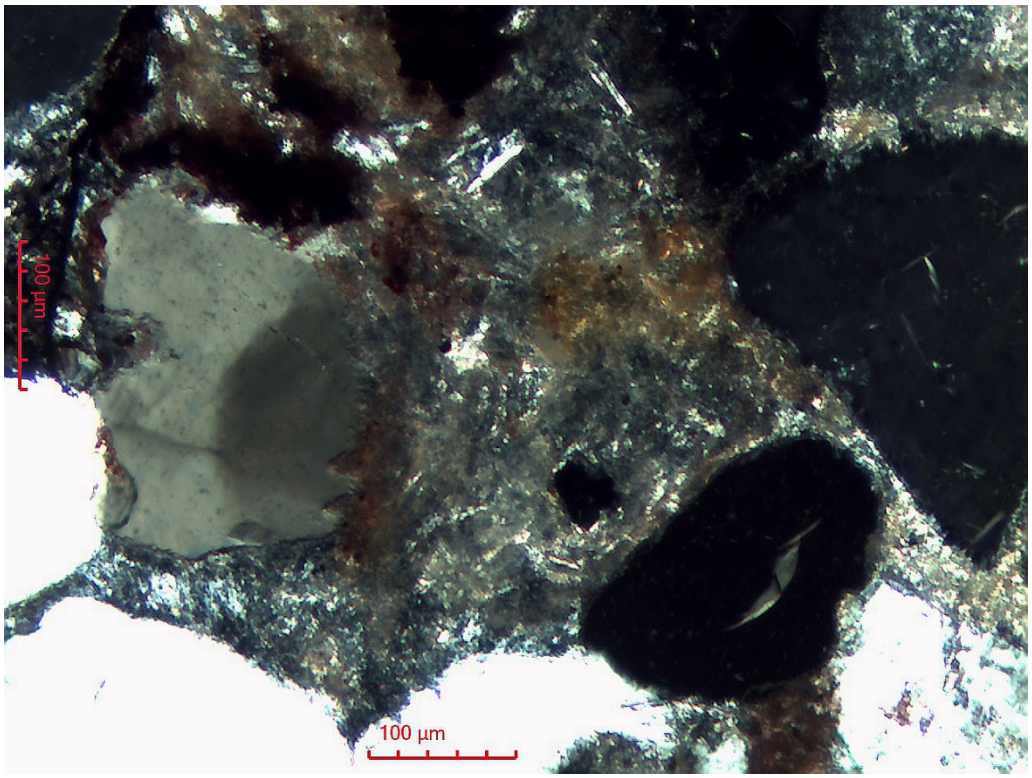
This sediment is a brown colored, unconsolidated, coarse sandy gravel. The sample contains numerous large, rounded, lithic fragments of various rock types measuring up to 1cm in size. Lithic fragments include basalt, carbonated cemented sandstone, iron oxide cemented sandstone, granite and dacite porphyry. Petrographic and XRD studies indicate the sediment is primarily composed of hard silicates. Quartz (77%) is the main constituent and occurs as both liberated grains and as an unliberated component of granitic rock fragments. As liberated grains, quartz occurs as sub-rounded to very well rounded clasts that vary greatly in size from 10µm to over 1mm. As unliberated grains in granitic rock, quartz occurs as anhedral mosaic aggregates with an individual grain size up to 500µm. Quartz phenocrysts in the dacite porphyry show a crude bipyramidal shape with embayed grain boundaries. Quartz in sandstone is generally angular and finer grained with measurements up to 120µm. Clasts of rounded chert and chalcedony are common. Collectively feldspar accounts for ~11% of the sample. K-spar (microcline/orthoclase) is the dominant type at 7% and occurs as angular to sub-rounded grains that measure from 5µm to over 1mm. K-spar is seen as liberated clasts, anhedral grains in granite and as a component in sandstone fragments. Plagioclase (4%) occurs as angular to sub-rounded grains of oligoclase/andesine with measurements up to 1mm. A couple of fragments of basalt and a dacite porphyry carry euhedral laths of labradorite and andesine. Although calcite (5%) is present as liberated fragments up to 200µm, it is more commonly seen as sandstone cement. XRD indicates clay accounts for ~5% of the total sample in the form kaolinite and illite. The clays occur as brown colored sinuous strings and mats that are often intermixed with iron oxide and carry small fragments of carbonaceous material. A few fragments of clay/iron oxide cemented arkosic sandstone is present. Although pyrite is rare, a few small grains are present in chert. Accessory minerals include rutile, magnetite, and zircon.



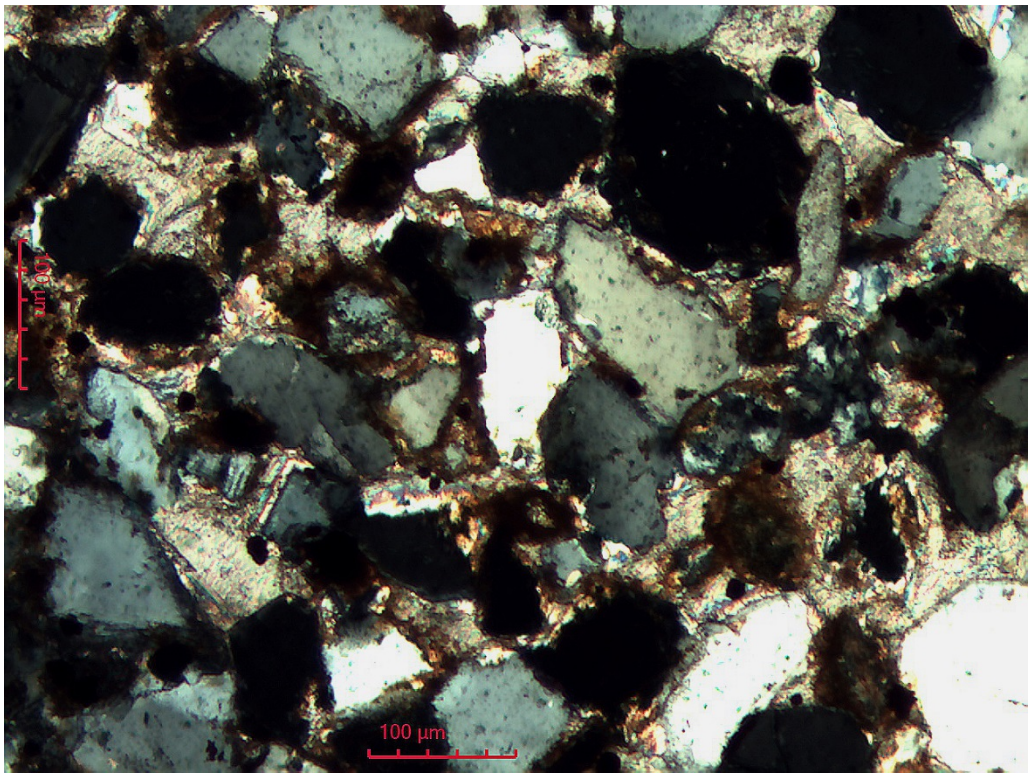
Client Sample No.: **BK2-63.5-64.5-051619**
Rounded clasts of quartz cemented by coarse calcite – 100X PL



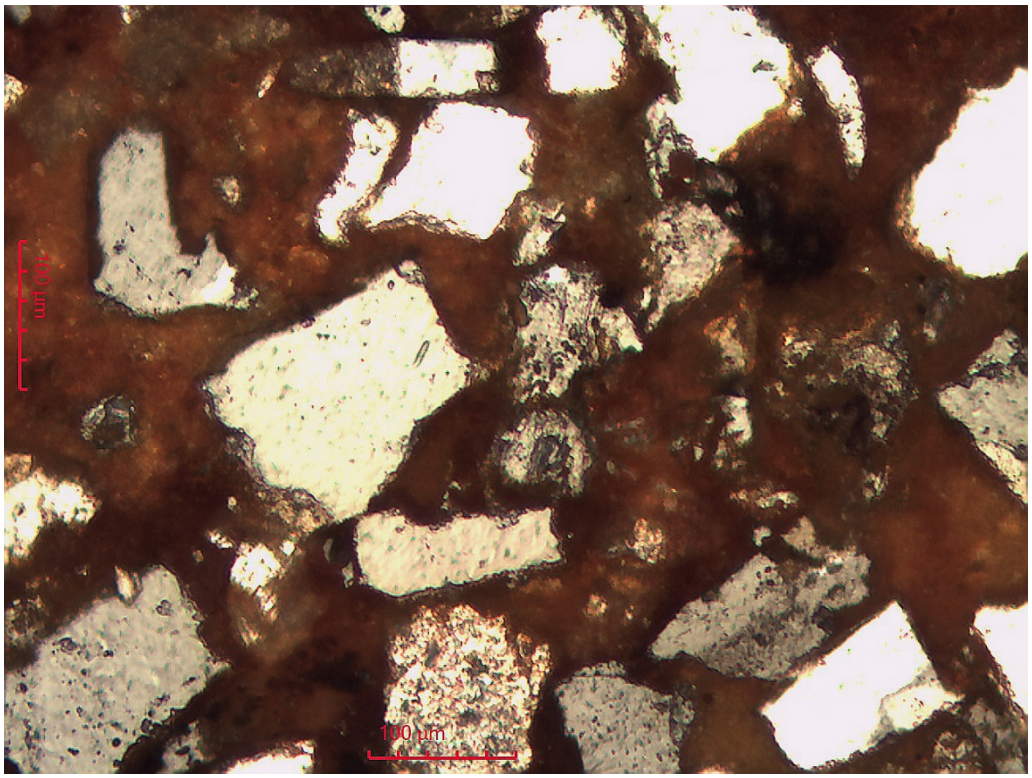
Client Sample No.: **BK2-63.5-64.5-051619**
Basalt fragment showing plagioclase microlites and iron oxide – 100X PL



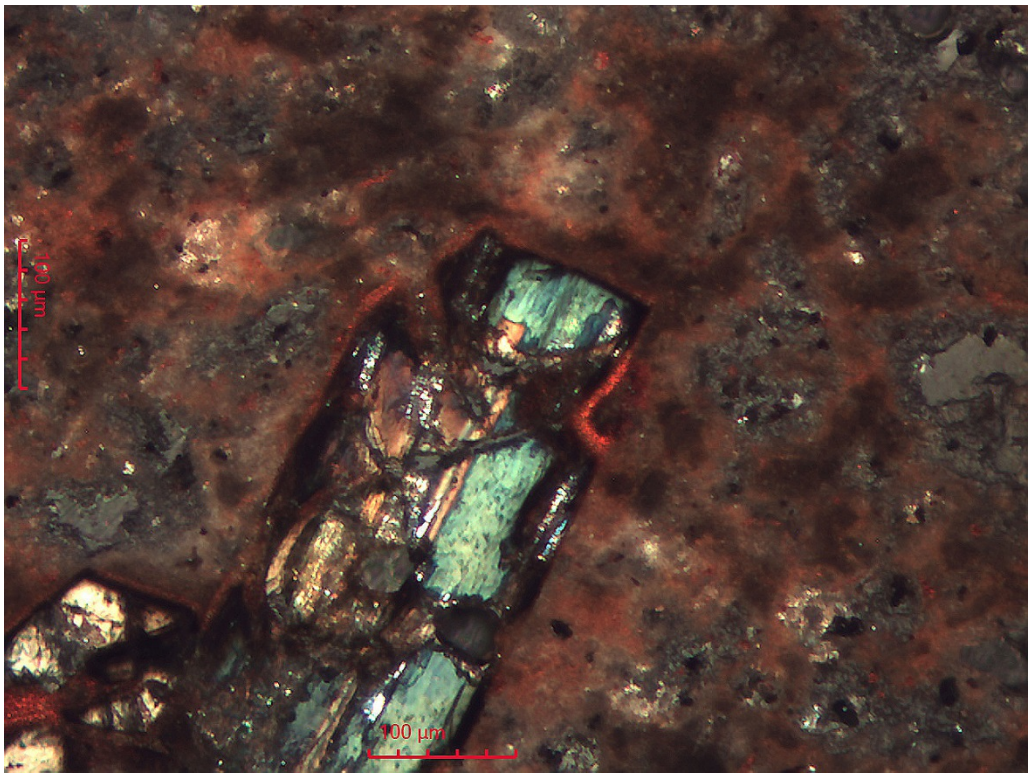
Client Sample No.: **BK2-63.5-64.5-051619**
Pocket of sinuous clay between quartz/feldspar – 100X PL



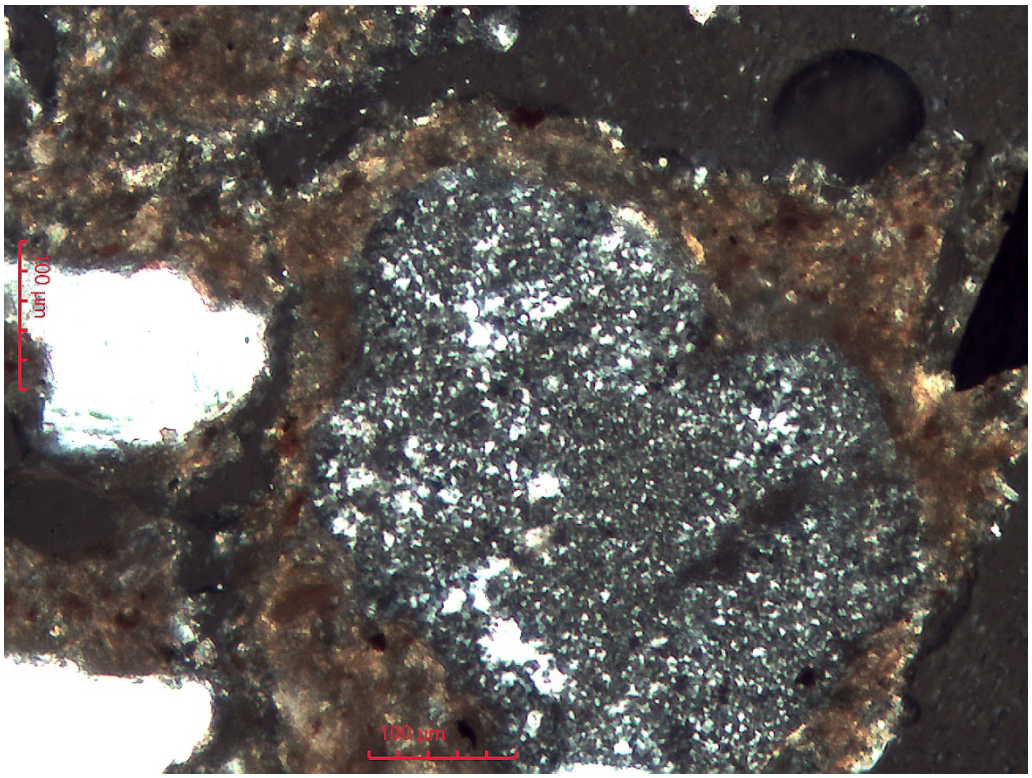
Client Sample No.: **BK2-63.5-64.5-051619**
Quartz/feldspar cemented by calcite – 100X PL



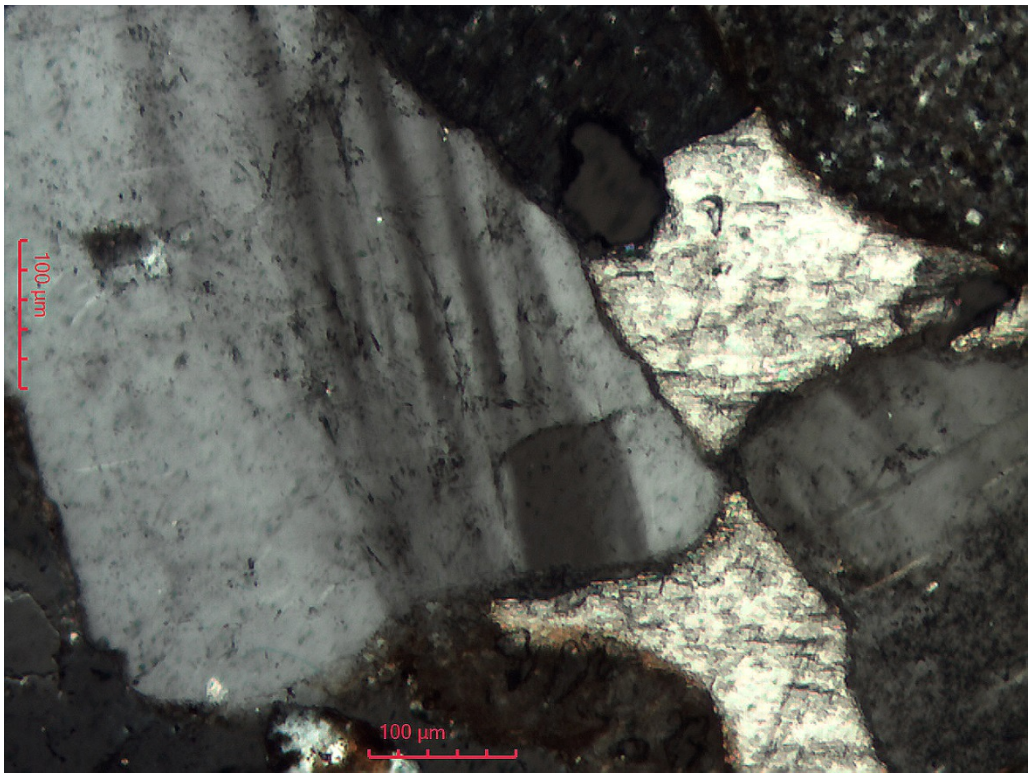
Client Sample No.: **BK2-63.5-64.5-051619**
Fragment of iron oxide cemented quartz/feldspar – 100X RL



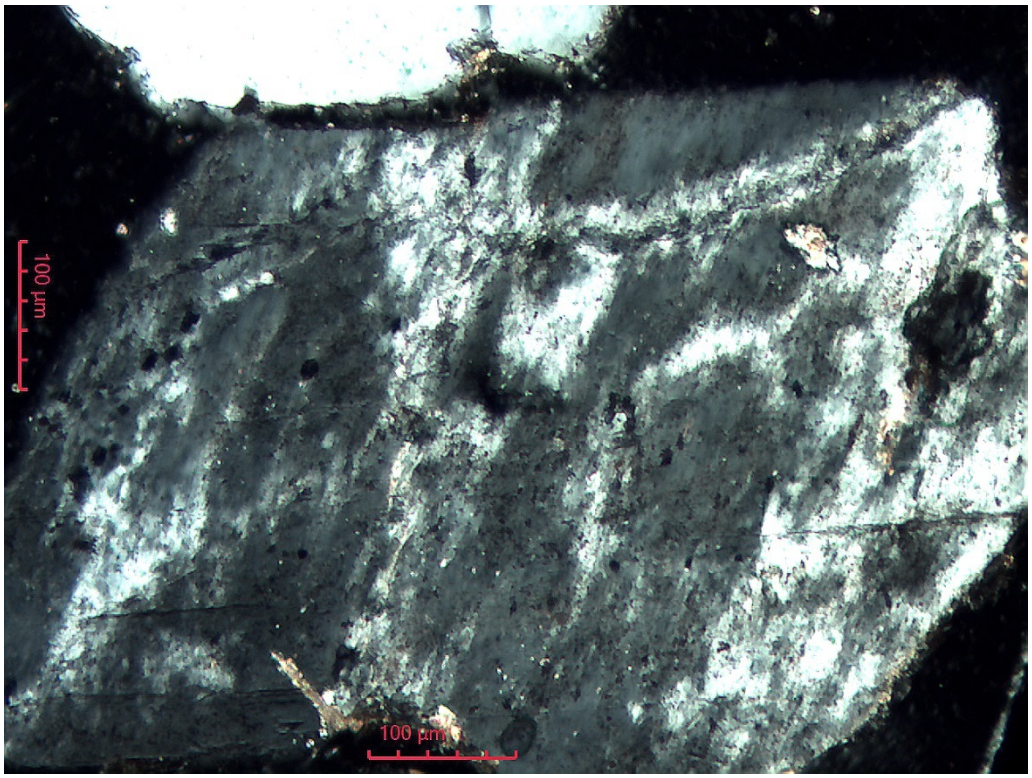
Client Sample No.: **BK2-63.5-64.5-051619**
Altered prism of pyroxene in dacite porphyry – 100X PL



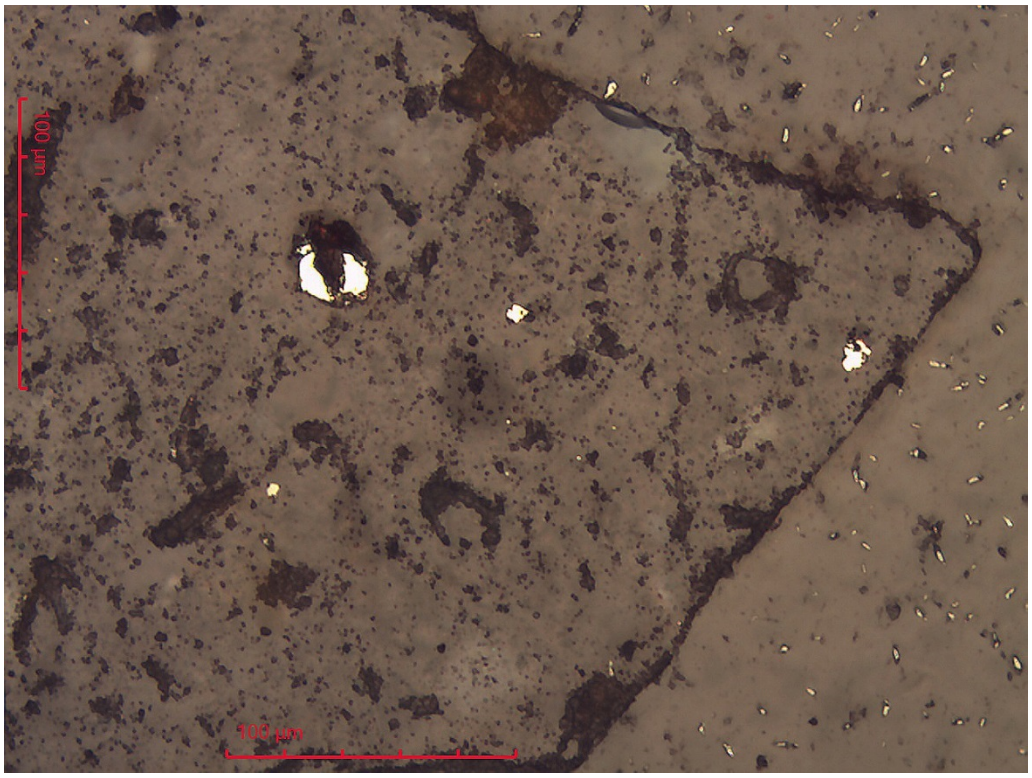
Client Sample No.: **BK2-63.5-64.5-051619**
Grain of microcrystalline chert rimmed with brown clay – 100X PL



Client Sample No.: **BK2-63.5-64.5-051619**
Grains of grey plagioclase with coarse sparry calcite – 100X PL



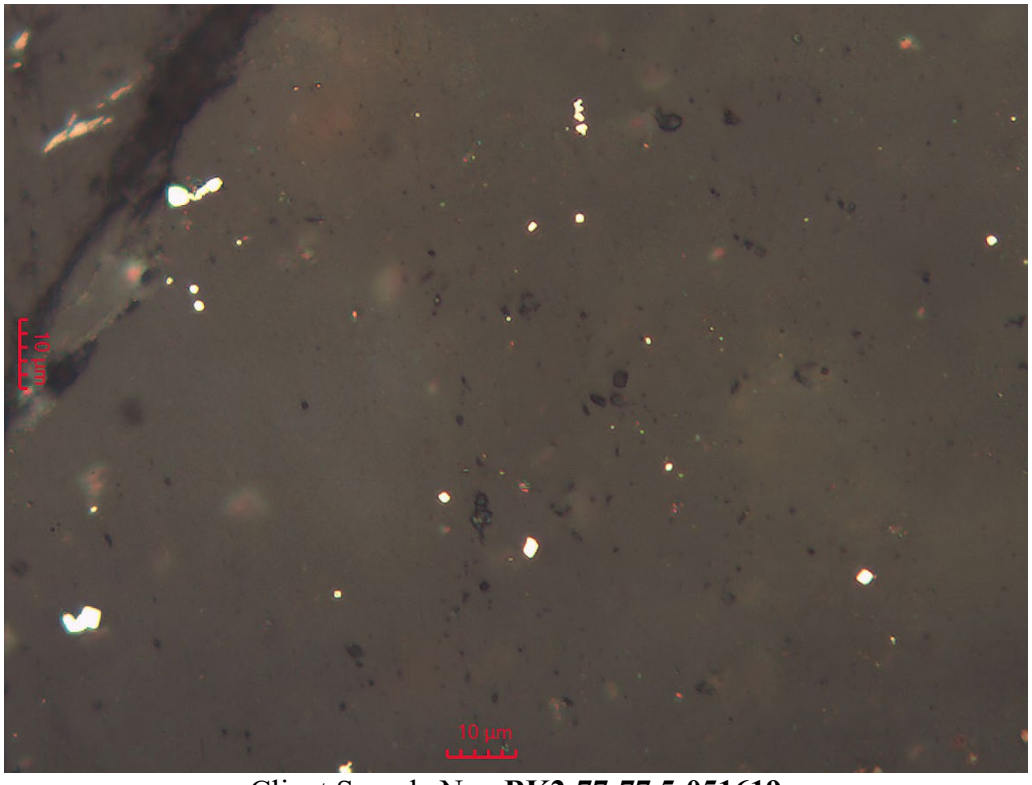
Client Sample No.: **BK2-63.5-64.5-051619**
Large grain of perthitic K-spar – 100X PL



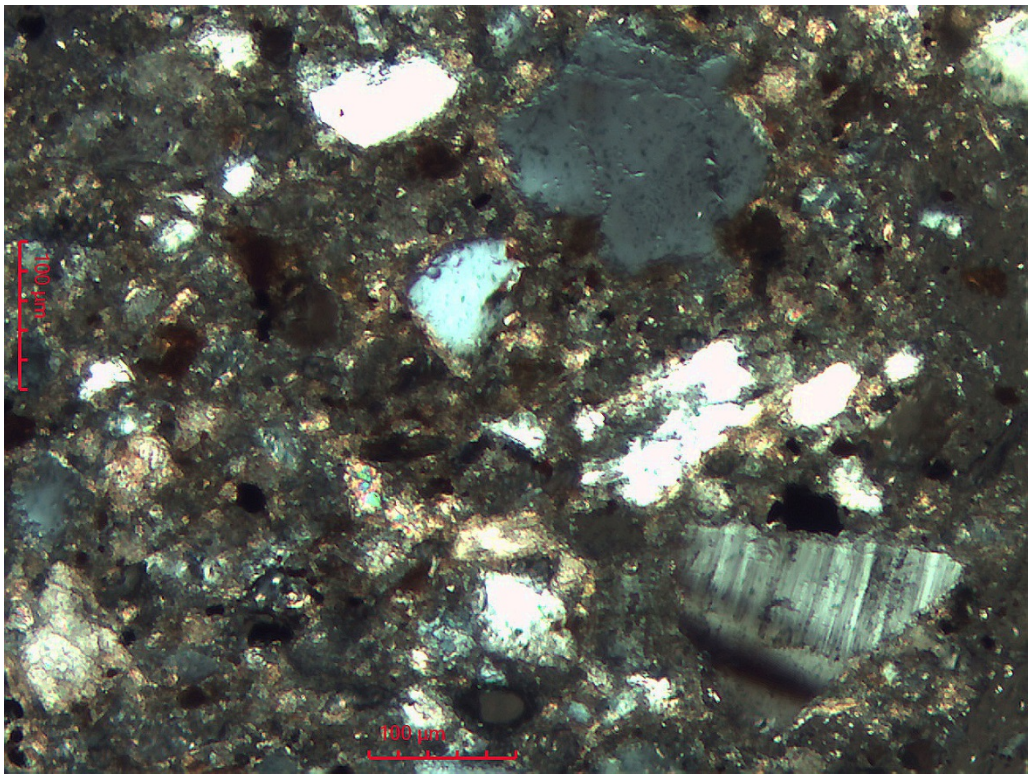
Client Sample No.: **BK2-63.5-64.5-051619**
Angular grain of chert with inclusions of bright pyrite – 200C RL

Client Sample No.: **BK2-77-77.5-051619**

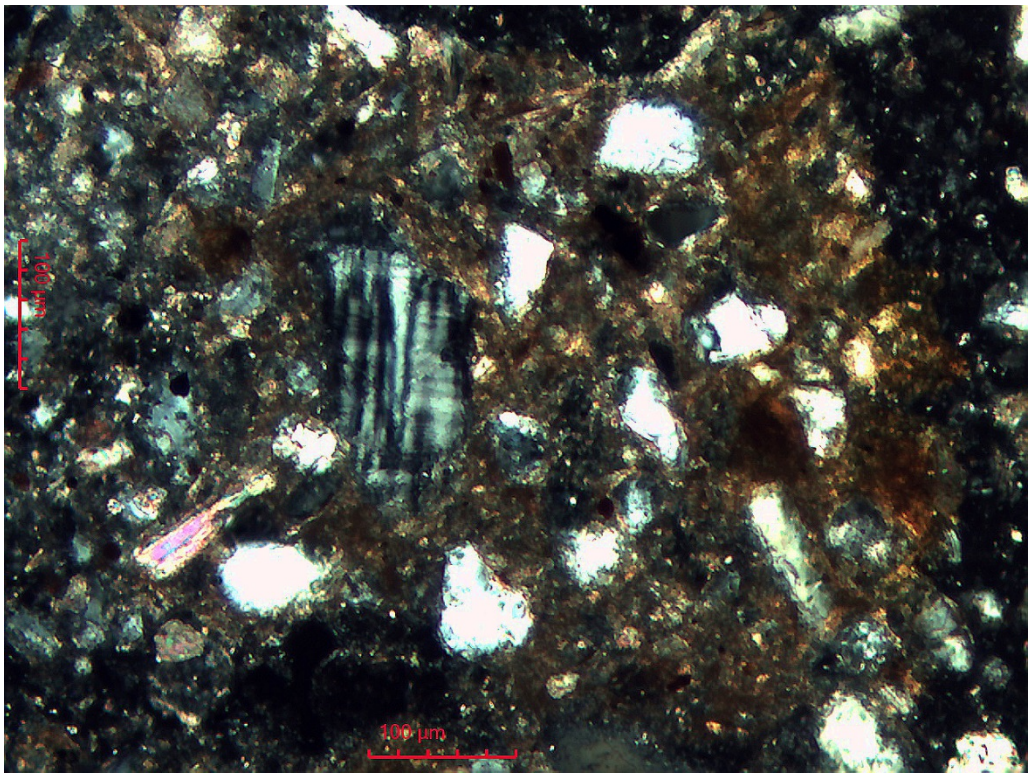
This sediment is a brown colored very fine to medium grained silty sand with some clay. Quartz (70%) is the primary hard silicate and occurs as angular to very well rounded clasts that vary significantly in size from <2µm up to 250µm. Small grains of microcrystalline chert in the 50µm to 150µm size range are common and frequently carry small included grains of pyrite. K-spar (9%) is the main feldspar and occurs as clear angular to rounded clasts of microcline and orthoclase up to 250µm. Plagioclase (6%) occurs as angular to rounded fragments of oligoclase/andesine with a grain size up to 200µm. A few grains show mild seritization. Carbonates are present in low amounts. Calcite (4%) is the main type and occurs as fragments and aggregates. Fragments of sparry calcite measure up to 500µm. When seen as aggregates or intermixed with clay, calcite grain size varies from 1µm to approximately 20µm. Dolomite (2%) occurs as dirty looking aggregates and rhomb shaped grains up to 20µm and is usually seen intermixed with clay. XRD identifies the clay as kaolinite and illite in like amounts of 3%. The clays are seen as brown masses with small flecks of carbon mixed with minor iron oxide. Clay is often seen cementing aggregates of silt/sand.



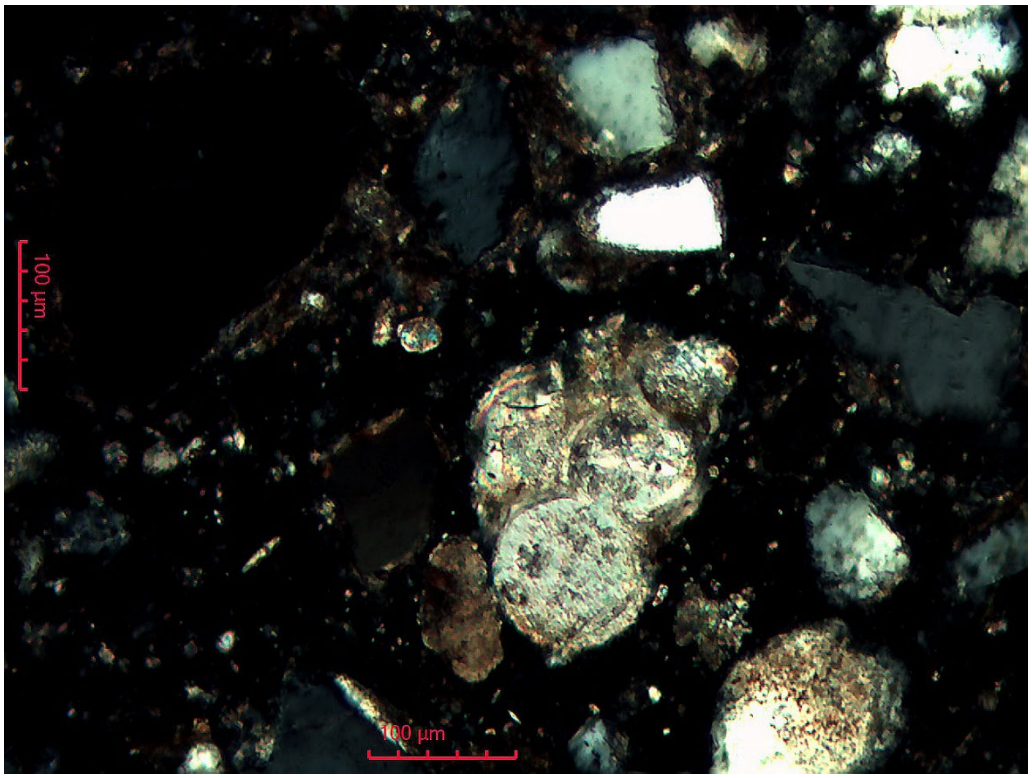
Client Sample No.: **BK2-77-77.5-051619**
Numerous bright grains of pyrite in chert – 500X RL



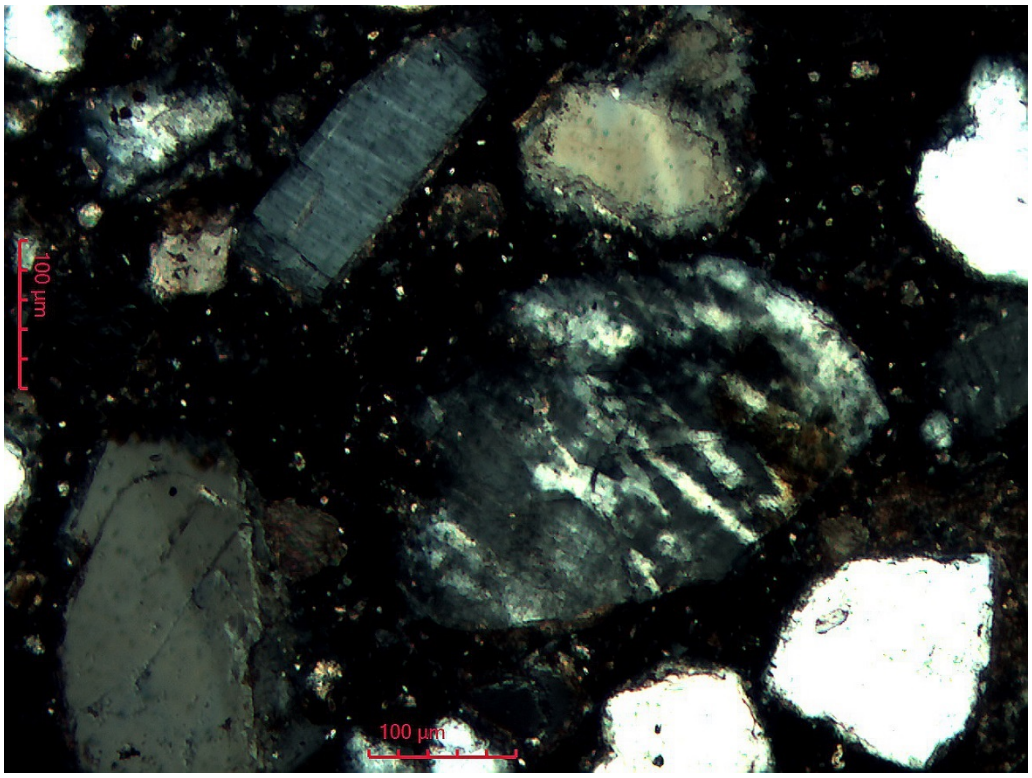
Client Sample No.: **BK2-77-77.5-051619**
Aggregate of quartz/feldspar fragments cemented by clay and carbonate – 100X PL



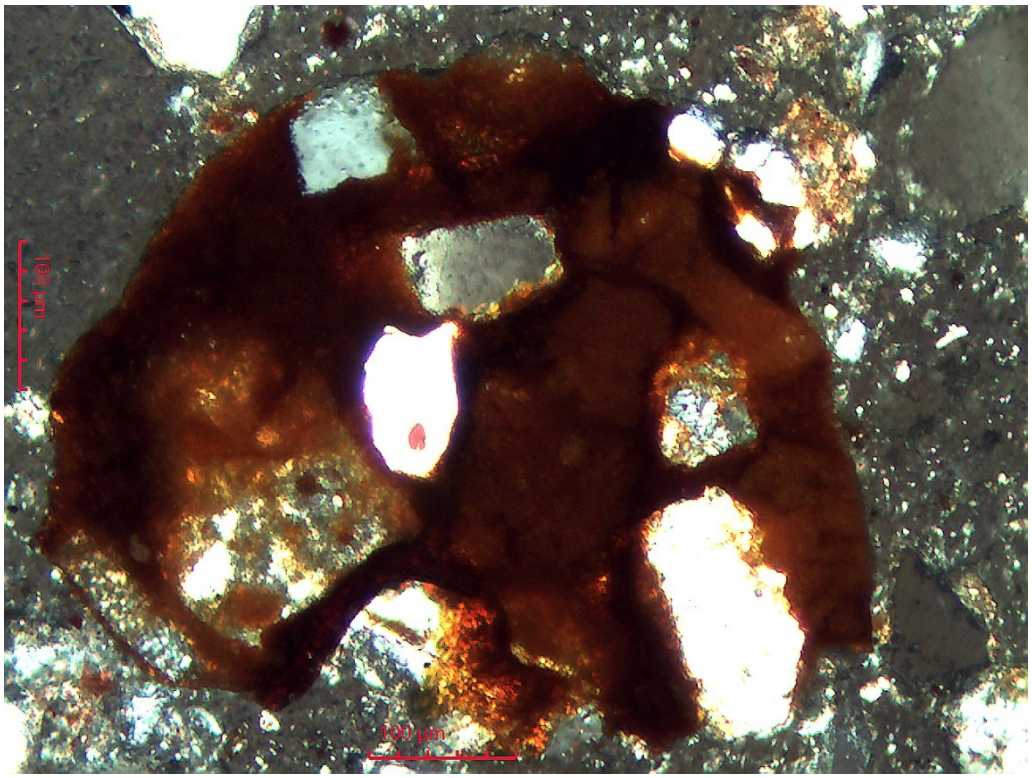
Client Sample No.: **BK2-77-77.5-051619**
Aggregate of quartz/feldspar fragments cemented by clay and carbonate – 100X PL



Client Sample No.: **BK2-77-77.5-051619**
Spherical calcite cluster surrounded by clay and quartz/feldspar – 100X PL



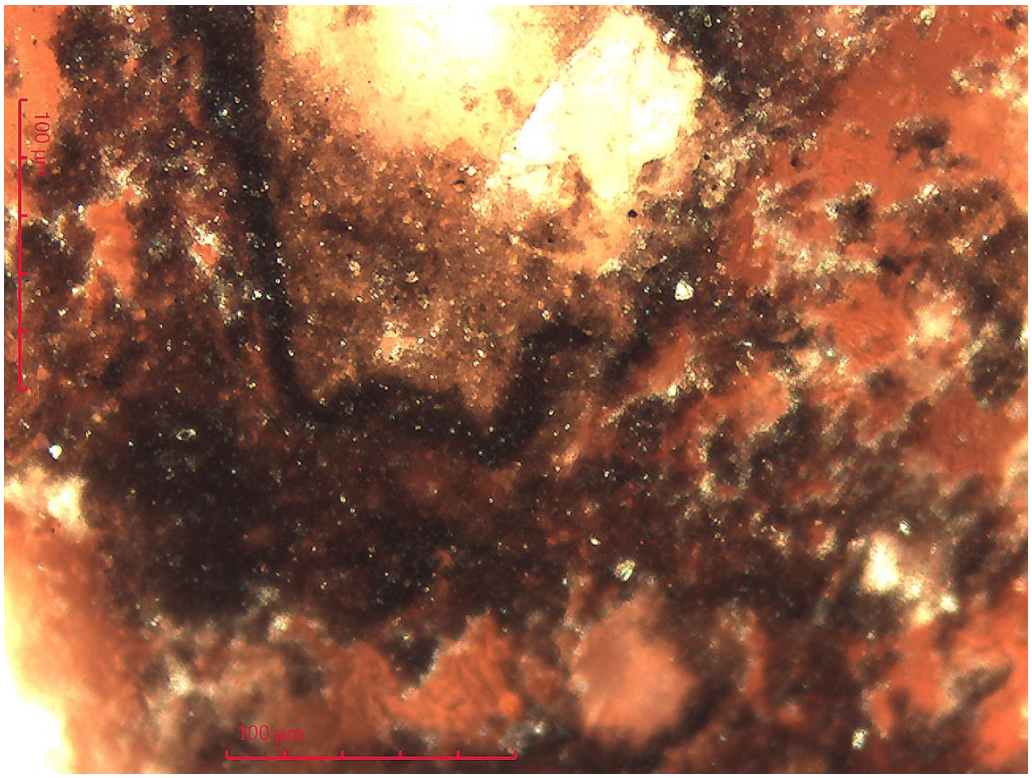
Client Sample No.: **BK2-77-77.5-051619**
Grains of white quartz and perthitic K-spar – 100X PL



Client Sample No.: **BK2-77-77.5-051619**
Aggregate of iron oxide and quartz/feldspar – 100X PL

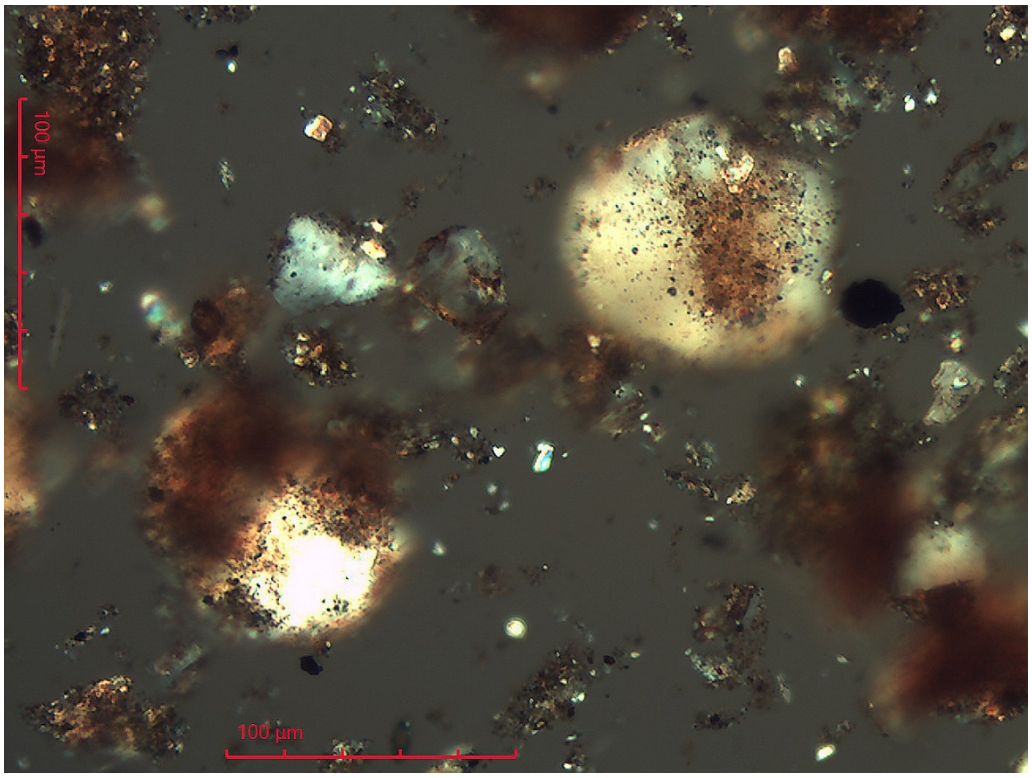
Client Sample No.: **BK3-42.5-43.5-052219**

Due to the high clay content a standard thin section could not be prepared, therefore, reflected light microscopy was done on a polished billet and transmitted light microscopy was achieved using grain mounts. This sample is a brown colored, very fine sandy clay with a clay/sand ratio of approximately 1:1. XRD analysis determined a clay content of 50% of the sample's mass. Illite (22%) is the dominant clay followed by swelling smectite (19%) and kaolinite (9%). The clay is iron stained and carries approximately 1% carbonaceous material. Quartz (30%) is the primary hard silicate and occurs as angular to well rounded clasts that vary in size from 1µm to 100µm. Plagioclase and K-spar are present in like amounts of 5%. K-spar occurs as angular fragments of orthoclase/microcline with a maximum grain size of 100µm. Plagioclase occurs as angular fragments with a similar grain size and a composition that varies from albite to andesine. Calcite (10%) is very fine grained with an upper grain size of 50µm and is intimately mixed with clay. A trace of pyrite was identified associated with opaque carbon.

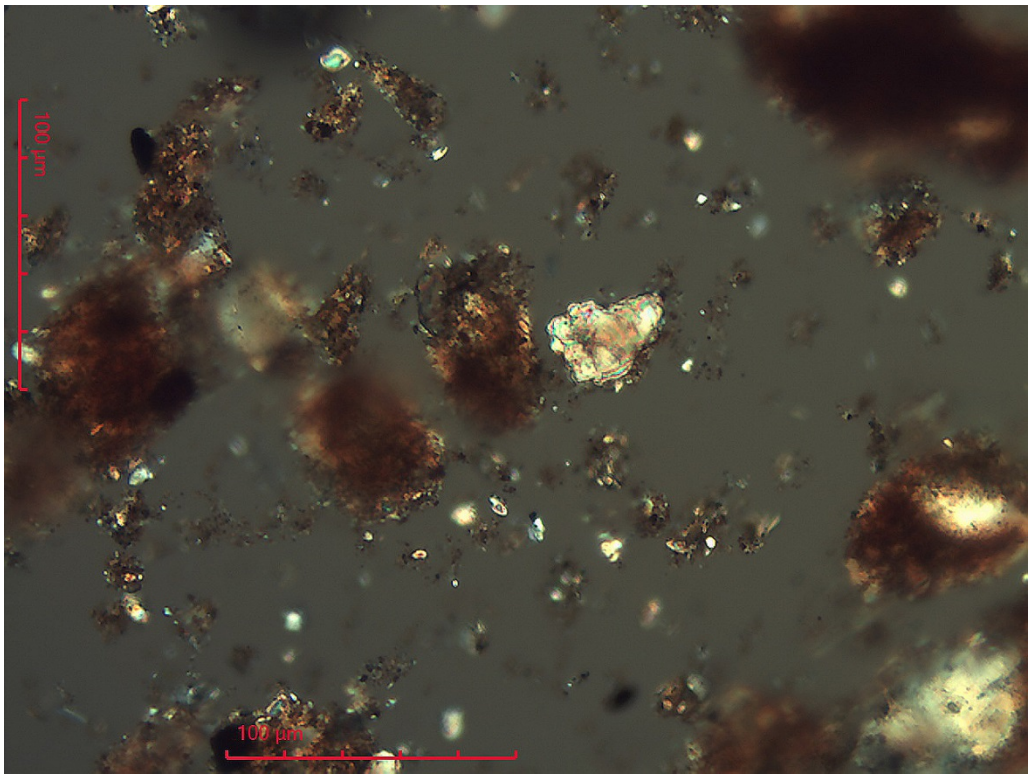


Client Sample No.: **BK3-42.5-43.5-052219**
Massive clay with opaque carbonaceous material – 200X RL

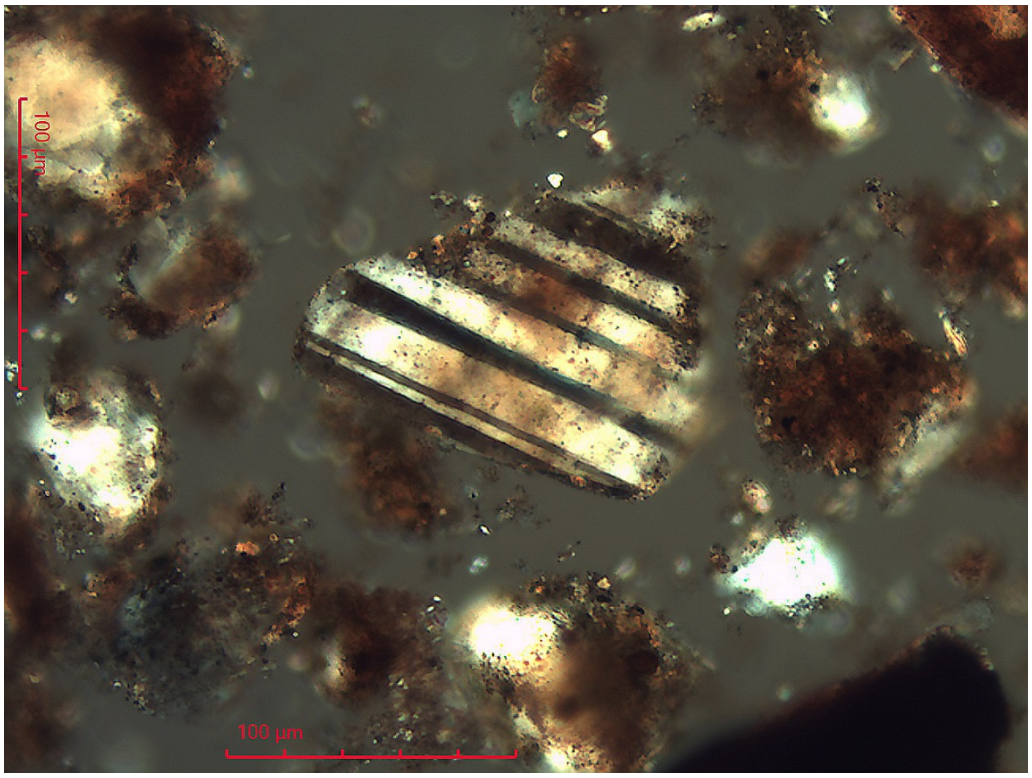
Client Sample No.: **BK3-42.5-43.5-052219**
Small cube of bright pyrite in carbon – 200X RL



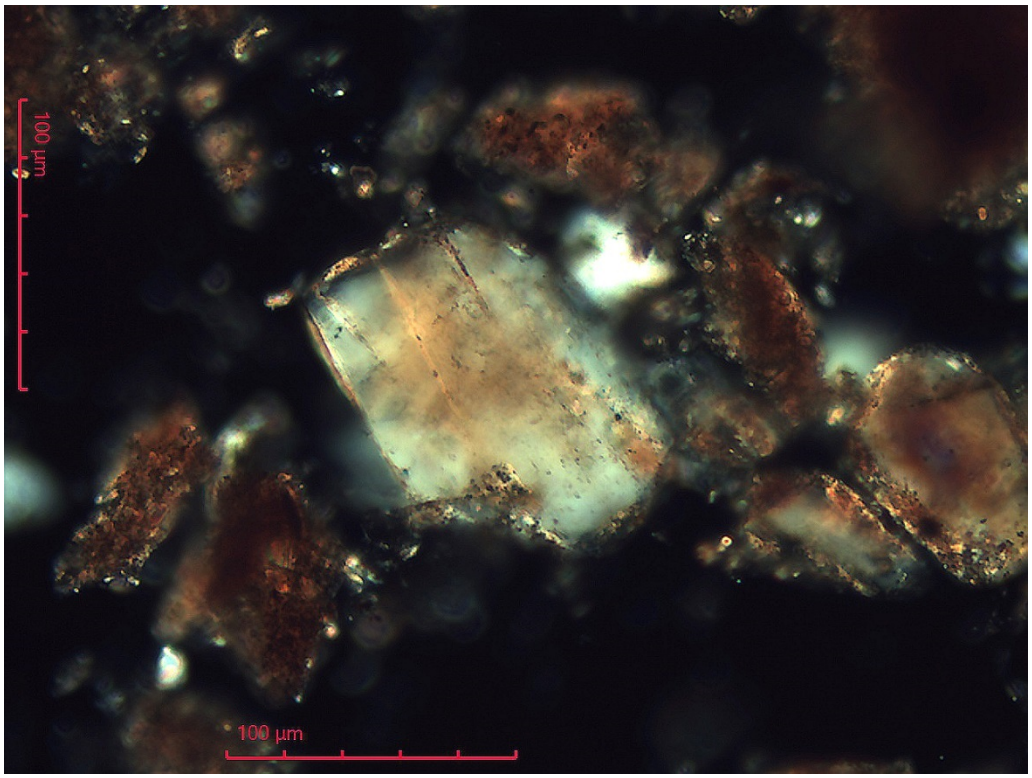
Client Sample No.: **BK3-42.5-43.5-052219**
Quartz/feldspar grains surrounded by brown clay – 200X PL



Client Sample No.: **BK3-42.5-43.5-052219**
Colorful calcite grain surrounded by clay and quartz/feldspar – 200X PL



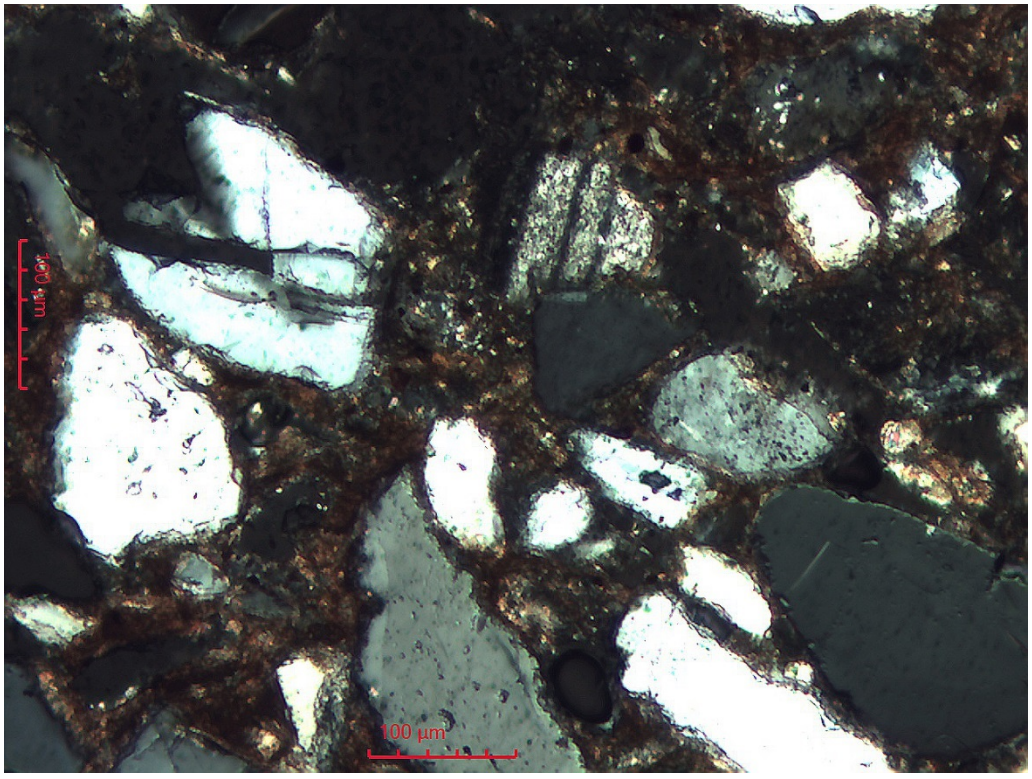
Client Sample No.: **BK3-42.5-43.5-052219**
Fragment of twinned plagioclase with clay and quartz – 200X PL



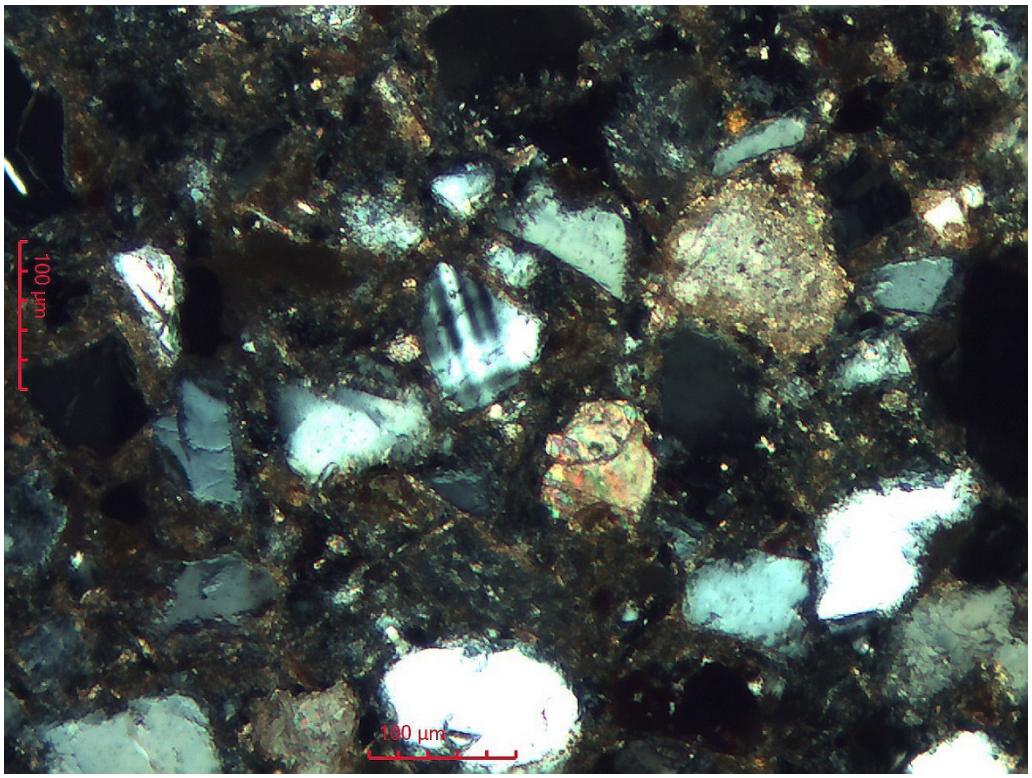
Client Sample No.: **BK3-42.5-43.5-052219**
Grain of orthoclase with brown clay – 200X PL

Client Sample No.: **BK3-47.5-48.5-052219**

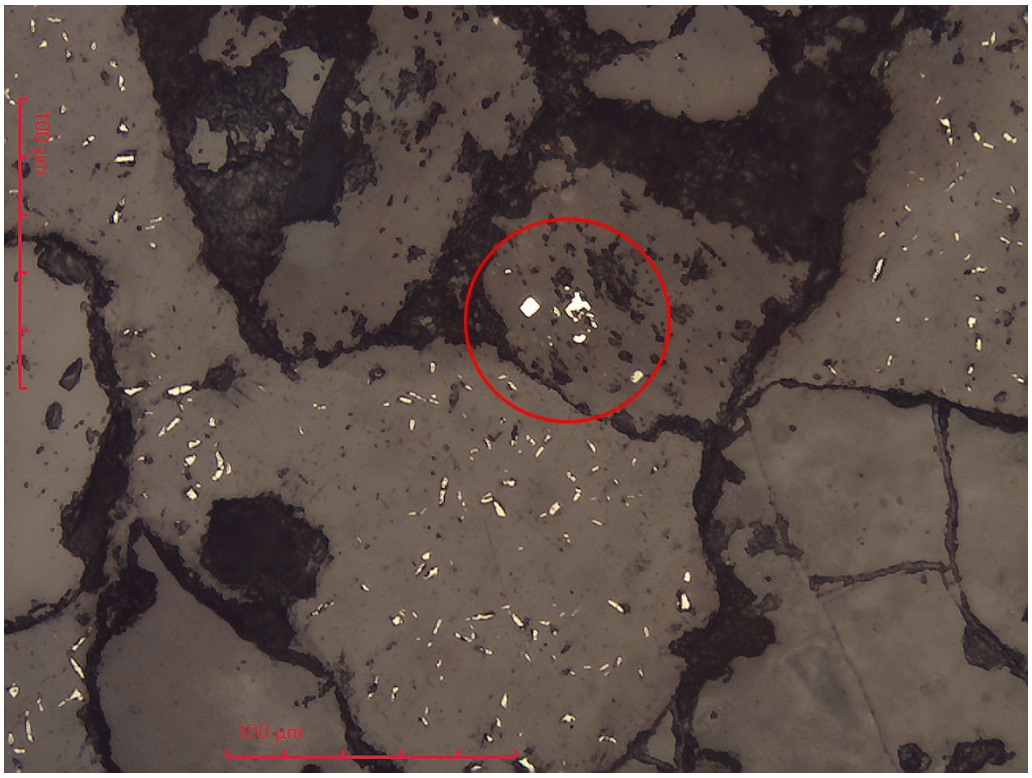
This sample is a brown colored, unconsolidated, very fine to very coarse sand with a few gravel sized lithic fragments up to 1cm in size. Quartz (63%) occurs as angular to well rounded clasts that vary greatly in size from 5µm up to 1.5mm. Approximately 5% of the quartz content is in the form of microcrystalline chert with minute inclusions of pyrite and fibrous chalcedony. Potassium feldspar (18%) occurs as angular to rounded clasts of orthoclase and grid twinned microcline with grain size measurements of 5µm up to 1.4mm. Although the orthoclase shows some cloudiness, the K-spar in general shows little in the way of weathering. Plagioclase (7%) occurs as angular to rounded clasts with measurements up to 1mm in size. Although most of the plagioclase is oligoclase/andesine, a couple of rounded fragments of basalt with labradorite laths are present. Carbonate is represented in low amounts by two types. Calcite (3%) occurs as fine grained aggregates and large fragments and clusters of sparite up to 1.5mm in size. Dolomite (2%) is seen as small aggregates and dirty looking rhomb shaped grains up to 20µm mixed with clay. XRD indicates a low clay concentration of illite (3%) and kaolinite (2%). The clay is seen as thin strings and masses weakly cementing aggregates of quartz/feldspar. Although not positively identified by XRD, swelling smectite is strongly suspected. Iron oxide (~1%) occurs as small rosettes in clay and as large exotic masses cementing quartz/feldspar. Accessory minerals include rutile, magnetite, and zircon.



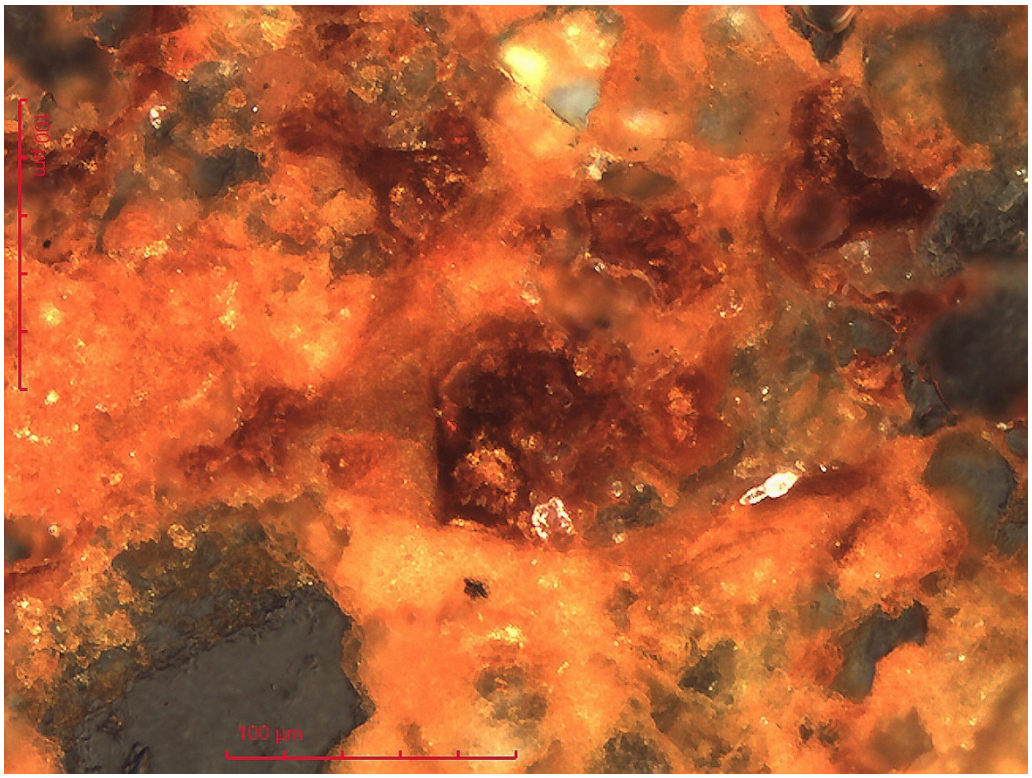
Client Sample No.: **BK3-47.5-48.5-052219**
Aggregate of quartz/feldspar cemented by brown clay – 100X PL



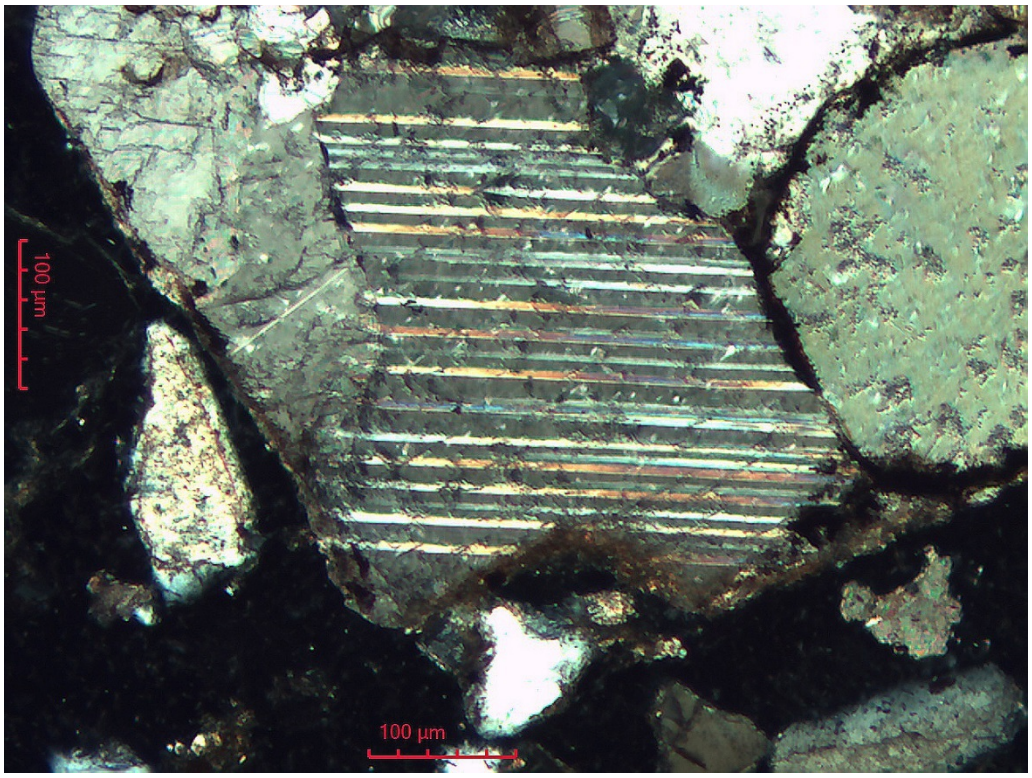
Client Sample No.: **BK3-47.5-48.5-052219**
Aggregate of quartz/feldspar, carbonate and clay – 100X PL



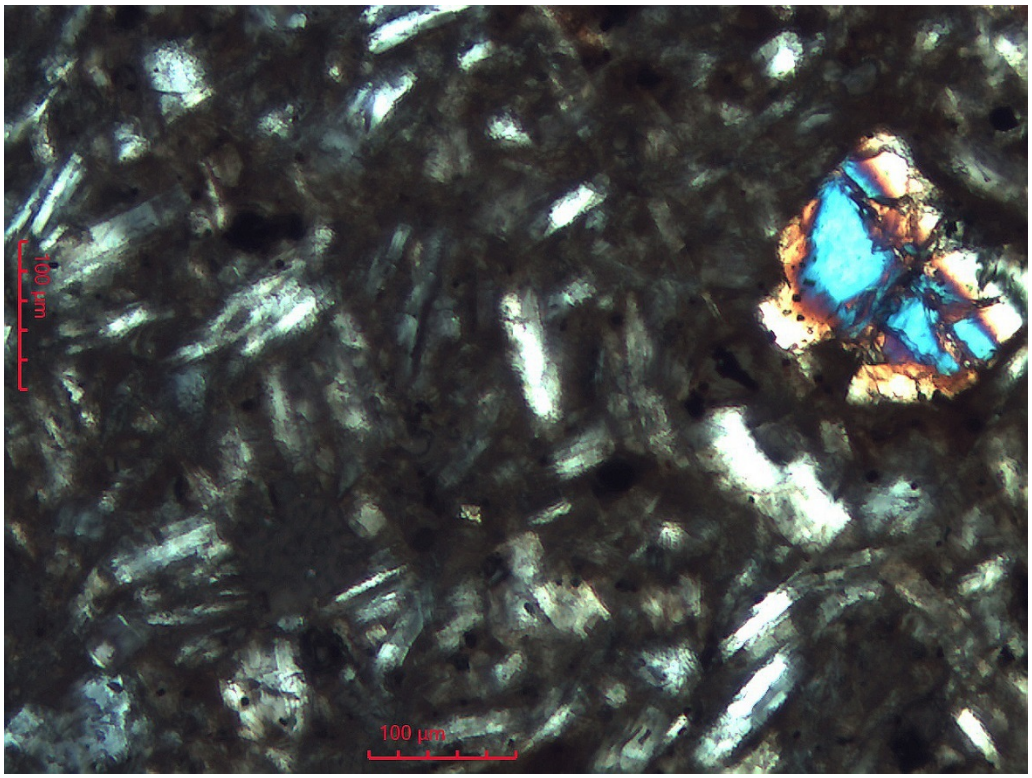
Client Sample No.: **BK3-47.5-48.5-052219**
Small cluster of bright pyrite in chert – 200 X RL



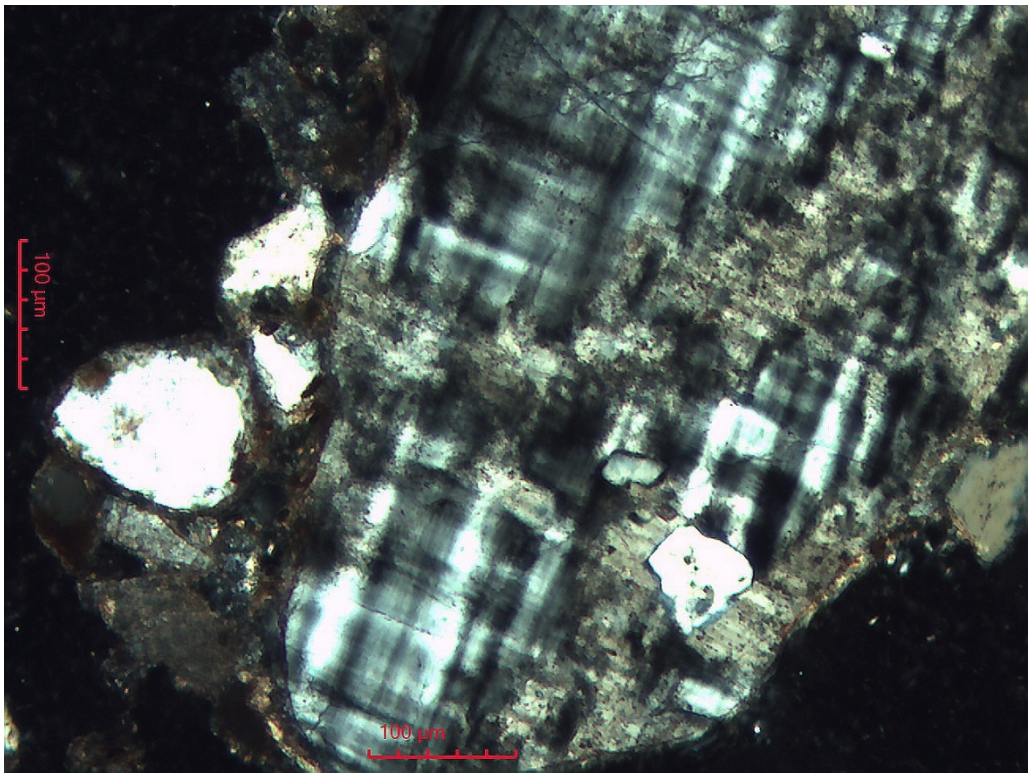
Client Sample No.: **BK3-47.5-48.5-052219**
Large mass of red/orange iron oxide – 200X RL



Client Sample No.: **BK3-47.5-48.5-052219**
Large aggregate of coarse sparry calcite – 100X PL



Client Sample No.: **BK3-47.5-48.5-052219**
Basalt fragment with plagioclase microlites and colorful augite – 100X PL



Client Sample No.: **BK3-47.5-48.5-052219**
Large grain of perthitic microcline and white quartz fragments – 100X PL

DCM SCIENCE LABORATORY, INC.
12421 W. 49th Avenue, Unit #6
Wheat Ridge, CO 80033

(303) 463-8270/(800) 852-7340
(303) 463-8267 – fax

Date/Time Received _____ DCMSL Group No. _____ DCMSL Log No. ELAB49

Field Data Sheet/Chain of Custody

Samples Submitted By:

Company: Arcadis through Energy Labs, Inc. Job/P.O. # Arcadis: CO000120.1901

Address: ELI: 400 W Boxelder Rd., Gillette, WY 82718
Arcadis: 630 Plaza Drive, Ste. 200, Highlands Ranch, CO 80129 Project Title HMC-Grants Supp Bkgd Investigation

Contact: ELI: Tracey Archer; Arcadis: Shannon Ulrich

Phone: Tracy Archer: 307-686-7175 x2041
Shannon Ulrich: 303-471-3465

Cell:

Email: tarcher@energylab.com; shannon.ulrich@arcadis.com

Archive: Asbestos samples are archived for 6 months unless other arrangements are made. All other samples are archived for 3 months.

Turnaround Time Requested:

[XRD] Standard (3 to 5 Business Days)
[ ] 24 Hour Rush
[ ] 2 Hour Rush (Asbestos Only)
[RUSH] Other Rush thin sections and petrography

Procedure Requested:

ASBESTOS			DUST & SILICA			OTHER SERVICES	
Bulk	[ ]	Standard EPA	[ ]	Silica – Air NIOSH 7500	[RUSH]	Optical Microscopy	
	[ ]	Progressive	[ ]	Silica – Bulk	[standard] TAT	X-ray Diffraction – Scan/Search	
	[ ]	Point Count	[ ]	Silica – Bulk Respirable	[standard] TAT	X-ray Diffraction – Clay/Bulk	
	[ ]	Other	[ ]	Dust – NIOSH 0500/0600	[ ]	SEM	
Air	[ ]	NIOSH 7400	**Other Analysis:**				
	[ ]	OSHA ID-160					
	[ ]	Other					

	Client Sample No.:	Sample Date	Air Volume	Other Information
1	BK1-39-40-052119	5-21-2019		Bulk XRD; RUSH thin section/petrography
2	BK1-47-48-052119	5-21-2019		Bulk XRD; Clay XRD; RUSH thin section/petrography
3	BK1-51-52-052119	5-21-2019		Bulk XRD; RUSH thin section/petrography
4	BK1-52-53-052119	5-21-2019		Bulk XRD; Clay XRD; RUSH thin section/petrography
5	BK1-55.5-56.5-052219	5-22-2019		Bulk XRD; Clay XRD; RUSH thin section/petrography
6	BK2-35-36-051519	5-15-2019		Bulk XRD; RUSH thin section/petrography
7	BK2-63.5-64-051619	5-16-2019		Bulk XRD; RUSH thin section/petrography
8	BK2-77-77.5-051619	5-16-2019		Bulk XRD; RUSH thin section/petrography
9	BK3-42.5-43.5-052219	5-22-2019		Bulk XRD; Clay XRD; RUSH thin section/petrography
10	BK3-47.5-48.5-052219	5-22-2019		Bulk XRD; RUSH thin section/petrography

Relinquished By: Shannon Ulrich sent to ELI on 5/16/19 and 5/22/19 Date/Time _____

Received By: D Harvey Date/Time 6/17/19 10:45

Revised 1-19-17 cm

DCM SCIENCE LABORATORY, INC.
12421 W. 49th Avenue, Unit #6
Wheat Ridge, CO 80033 (303) 463-8270

Semi-Quantitative X-Ray Diffraction Analysis

Client:
Energy Labs, Inc (for Arcadis)
400 W. Boxelder Road
Gillette, WY 82718

Analysis Date:	6-26-19
Reporting Date:	6-27-19
Receipt Date:	6-17-19
Client Job No.:	Arcadis CO000120.1901
Project Title:	HMC - Grants Supp Bkgd Investigation
DCMSL Project:	ELAB50

Client Sample No.:	**BK1-39-40-052119 5-21-2019**	**BK1-51-52-052119 5-21-19**	**BK2-35-36-051519 5-15-2019**
Phase			
Quartz	72	53	76
Calcite	3	16	2
Plagioclase	8	8	5
K-Feldspar	11	9	9
Goethite/Hematite	3	2	1
Illite/Mica	-	3	2
Kaolinite	-	6	2
Smectite	-	<5*	-
Unaccounted	<5	<5	<5

*May be present

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Client Job No.:	Arcadis CO000120.1901
Project Title:	HMC - Grants Supp Bkgd Investigation
DCMSL Project:	ELAB50

Phase	BK2-63.5-64-051619 5-16-2019	BK2-77-77.5-051619 5-16-2019	BK3-47.5-48.5-052219 5-22-2019
Quartz	77	70	63
Calcite	5	4	3
Plagioclase	4	6	7
K-Feldspar	7	9	18
Illite/Mica	3	3	3
Kaolinite	2	3	2
Dolomite	-	2	2
Unaccounted	<5	<5	<5

The samples were prepared for x-ray diffraction analysis and scanned over a range of 3° to 45° 2Θ Cu Kα radiation, 40kV, 25mA. Mineral phases were identified with the aid of computer-assisted programs accessing a powder diffraction database. Estimates of mineral concentrations are based on relative peak heights and reference intensity ratios (RIR) measured in-house.

Jason Barnes

Jason Barnes, Analyst

DCM SCIENCE LABORATORY, INC.
12421 W. 49th Avenue, Unit #6
Wheat Ridge, CO 80033

(303) 463-8270/(800) 852-7340
(303) 463-8267 – fax

Date/Time Received _____ DCMSL Group No. 2177 DCMSL Log No. ELAB50

Field Data Sheet/Chain of Custody

Samples Submitted By:

Company: Arcadis through Energy Labs, Inc. Job/P.O. # Arcadis: CO000120.1901

Address: ELI: 400 W Boxelder Rd., Gillette, WY 82718
Arcadis: 630 Plaza Drive, Ste. 200, Highlands Ranch, CO 80129 Project Title HMC-Grants Supp Bkgd Investigation

Contact: ELI: Tracey Archer; Arcadis: Shannon Ulrich

Phone: Tracy Archer: 307-686-7175 x2041
Shannon Ulrich: 303-471-3465

Cell: _____

Email: tarcher@energylab.com; shannon.ulrich@arcadis.com

Archive: Asbestos samples are archived for 6 months unless other arrangements are made. All other samples are archived for 3 months.

Turnaround Time Requested:

[XRD] Standard (3 to 5 Business Days)
[ ] 24 Hour Rush
[ ] 2 Hour Rush (Asbestos Only)
[RUSH] Other Rush thin sections and petrography

Procedure Requested:

ASBESTOS			DUST & SILICA			OTHER SERVICES	
Bulk	[ ]	Standard EPA	[ ]	Silica – Air NIOSH 7500	[RUSH]		Optical Microscopy
	[ ]	Progressive	[ ]	Silica – Bulk	standard TAT		X-ray Diffraction – Scan/Search
	[ ]	Point Count	[ ]	Silica – Bulk Respirable	standard TAT		X-ray Diffraction – Clay/Bulk
	[ ]	Other	[ ]	Dust – NIOSH 0500/0600	[ ]		SEM
Air	[ ]	NIOSH 7400	**Other Analysis:**				
	[ ]	OSHA ID-160					
	[ ]	Other					

	Client Sample No.:	Sample Date	Air Volume	Other Information
1	BK1-39-40-052119	5-21-2019		Bulk XRD; RUSH thin section/petrography 1 ✓
2	BK1-47-48-052119	5-21-2019		Bulk XRD; Clay XRD; RUSH thin section/petrography
3	BK1-51-52-052119	5-21-2019		Bulk XRD; RUSH thin section/petrography 2 ✓
4	BK1-52-53-052119	5-21-2019		Bulk XRD; Clay XRD; RUSH thin section/petrography
5	BK1-55.5-56.5-052219	5-22-2019		Bulk XRD; Clay XRD; RUSH thin section/petrography
6	BK2-35-36-051519	5-15-2019		Bulk XRD; RUSH thin section/petrography 3 ✓
7	BK2-63.5-64-051619	5-16-2019		Bulk XRD; RUSH thin section/petrography 4 ✓
8	BK2-77-77.5-051619	5-16-2019		Bulk XRD; RUSH thin section/petrography 5 ✓
9	BK3-42.5-43.5-052219	5-22-2019		Bulk XRD; Clay XRD; RUSH thin section/petrography
10	BK3-47.5-48.5-052219	5-22-2019		Bulk XRD; RUSH thin section/petrography 6

Relinquished By: Shannon Ulrich sent to ELI on 5/16/19 and 5/22/19 Date/Time _____

Received By: D Harvey Date/Time 6/17/19 10:45

Revised 1-19-17 cm

12421 W. 49th Avenue, Unit #6
Wheat Ridge, CO 80033 (303) 463-8270

Semi-Quantitative X-Ray Diffraction Analysis

Client:
Energy Labs, Inc (for Arcadis)
400 W. Boxelder Road
Gillette, WY 82718

Analysis Date:	6-26-19
Reporting Date:	6-27-19
Receipt Date:	6-17-19
Client Job No.:	Arcadis CO000120.1901
Project Title:	HMC - Grants Supp Bkgd Investigation
DCMSL Project:	ELAB51

Client Sample No.:	**BK1-47-48-052119 5-21-2019**	**BK1-52-53-052119 5-21-2019**	**BK1-55.5-56.5-052219 5-22-2019**	**BK3-42.5-43.5-052219 5-22-2019**
Bulk Sample				
Quartz	29	40	51	30
K-Feldspar	6	7	6	5
Plagioclase	6	6	8	5
Calcite	5	7	7	10
Goethite/Hematite	-	3	1	-
Dolomite	-	-	3	-
Total Clay	54	37	22	50
Smectite	31	20	13	19
Illite	8	5	5	22
Kaolinite	15	12	4	9

The bulk sample(s) was/were spiked with corundum, prepared for x-ray diffraction analysis and scanned over a range of 3º to 45º 2θ Cu Kα radiation, 40kV, 25mA. Mineral phases were identified with the aid of computer-assisted programs accessing a powder diffraction database. Estimates of mineral concentrations are based on relative peak heights and reference intensity ratios (RIR) measured in-house.

12421 W. 49th Avenue, Unit #6
Wheat Ridge, CO 80033 (303) 463-8270

Semi-Quantitative X-Ray Diffraction Analysis

Client:
Energy Labs, Inc (for Arcadis)
400 W. Boxelder Road
Gillette, WY 82718

Analysis Date:	6-26-19
Reporting Date:	6-27-19
Receipt Date:	6-17-19
Client Job No.:	Arcadis CO000120.1901
Project Title:	HMC - Grants Supp Bkgd Investigation
DCMSL Project:	ELAB51

Client Sample No.:	**BK1-47-48-052119 5-21-2019**	**BK1-52-53-052119 5-21-2019**	**BK1-55.5-56.5-052219 5-22-2019**	**BK3-42.5-43.5-052219 5-22-2019**
Clay Fraction <2µm				
Smectite	58	55	60	37
Illite	15	14	22	44
Kaolinite	28	31	17	18

An oriented clay mount (<2µm) was prepared for x-ray diffraction analysis and scanned over a range of 3° to 40° 2Θ Cu Ka radiation, 40kV, 25mA. The mount was analyzed air-dried (RH ~25%) and glycolated. Clay concentrations are based on peak areas and intensity factors measured in-house on known standards or computer calculated.

Jason Barnes

Jason Barnes, Analyst

DCM SCIENCE LABORATORY, INC.
12421 W. 49th Avenue, Unit #6
Wheat Ridge, CO 80033

(303) 463-8270/(800) 852-7340
(303) 463-8267 – fax

Date/Time Received _____ DCMSL Group No. 2178 DCMSL Log No. ELAB51

Field Data Sheet/Chain of Custody

Samples Submitted By:

Company: Arcadis through Energy Labs, Inc. Job/P.O. # Arcadis: CO000120.1901

Address: ELI: 400 W Boxelder Rd., Gillette, WY 82718
Arcadis: 630 Plaza Drive, Ste. 200, Highlands Ranch, CO 80129 Project Title HMC-Grants Supp Bkgd Investigation

Contact: ELI: Tracey Archer; Arcadis: Shannon Ulrich

Phone: Tracy Archer: 307-686-7175 x2041
Shannon Ulrich: 303-471-3465

Cell:

Email: tarcher@energylab.com; shannon.ulrich@arcadis.com

Archive: Asbestos samples are archived for 6 months unless other arrangements are made. All other samples are archived for 3 months.

Turnaround Time Requested:

[XRD] Standard (3 to 5 Business Days)
[ ] 24 Hour Rush
[ ] 2 Hour Rush (Asbestos Only)
[RUSH] Other Rush thin sections and petrography

Procedure Requested:

ASBESTOS			DUST & SILICA			OTHER SERVICES	
Bulk	[ ]	Standard EPA	[ ]	Silica – Air NIOSH 7500	[RUSH]	Optical Microscopy	
	[ ]	Progressive	[ ]	Silica – Bulk	standard TAT	X-ray Diffraction – Scan/Search	
	[ ]	Point Count	[ ]	Silica – Bulk Respirable	standard TAT	X-ray Diffraction – Clay/Bulk	
	[ ]	Other	[ ]	Dust – NIOSH 0500/0600	[ ]	SEM	
Air	[ ]	NIOSH 7400	**Other Analysis:**				
	[ ]	OSHA ID-160					
	[ ]	Other					

	Client Sample No.:	Sample Date	Air Volume	Other Information
1	BK1-39-40-052119	5-21-2019		Bulk XRD; RUSH thin section/petrography
2	BK1-47-48-052119	5-21-2019		Bulk XRD; Clay XRD; RUSH thin section/petrography 1
3	BK1-51-52-052119	5-21-2019		Bulk XRD; RUSH thin section/petrography
4	BK1-52-53-052119	5-21-2019		Bulk XRD; Clay XRD; RUSH thin section/petrography 2
5	BK1-55.5-56.5-052219	5-22-2019		Bulk XRD; Clay XRD; RUSH thin section/petrography 3
6	BK2-35-36-051519	5-15-2019		Bulk XRD; RUSH thin section/petrography
7	BK2-63.5-64-051619	5-16-2019		Bulk XRD; RUSH thin section/petrography
8	BK2-77-77.5-051619	5-16-2019		Bulk XRD; RUSH thin section/petrography
9	BK3-42.5-43.5-052219	5-22-2019		Bulk XRD; Clay XRD; RUSH thin section/petrography 4
10	BK3-47.5-48.5-052219	5-22-2019		Bulk XRD; RUSH thin section/petrography

Relinquished By:	Date/Time	Received By:	Date/Time
Shannon Ulrich sent to ELI on 5/16/19 and 5/22/19		D Harvey	6/17/19 10:45

Revised 1-19-17 cm

Project Photographs

Grants Reclamation Project
Additional petrographic images from DCM Science Laboratory collected after final laboratory report was issued.

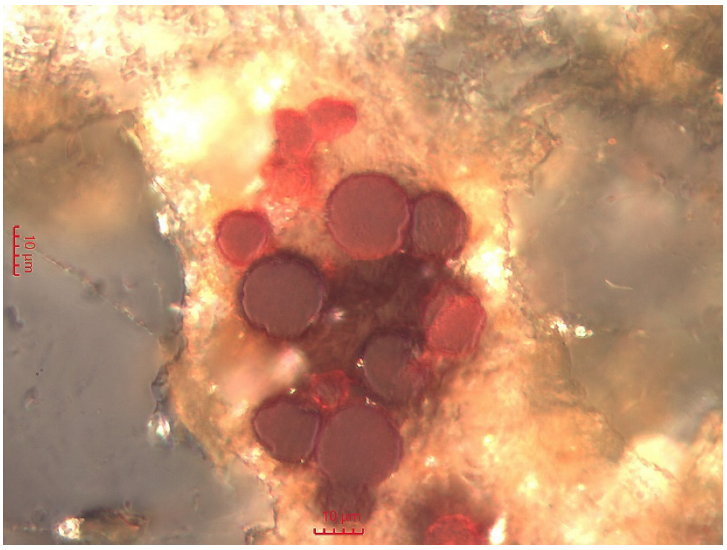


Photo: 1

Date:
7-2019

Description:
Goethite pseudomorphs after pyrite framboids

Location:
BK1-51-52

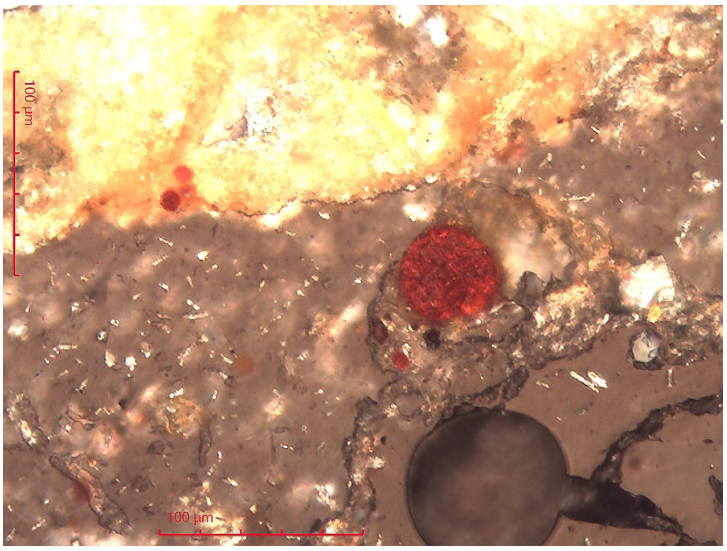


Photo: 2

Date:
7-2019

Description:
Goethite pseudomorphs after pyrite framboids

Location:
BK1-52-53

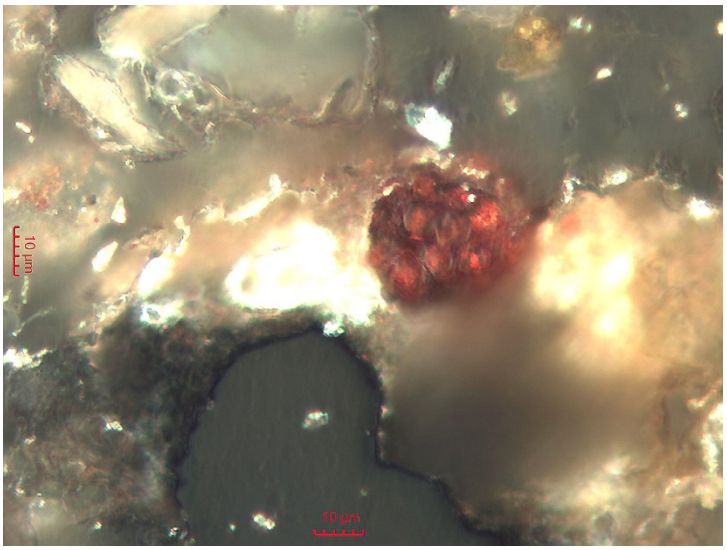


Photo: 3

Date:
7-2019

Description:
Goethite pseudomorphs after pyrite framboids

Location:
BK1-55.5-56.5

Project Photographs

Grants Reclamation Project
Additional petrographic images from DCM Science Laboratory collected after final laboratory report was issued.

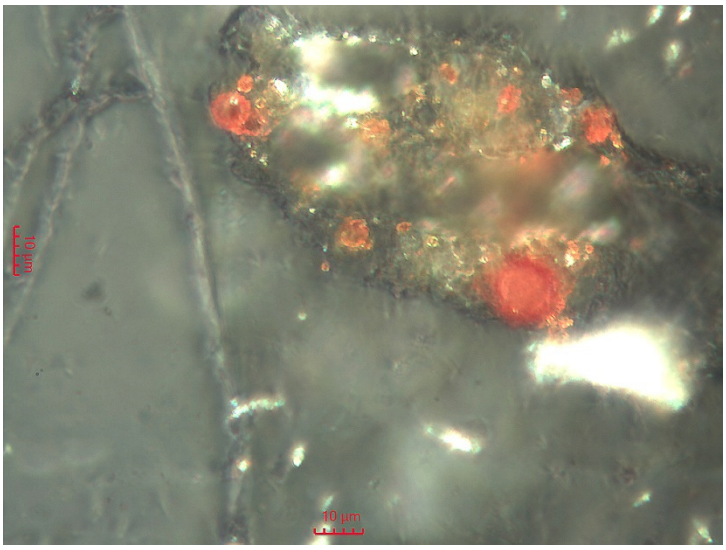


Photo: 1

Date:
7-2019

Description:
Goethite pseudomorphs after pyrite framboids

Location:
BK2-35-36

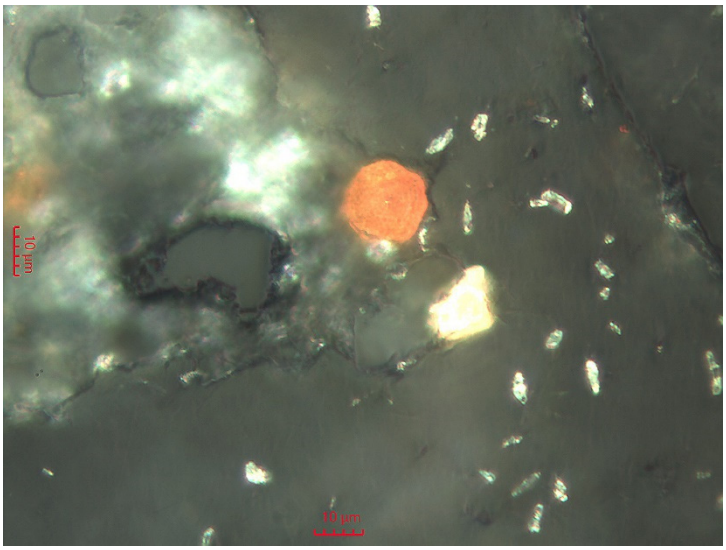


Photo: 2

Date:
7-2019

Description:
Goethite pseudomorphs after pyrite framboids

Location:
BK2-63.5-64

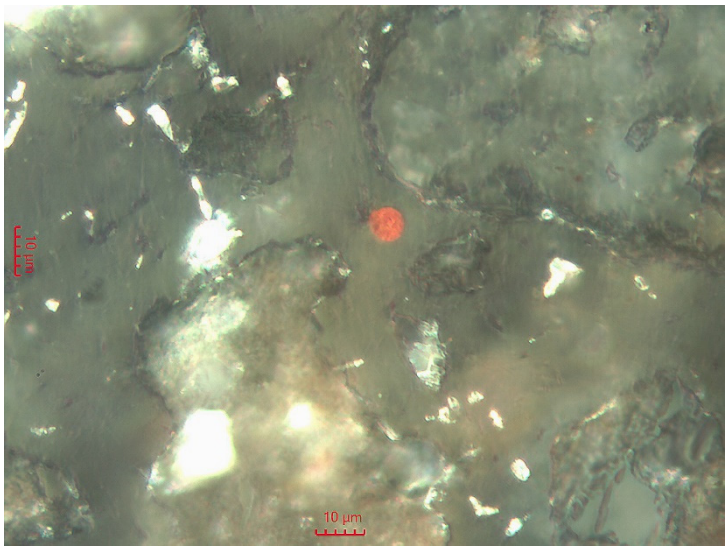


Photo: 3

Date:
7-2019

Description:
Goethite pseudomorphs after pyrite framboids

Location:
BK2-77-77.5

Project Photographs

Grants Reclamation Project
Additional petrographic images from DCM Science Laboratory collected after final laboratory report was issued.

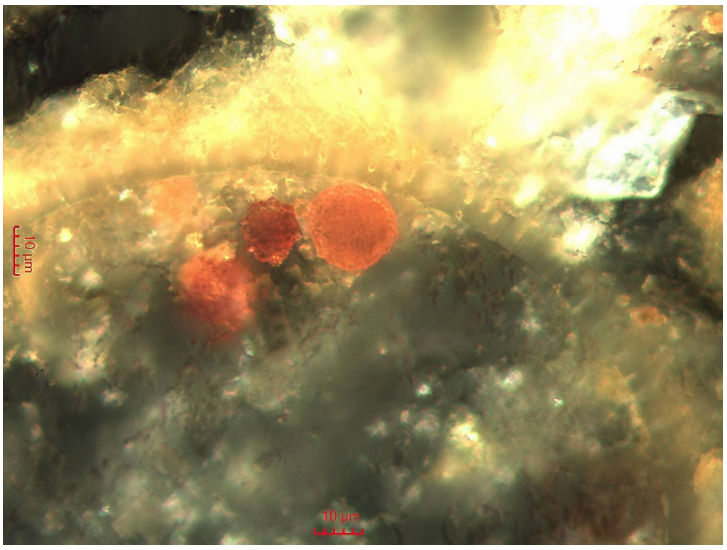


Photo: 7

Date:
7-2019

Description:
Goethite pseudomorphs after pyrite framboids

Location:
BK3-47.5-48.5

HAZEN RESEARCH, INC.

4601 Indiana Street • Golden, Colorado 80403 USA
Phone: (303) 279-4501 • Fax: (303) 278-1528
www.hazenresearch.com

July 19, 2019

Email Delivery

Ms. Tracey Archer
Energy Laboratories, Inc.
2393 Salt Creek Highway,
Casper, WY 82601

Subject: Uranium Deportment in a Soil Sample
Hazen Project 12685

Dear Ms. Archer:

This report provides a summary of a mineralogical study conducted by Hazen Research, Inc. on the uranium deportment in one soil sample, labeled BK1-52–53-052119. The main objective of the study was to identify and characterize any uranium-bearing minerals.

On June 17, 2019, Energy Laboratories, Inc. submitted two soil samples; the chain of custody form for these samples is enclosed at the end of this report. The origin of the samples and the geological environment is unknown. One of the samples was marked "hold." The sample for immediate analysis was characterized as sandy clay. The sample reportedly has a uranium concentration of 2 mg/kg, using US Environmental Protection Agency (EPA) Method 3050B,[1] followed by inductively coupled plasma–mass spectrometry (ICP–MS) analysis.

The sample was analyzed using Hazen's FEI-650FEG high-resolution SEM[2] system with attached QEMSCAN[3] technology.

[1]US Environmental Protection Agency, "Method 3050B, Acid Digestion of Sediments, Sludges, and Soils" (December 1996).

[2]Electron microscopes use a beam of charged particles and use electromagnetic or electrostatic lenses to focus the beam onto a sample surface. In general, field emission gun (FEG) electron microscope can visualize features as small as 10–20 nanometers (1–2 × 10^{-8} meters). Electron detectors are used to build an image of the specimen's surface. When electrons impinge on the specimen, they cause, amongst other phenomena, the following: (a) some of the primary electrons are reflected backscattered electrons (BSE); the BSE signal is used primarily for its strong atomic number contrast; and (b) specimen atoms may emit x-rays whose energy and wavelength are related to the elemental composition; these are called characteristic x-rays and are used for elemental microanalysis.

[3]QEMSCAN (**Q**uantitative **E**valuation of **M**inerals by **Scan**ning Electron Microscopy) uses advanced electron beam technology and combines this with high-resolution imaging and energy-dispersive spectrometry (EDS). The components are integrated to provide a comprehensive tool capable of identifying most ore- and rock-forming minerals as well as human-made phases on a microscale in just milliseconds.

SUMMARY

Five polished sections of the fine-grained soil sample were scanned automatically to locate uranium-bearing phases. Between 58 and 83% of the surfaces of the exposed sections were covered by the system. Particles exhibiting one or more pixels (physical point in a raster image) with an elevated backscattered electron (BSE) signal level were analyzed in detail by QEMSCAN-based energy-dispersive spectrometry (EDS) to characterize the chemical and mineralogical composition of the composite particles. The analysis point spacing was 1.5 µm.

No uranium minerals were found during the search. However, thorium mineral grains with elevated uranium levels were observed in a single occurrence locked in quartz (Figure 1). The inclusions were too small for exact identification of their chemistry. The inclusions could be thorium oxide (ThO_2, thorianite) or thorium silicate ($ThSiO_4$, thorite), or both. A second thorium-rich inclusion in quartz may also contain low levels of uranium (Figure 2). Another mineral found to contain low levels of uranium is xenotime, an yttrium phosphate (Figures 3 and 4). The sample also contains low amounts of zircon ($ZrSiO_4$) and monazite (a rare-earth phosphate). Both zircon and monazite can contain low uranium levels, as described in the literature.[4,5] However, if present, uranium levels were too low to be detected by QEMSCAN-EDS under the acquisition conditions applied. Xenotime, zircon, and monazite are common accessory minerals in the soil sample BK1-52–53.

The EPA 3050B digestion method followed by ICP–MS determination of the uranium concentration uses nitric acid plus hydrogen peroxide and is a partial digestion method. Monazite may be slightly affected by nitric acid.[6] Zircon and xenotime are not soluble. Any uranium present in the latter two minerals probably remains in the residue portion during digestion.

It cannot be excluded that a portion of the nitric acid soluble uranium in the sample exists as complexes of the stable uranyl ion, UO_2^{2+}. The uranyl ion forms hydrolysis species, which may adsorb onto clays or iron oxides and iron hydroxides. Levels of adsorbed uranyl complexes are believed to be too low for detection by QEMSCAN technology.

[4]Lutz Nasdala et al., "Retention of Uranium in Complexly Altered Zircon: An Example from Bancroft, Ontario," *Chemical Geology* 269, no. 3–4 (2010): 290–300.

[5]G. T. Lapidus and F. M. Doyle, "Selective Thorium and Uranium Extraction from Monazite: I. Single-Stage Oxalate Leaching," *Hydrometallurgy* 154 (2015): 102–110.

[6]http://marulla.com/mineral-solubility/ (accessed July 18, 2019).

SAMPLE RECEIPT, PREPARATION, AND DATA ACQUISITION

On receipt, the ice in the shipping container had melted. Both samples were shipped in small plastic bags and weighed less than 100 g each. They were moist and appeared lumpy. The sample, marked "hold," was placed in a freezer shortly after delivery. Sample BK1-52-53 was submitted for sample preparation. It was dried overnight at 60°C. The moisture content was 15.8%. After drying, the agglomerates were broken up gently, and the sample was homogenized. The sample was then split. Five round polished epoxy resin blocks (28 mm in diameter) were prepared from sample subsplits for QEMSCAN analysis.

The polished sections were scanned automatically on the QEMSCAN system in the Trace Mineral Search (TMS) mode to locate and characterize uranium-bearing particles. The TMS analysis mode analyzes only a preset subpopulation of the particles exposed in cross section. This acquisition mode is based on the premise that phases of primary interest (i.e., target phases with a relatively high average atomic number; here, uranium-bearing minerals) have a higher BSE[7] brightness than the bulk of the silicate minerals. Therefore, the TMS mode enables each polished section to be scanned for particles containing target phases. Only those particles that exhibit pixels in the BSE image with a BSE brightness greater than a set threshold are fully analyzed and characterized chemically and mineralogically at a preset analysis point spacing (here, 1.5 μm). The analysis mode minimizes the acquisition time.

QEMSCAN acquisition is fully automated. In the TMS measurement setup, the surface of each polished section was subdivided into slightly overlapping fields of view. The microscope magnification was set so each field of view was 288 μm^2 in size. At this setting, the section surface was subdivided into 6,353 fields. At each field, the system acquired a high-resolution BSE image and located particles containing pixels with elevated BSE intensity above the set threshold of 83. This relatively low threshold value was selected because the uranium mineralogy was unknown and uranium-bearing grains were anticipated to be small in this particular sample, potentially less than 1 μm. In addition to the atomic number dependency, the measured BSE signal intensity is also a function of the grain sizes, i.e., the mass of a particular grain under the electron beam. Therefore, the signal emitted from submicron grains collected by the BSE detector is weaker than from larger grains.

Data acquisition of Section-A was terminated after 21 h. Acquisition of the other section was terminated by the software after 7,500 particles containing elevated BSE signal intensities were analyzed. Between 14 and 20 million x-ray data points were collected on each polished section. Table 1 shows some of the acquisition statistics.

The mineral identification protocol was configured in a way that enhanced the probability of identifying possible uranium-bearing phases during the automated raw data acquisition. Acquisition points, for which the software indicated the potential presence of uranium- or thorium-bearing phases, were verified manually. Manual confirmation was necessary because of the potential line overlaps and false positives at

[7]The BSE brightness intensity is divided into 256 channels, ranging from black (0) to white (255). The slope of the BSE intensity versus average atomic number is calibrated using a three-point calibration using quartz (intensity 42), copper (130), and gold (232) as standards.

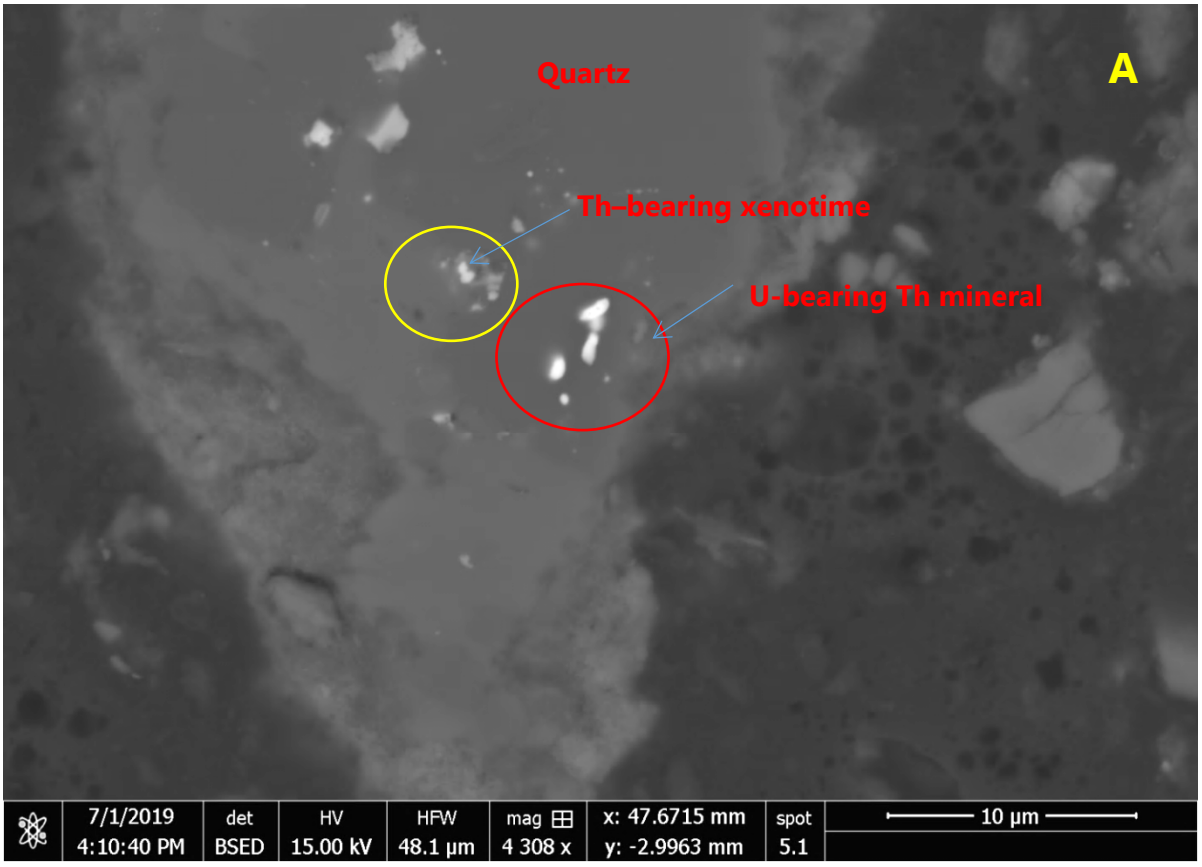
the short counting times applied (10–20 ms per analysis point). The main mineralogy of the particles analyzed was determined. Other minerals that may contain low levels of uranium were investigated.

Table 1. TMS Acquisition Statistics

Section ID	Analysis Point Spacing, µm	Particle Counts	Acquisition Time, h	No. of Fields Scanned	No. of Fields with Target Particles	Section Fraction Scanned, %
A	1.54	10,497	21	5,248	4,591	83
B		7,503	16	3,682	3,241	58
C		7,500	16	3,788	3,316	60
D		7,501	18	4,247	3,618	67
E		7,500	17	4,729	3,769	74

RESULTS

Minerals identified during the investigation in decreasing order of abundance are clays, quartz, feldspars, carbonates, micas, iron oxides or oxyhydroxides, chlorite-group minerals, titanium oxide, barite, apatite, titanium–iron oxides, and iron sulfides. Accessory minerals are zircon, monazite, xenotime, and thorium-rich oxides or thorium silicate. No uranium-rich minerals like uraninite (UO_2) or coffinite ($U(SiO_4)_{1-x}(OH)_{4x}$) were recognized. Uranium was identified to occur in thorium-rich inclusions in quartz (Figure 1). Figure 2 shows another thorium-bearing inclusion in quartz. The inclusion is less than 1 µm in size and could be thorium-bearing rare monazite (rare-earth phosphate). The grain may also contain low levels of uranium. Xenotime (yttrium phosphate), which is enriched in heavy rare-earth elements, was found to contain low levels of uranium or may contain submicron inclusions of uranium- and thorium-bearing minerals. Figure 3 shows a chemically zoned xenotime grain with inclusions of uranium-bearing phases. The grain exhibits zonation of heavy rare-earth elements and thorium. Figure 4 shows another example of thorium- and uranium-bearing xenotime.



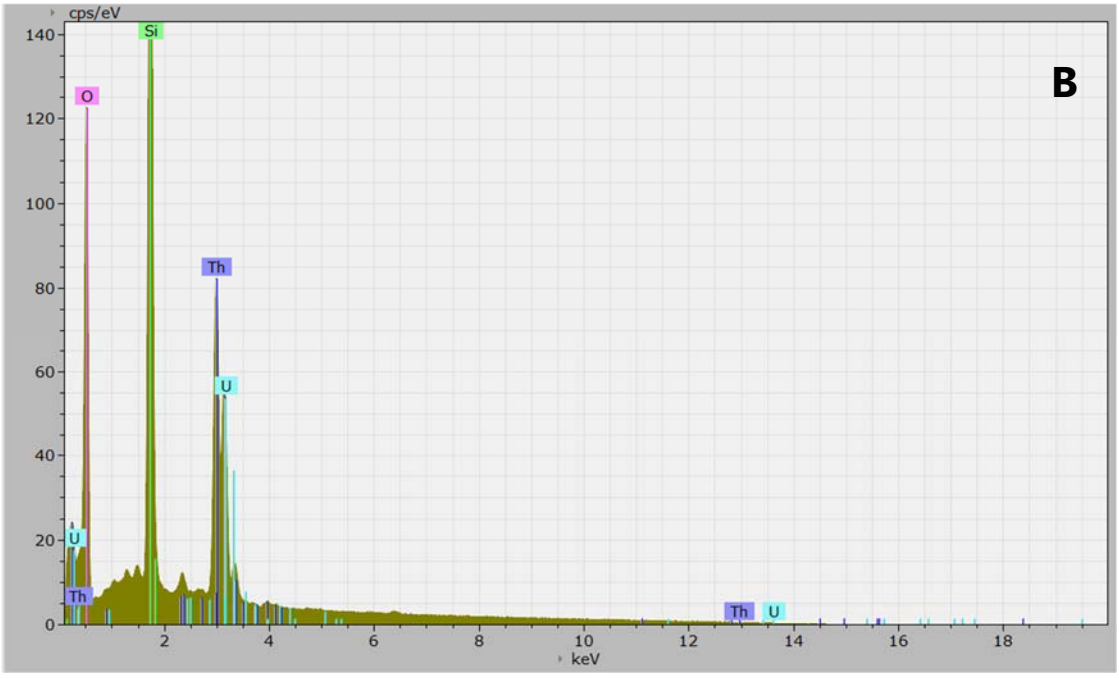


Figure 1. BSE Image of Thorium Mineral Locked in Quartz (A) and Screenshot of Qualitative EDS Analysis Showing Uranium Levels (B)

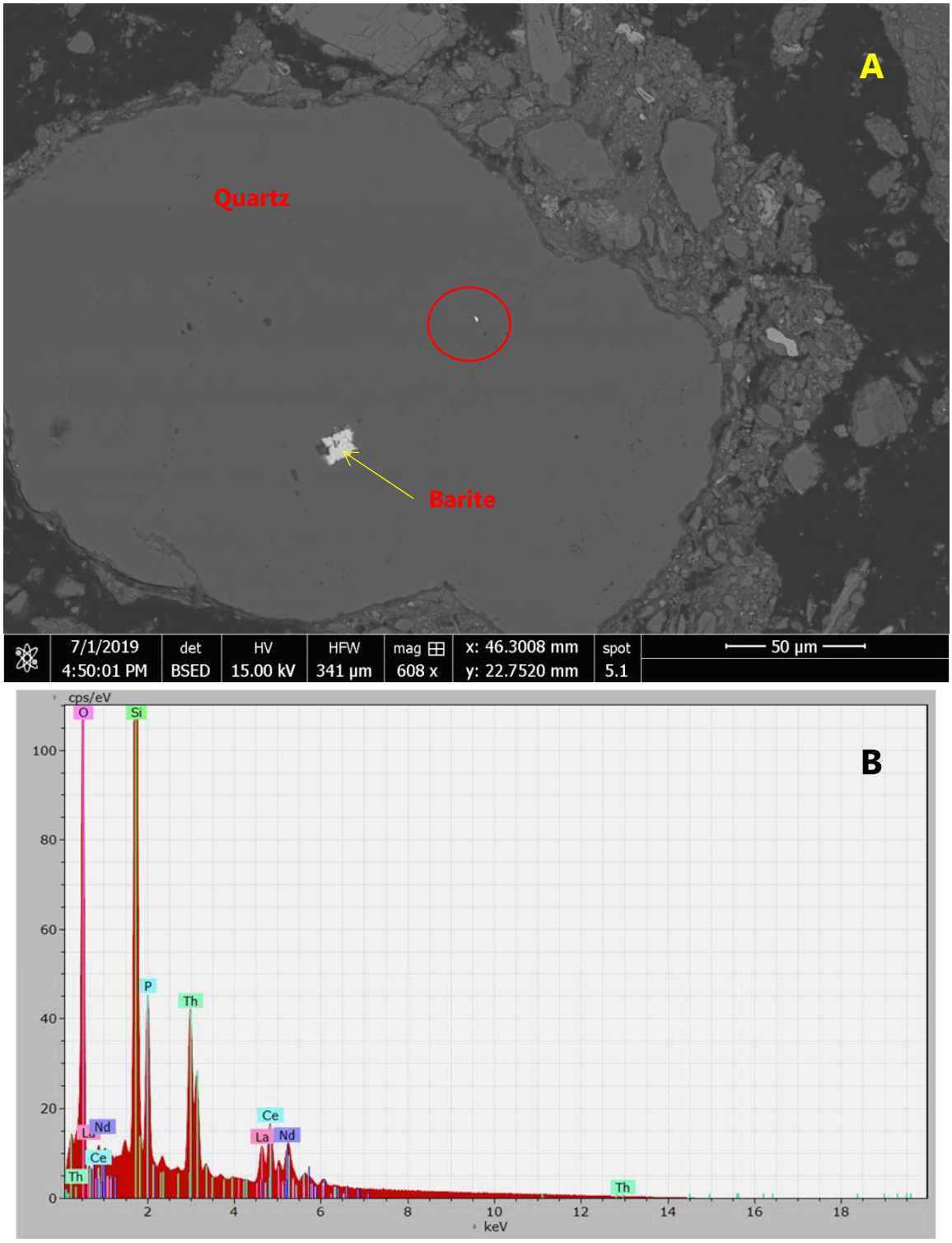


Figure 2. BSE Image of Thorium-Bearing Mineral Locked in Quartz (A) and Screenshot of Qualitative EDS Analysis Showing Thorium, Rare Earths, and Phosphorus Levels (B)

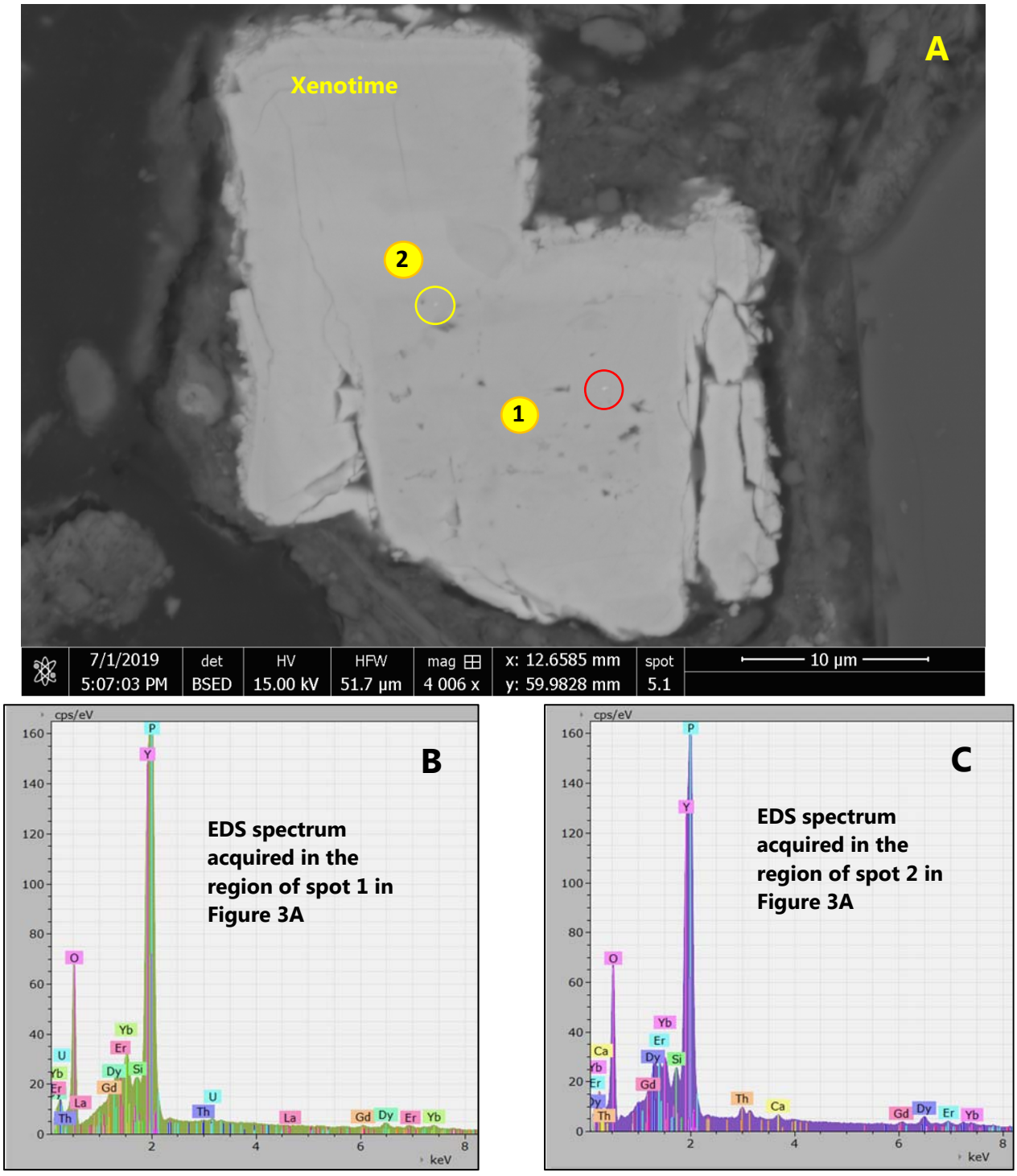


Figure 3. Zoned Xenotime Grain (A) Containing Variable Levels of Uranium, Thorium, and Heavy Rare-Earth Elements (B and C; also see Figure 4)

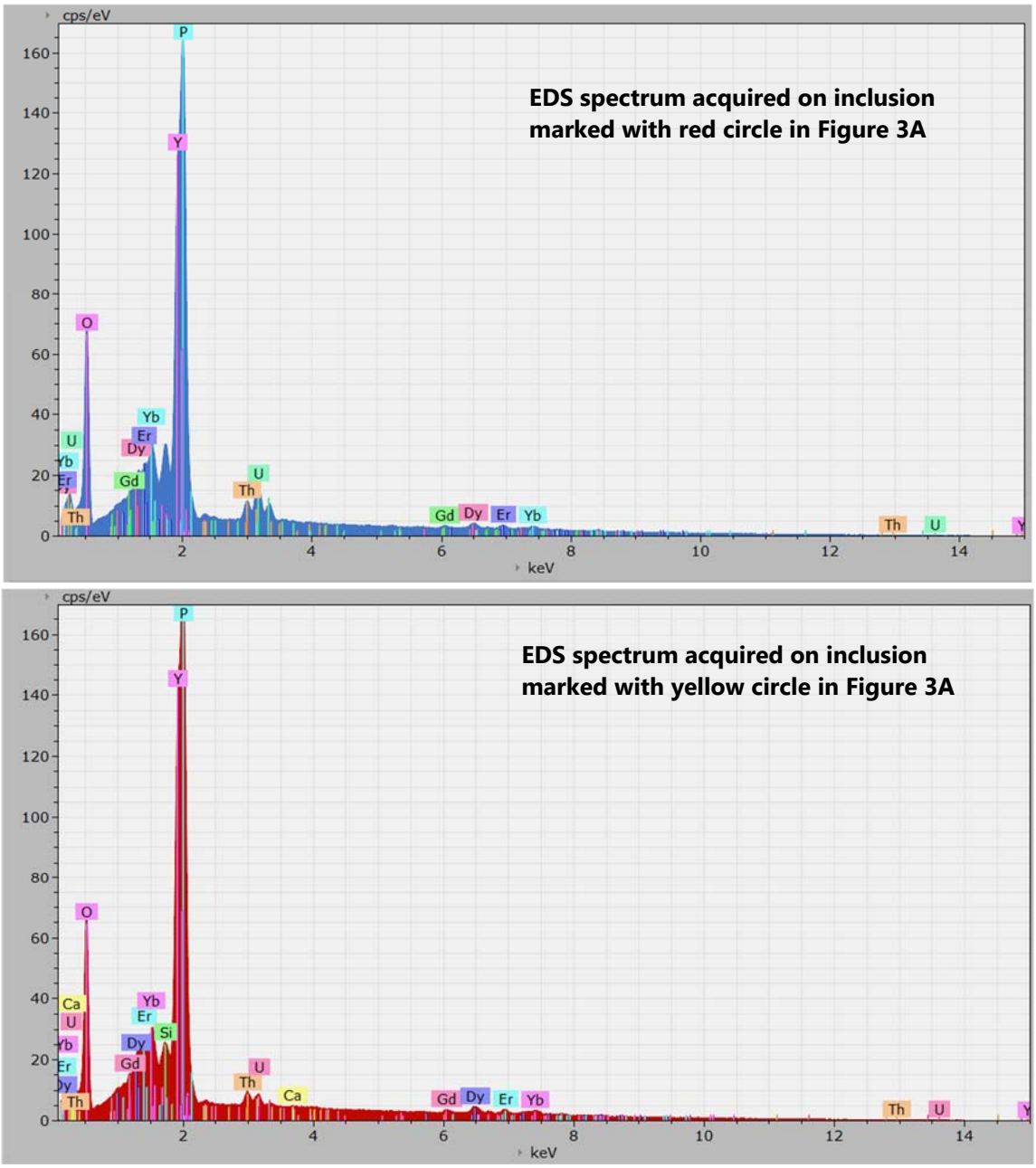


Figure 4. Screenshots of EDS Analysis Performed on Inclusions in Xenotime Grain Shown in Figure 3A

Please let us know if you have any comments or questions about this report.

Regards,

Hanna Horsch
Manager of Quantitative Mineralogy

HH/sc

Enclosure

xc: Jeff Gillow, Geosyntec Consultants (email: jgillow@geosyntec.com)
Shannon Ulrich, Arcadis, (email: Shannon.Ulrich@arcadis.com)
Nick Hazen, Hazen Research, Inc.

CHAIN OF CUSTODY RECORD ANALYTICAL SERVICES REQUEST

Huffman Hazen Laboratories
A Division of Hazen Research, Inc.

4630 Indiana Street • Golden, CO 80403
Phone: (303) 278-4455
FAX: (303) 278-7012

CLIENT Homestake Mining Company, subcontracted through Energy Labs
Tracey Archer (ELI)
CONTACT NAME Shannon Ulrich (Arcadis on behalf of HMC)

Lab # _____
P.O. # _____

ADDRESS Tracey Archer, 400 W Boxelder Rd., Gillette, WY 82718
Shannon Ulrich 630 Plaza Dr. Ste 200, Highlands Ranch, CO 80129

BILLING ADDRESS ELI: Tracey Archer, 400 W Boxelder Rd., Gillette, WY

PHONE # Tracey Archer: 307-686-7175 x2041
Shannon Ulrich: 303-471-3465

FAX # _____

SAMPLERS: (Signature) _____

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	NUMBER OF CONTAINERS	ANALYSES REQUESTED: QEMSCAN							REMARKS
BK1-51-52-052119	5-21-19	1750	So	1	HOLD							Analyses are subcontracted through ELI
BK1-52-53-052119	5-21-19	1820	So	1	x							

(Signature)	DATE	TIME	(Signature)	DATE	TIME	COMMENTS:
RELINQUISHED BY Relinquished to ELI on 6/22/19			RECEIVED BY Michelle Stringer	6-17-19	11 00	Cont. Sealed - no ice remaining
RELINQUISHED BY			RECEIVED BY			
RELINQUISHED BY			RECEIVED BY			
DISPATCHED BY:			RECEIVED FOR LAB BY:			

METHOD OF SHIPMENT: FED X ☐ UPS ☐ COURIER ☐ HAND-DELIVERY ☐ OTHER ☐ _____

ISOTOPE TRACER TECHNOLOGIES INC

Isotope Analyses for: Homestake Mining Company

IT2 FILE # 190124

2019-07-05

Approved by:

Orfan SStash

Orfan Shouakar-Stash, PhD
Director
Isotope Tracer Technologies Inc.
695 Rupert St. Unit B, Waterloo, ON, N2V 1Z5
Tel: 519-886-5555 | Fax: 519-886-5575
Email: orfan@it2isotopes.com
Website: www.it2isotopes.com

2019-07-05

ISOTOPE TRACER TECHNOLOGIES INC

Client: Homestake Mining Company
Address: PO Box 98
Grants, NM 87068
USA
Tel: 505-885-1041
Attn.: Adam Arguello
E-mail: aarguello@barrick.com
E-mail: Shannon.Ulrich@arcadis.com

File Number: **190124**

#	Sample ID	Sample Collection		Sample #	$\delta^{34}S$	Result	Repeat	$\delta^{18}O$	Result	Repeat
		Date	Time		SO_4	VCDT		SO_4	VSMOW	
1	BK1f	2019-06-10	9:22	59052	X	-24.0	-24.3	X	3.6	1.0
2	BK1c	2019-06-10	11:48	59053	X	-26.1		X	1.4	
3	BK2f	2019-06-10	13:35	59054	X	-23.7		X	3.5	
4	BK2c	2019-06-10	15:20	59055	X	-23.8		X	2.6	

RUSH ANALYSES

34S SO4 Analyses

Instrument Used:

Isotope Ratio Mass Spectrometry (IRMS) - MAT 253, Thermo Scientific, Germany
Coupled with Elemental Analyzer (EA), Fisons Instruments, Italy

Standard Used:

IAEA-SO-6 / IT^2-520 / IAEA-SO-5 / IT^2-518 / NBS-127

Typical Standard deviation:

±0.5‰

18O SO4 Analyses

Instrument Used:

Isotope Ratio Mass Spectrometry (IRMS) - Delta^{Plus}, Finnigan MAT, Germany
Coupled with TC/EA, Thermo Scientific, Germany.

Standard Used:

USGS-32 / NBS-127 / IAEA-SO-5 / IAEA-SO-6

Typical Standard deviation:

±0.5‰

Approved by:

Orfan SStash

Orfan Shouakar-Stash, PhD
Director
Isotope Tracer Technologies Inc.
695 Rupert St. Unit B, Waterloo, ON, N2V 1Z5
Tel: 519-886-5555 | Fax: 519-886-5575
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ISOTOPE TRACER TECHNOLOGIES INC

Isotope Analyses for: Arcadis / Energy Laboratories Inc.

IT2 FILE # 190127

2019-07-19

Approved by:

Orfan SStash

Orfan Shouakar-Stash, PhD
Director
Isotope Tracer Technologies Inc.
695 Rupert St. Unit B, Waterloo, ON, N2V 1Z5
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Report Date: 2019-07-19

Client: Arcadis / Energy Laboratories, Inc.
Address: 630 Plaza Dr., Ste. 200, Highlands Ranch, CO 80129
400 W Boxelder Rd., Gilette, WY 82718 (ELI)
Tel: 307-686-7175 x. 2041 (Tracey Archer)
Tel: 303-471-3456 (Shannon Ulrich)
Attn.: Tracey Archer (ELI)
Attn.: Shannon Ulrich (Arcadis)
E-mail: tarcher@energylab.com
E-mail: Shannon.Ulrich@arcadis.com
E-mail: aarguello@barrick.com

File Number: **190127**
Project Number: **CO000120.1901 (Arcadis)**

#	Sample ID	Sample Collection		Sample #	$\delta^{34}S$	Result	Repeat	$\delta^{18}O$	Result	Repeat
		Date	Time		Dissolved SO_4	VCDT		Dissolved SO_4	VSMOW	
1	BK1-39-40-052119	2019-05-21	14:20	59070	X	6.0	5.6	X	9.6	9.2
2	BK1-47-48-052119	2019-05-21	16:30	59071	X	-22.1		X	2.8	
3	BK1-51-52-052119	2019-05-21	17:50	59072	X	-25.7	-25.3	X	1.7	
4	BK1-52-53-052119	2019-05-21	18:20	59073	X	-20.3		X	2.2	
5	BK1-55.5-56.5-052219	2019-05-22	8:55	59074	X	-20.9		X	6.9	6.6
6	BK2-35-36-051519	2019-05-15	17:40	59075	X	-0.5	-0.1	X	7.9	8.3
7	BK3-42.5-43.5-052219	2019-05-22	15:05	59076	X	-14.8		X	5.5	5.8
8	BK3-47.5-48.5-052219	2019-05-22	13:00	59077	X	-4.1		X	5.2	

RUSH ANALYSES

^{18}O SO_4 Analyses

Instrument Used:

Isotope Ratio Mass Spectrometry (IRMS) - Delta^{Plus}, Finnigan MAT, Germany
Coupled with TC/EA, Thermo Scientific, Germany.
Standard Used: USGS-32 / NBS-127 / IAEA-SO-5 / IAEA-SO-6
Typical Standard deviation: ±0.5‰

^{34}S SO_4 Analyses

Instrument Used:

Isotope Ratio Mass Spectrometry (IRMS) - MAT 253, Thermo Scientific, Germany
Coupled with Elemental Analyzer (EA), Fisons Instruments, Italy
Standard Used: IAEA-SO-6 / IT2-520 / IAEA-SO-5 / IT2-518 / NBS-127
Typical Standard deviation: ±0.5‰

Approved by:

Orfan Shouakar-Stash, PhD
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Report Date: 2019-07-19

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Tel: 307-686-7175 x. 2041 (Tracey Archer)
Tel: 303-471-3456 (Shannon Ulrich)
Attn.: Tracey Archer (ELI)
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E-mail: Shannon.Ulrich@arcadis.com
E-mail: aarguello@barrick.com

File Number: **190127**
Project Number: **CO000120.1901 (Arcadis)**

#	Sample ID	Sample Collection		Sample #	$\delta^{34}S$	Result	Repeat	$\delta^{18}O$	Result	Repeat
		Date	Time		Adsorbed SO_4	VCDT		Adsorbed SO_4	VSMOW	
1	BK1-39-40-052119	2019-05-21	14:20	59070	X	6.0		X	8.6	
2	BK1-47-48-052119	2019-05-21	16:30	59071	X	-14.8	-15.5	X	6.7	5.6
3	BK1-51-52-052119	2019-05-21	17:50	59072	X	-10.1		X	NES	
4	BK1-52-53-052119	2019-05-21	18:20	59073	X	-15.2	-14.9	X	7.2	6.7
5	BK1-55.5-56.5-052219	2019-05-22	8:55	59074	X	-10.3	-9.6	X	6.1	7.3
6	BK2-35-36-051519	2019-05-15	17:40	59075	X	0.0		X	NES	
7	BK3-42.5-43.5-052219	2019-05-22	15:05	59076	X	-5.5	-5.4	X	5.6	5.2
8	BK3-47.5-48.5-052219	2019-05-22	13:00	59077	X	-2.0		X	1.7	

RUSH ANALYSES
Small Peak. Uncertainty is High
NES: No enough sample

^{18}O SO_4 Analyses

Instrument Used:
Isotope Ratio Mass Spectrometry (IRMS) - Delta^{Plus}, Finnigan MAT, Germany
Coupled with TC/EA, Thermo Scientific, Germany.
Standard Used: USGS-32 / NBS-127 / IAEA-SO-5 / IAEA-SO-6
Typical Standard deviation: ±0.5‰

^{34}S SO_4 Analyses

Instrument Used:
Isotope Ratio Mass Spectrometry (IRMS) - MAT 253, Thermo Scientific, Germany
Coupled with Elemental Analyzer (EA), Fisons Instruments, Italy
Standard Used: IAEA-SO-6 / IT2-520 / IAEA-SO-5 / IT2-518 / NBS-127
Typical Standard deviation: ±0.5‰

Approved by:

Orfan SStash

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Completed 2019-07-19

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Attn.: Shannon Ulrich (Arcadis)
E-mail: tarcher@energylab.com
E-mail: Shannon.Ulrich@arcadis.com
E-mail: aarguello@barrick.com

File Number: **190127**
Project Number: **CO000120.1901 (Arcadis)**

#	Sample ID	Sample Collection		Sample #	$\delta^{34}S$	Result	Repeat
		Date	Time		S_2	VCDT	
1	BK1-39-40-052119	2019-05-21	14:20	59070	X	3.1	
2	BK1-47-48-052119	2019-05-21	16:30	59071	X	-16.1	
3	BK1-51-52-052119	2019-05-21	17:50	59072	X	-2.9	1.1
4	BK1-52-53-052119	2019-05-21	18:20	59073	X	1.4	1.4
5	BK1-55.5-56.5-052219	2019-05-22	8:55	59074	X	10.4	
6	BK2-35-36-051519	2019-05-15	17:40	59075	X	-7.7	
7	BK3-42.5-43.5-052219	2019-05-22	15:05	59076	X	-19.2	
8	BK3-47.5-48.5-052219	2019-05-22	13:00	59077	X	-2.7	-1.9

RUSH ANALYSES
Small Peak. Uncertainty is High

^{34}S Analyses

Instrument Used:
Isotope Ratio Mass Spectrometry (IRMS) - MAT 253, Thermo Scientific, Germany
Coupled with Elemental Analyzer (EA), Fisons Instruments, Italy

Standard Used:
IAEA-SO-6 / IT^2-520 / IAEA-SO-5 / IT^2-518 / NBS-127

Typical Standard deviation:
±0.5‰

Approved by:

Orfan SStash

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Director
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ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 18, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52539

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52539. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52539. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 14, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 18, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52539

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52539. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK1-11.5-12.5-052119

ACZ Sample ID: ***L52539-01***
Date Sampled: *05/21/19 12:35*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	98.8		*	%	0.1	0.5	06/21/19 11:00	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 8:00	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK1-11.5-12.5-052119-DI

ACZ Sample ID: ***L52539-02***
Date Sampled: *05/21/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.2	J	*	mg/L	0.1	0.5	07/18/19 0:32	jlw
Calcium, dissolved	M200.7 ICP	2	5.0		*	mg/L	0.2	1	07/16/19 14:01	aeh
Iron, dissolved	M200.7 ICP	2	1.34		*	mg/L	0.06	0.2	07/16/19 14:01	aeh
Magnesium, dissolved	M200.7 ICP	2	0.9	J	*	mg/L	0.4	2	07/16/19 14:01	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 14:01	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0012		*	mg/L	0.0004	0.001	07/15/19 11:55	mfm
Potassium, dissolved	M200.7 ICP	2		U	*	mg/L	0.4	2	07/16/19 14:01	aeh
Selenium, dissolved	M200.8 ICP-MS	2		U	*	mg/L	0.0002	0.0005	07/15/19 11:55	mfm
Silicon, dissolved	M200.7 ICP	2	4.8		*	mg/L	0.2	1	07/16/19 14:01	aeh
Sodium, dissolved	M200.7 ICP	2		U	*	mg/L	0.4	2	07/16/19 14:01	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0003	J	*	mg/L	0.0002	0.001	07/15/19 11:55	mfm
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/16/19 14:01	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	20.0	H	*	mg/L	3	20	07/16/19 0:00	emk
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/16/19 0:00	emk
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/16/19 0:00	emk
Total Alkalinity		1	20.0	H	*	mg/L	3	20	07/16/19 0:00	emk
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	07/16/19 21:19	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	1.3	BH	*	mg/L	1	5	07/17/19 10:07	ttg

ARCADIS
Project ID:
Sample ID: BK1-11.5-12.5-052119-STEP 1

ACZ Sample ID: ***L52539-03***
Date Sampled: *05/21/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5		U	*	mg/L	0.3	1	07/18/19 0:35	jlw
Calcium, dissolved	M200.7 ICP	5	2.2	J	*	mg/L	0.5	3	07/16/19 14:04	aeh
Iron, dissolved	M200.7 ICP	5	1.5		*	mg/L	0.2	0.4	07/16/19 14:04	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:04	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 14:04	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 11:57	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:04	aeh
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/15/19 11:57	mfm
Silicon, dissolved	M200.7 ICP	5	6.3		*	mg/L	0.5	3	07/16/19 14:04	aeh
Sodium, dissolved	M200.7 ICP	5	367		*	mg/L	1	5	07/16/19 14:04	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0014	J	*	mg/L	0.0005	0.003	07/15/19 11:57	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 14:04	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	H	*	mg/L	0.01	0.05	07/16/19 21:21	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	1.1	BH	*	mg/L	1	5	07/17/19 10:07	ttg

ARCADIS
Project ID:
Sample ID: BK1-11.5-12.5-052119-STEP 2

ACZ Sample ID: ***L52539-04***
Date Sampled: *05/21/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	1	J	*	mg/L	1	6	07/18/19 0:44	jlw
Calcium, dissolved	M200.7 ICP	25	371		*	mg/L	3	10	07/16/19 14:14	aeh
Iron, dissolved	M200.7 ICP	25	1.6	J	*	mg/L	0.8	2	07/16/19 14:14	aeh
Magnesium, dissolved	M200.7 ICP	25	13	J	*	mg/L	5	30	07/16/19 14:14	aeh
Manganese, dissolved	M200.7 ICP	25	1.6		*	mg/L	0.3	1	07/16/19 14:14	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 13:21	bsu
Potassium, dissolved	M200.7 ICP	25		U	*	mg/L	5	30	07/16/19 14:14	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.002	J	*	mg/L	0.002	0.005	07/16/19 13:21	bsu
Silicon, dissolved	M200.7 ICP	25	5	J	*	mg/L	3	10	07/16/19 14:14	aeh
Sodium, dissolved	M200.7 ICP	25	21400		*	mg/L	5	30	07/16/19 14:14	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.007	J	*	mg/L	0.002	0.01	07/16/19 13:21	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 14:14	aeh

ARCADIS
Project ID:
Sample ID: BK1-11.5-12.5-052119-STEP 3

ACZ Sample ID: ***L52539-05***
Date Sampled: *05/21/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	13		*	mg/L	1	5	07/18/19 0:48	jlw
Calcium, dissolved	M200.7 ICP	20	18		*	mg/L	2	10	07/18/19 0:48	jlw
Iron, dissolved	M200.7 ICP	20	70.1		*	mg/L	0.6	2	07/18/19 0:48	jlw
Magnesium, dissolved	M200.7 ICP	20	11	J	*	mg/L	4	20	07/18/19 0:48	jlw
Manganese, dissolved	M200.7 ICP	20	1.6		*	mg/L	0.2	1	07/18/19 0:48	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.004		*	mg/L	0.001	0.003	07/15/19 12:04	mfm
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/18/19 0:48	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0012		*	mg/L	0.0005	0.001	07/15/19 12:04	mfm
Silicon, dissolved	M200.7 ICP	20	35		*	mg/L	2	10	07/18/19 0:48	jlw
Sodium, dissolved	M200.7 ICP	20	63		*	mg/L	4	20	07/18/19 0:48	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0031		*	mg/L	0.0005	0.003	07/15/19 12:04	mfm
Vanadium, dissolved	M200.7 ICP	20	0.1	J	*	mg/L	0.1	0.5	07/18/19 0:48	jlw

ARCADIS
Project ID:
Sample ID: BK1-11.5-12.5-052119-STEP 4

ACZ Sample ID: ***L52539-06***
Date Sampled: *05/21/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	11.8		*	mg/L	0.3	1	07/18/19 0:51	jlw
Calcium, dissolved	M200.7 ICP	5	2.5	J	*	mg/L	0.5	3	07/16/19 14:20	aeh
Iron, dissolved	M200.7 ICP	5	2.5		*	mg/L	0.2	0.4	07/16/19 14:20	aeh
Magnesium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 14:20	aeh
Manganese, dissolved	M200.7 ICP	5	0.12	J	*	mg/L	0.05	0.3	07/16/19 14:20	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.002	0.005	07/15/19 12:05	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:20	aeh
Selenium, dissolved	M200.8 ICP-MS	10	0.001	J	*	mg/L	0.001	0.003	07/15/19 12:05	mfm
Silicon, dissolved	M200.7 ICP	5	16.6		*	mg/L	0.5	3	07/16/19 14:20	aeh
Sodium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:20	aeh
Uranium, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.001	0.005	07/15/19 12:05	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 14:20	aeh

ARCADIS
Project ID:
Sample ID: BK1-11.5-12.5-052119-STEP 5

ACZ Sample ID: ***L52539-07***
Date Sampled: *05/21/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	19700			mg/Kg	300	1000	07/17/19 6:27	aeh
Calcium, total (3052)	M6010D ICP	5000	700	J		mg/Kg	500	3000	07/17/19 6:27	aeh
Iron, total (3052)	M6010D ICP	5000	3600			mg/Kg	200	400	07/17/19 6:27	aeh
Magnesium, total (3052)	M6010D ICP	5000		U	*	mg/Kg	1000	5000	07/17/19 6:27	aeh
Manganese, total (3052)	M6010D ICP	5000		U		mg/Kg	50	300	07/17/19 6:27	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:42	mfm
Potassium, total (3052)	M6010D ICP	5000	13000			mg/Kg	1000	5000	07/17/19 6:27	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:25	mfm
Silicon, total (3052)	M6010D ICP	5000	421000	O	*	mg/Kg	500	3000	07/17/19 6:27	aeh
Sodium, total (3052)	M6010D ICP	5000	5000		*	mg/Kg	1000	5000	07/17/19 6:27	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:25	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 6:27	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 9:46	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

ARCADIS

ACZ Project ID: ***L52539***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476997													
WG476997PBW	PBW	07/16/19 12:15				4	mg/L		-20	20			
WG476997LCSW	LCSW	07/16/19 12:18	WC190709-1	820.0001		772	mg/L	94	90	110			
L53239-08DUP	DUP	07/16/19 12:50			132	132	mg/L				0	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.892	mg/L	95	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.15	0.15			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	1.0006		.965	mg/L	96	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	5.003	U	6.02	mg/L	120	85	115			M1
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	5.003	U	7.18	mg/L	144	85	115	18	20	M1

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	100		99.69	mg/L	100	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.3	0.3			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	68.11783		70.83	mg/L	104	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	340.58915	2.2	350.35	mg/L	102	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	340.58915	2.2	354.1	mg/L	103	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	100		99.64	mg/L	100	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.3	0.3			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	68.11783		70.41	mg/L	103	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	340.58915	2.3	357	mg/L	104	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	340.58915	2.3	353.4	mg/L	103	85	115	1	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

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ACZ Project ID: ***L52539***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	2		1.931	mg/L	97	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.09	0.09			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	1.0018		1.102	mg/L	110	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	5.009	1.5	6.72	mg/L	104	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	5.009	1.5	6.89	mg/L	108	85	115	2	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.941	mg/L	97	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.09	0.09			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	1.0018		1.075	mg/L	107	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	5.009	.7	6.66	mg/L	119	85	115			M1
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	5.009	.7	6.69	mg/L	120	85	115	0	20	M1

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	100		95.67	mg/L	96	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.6	0.6			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	50.31093		49.61	mg/L	99	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	251.55465	U	244.6	mg/L	97	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	251.55465	U	246.2	mg/L	98	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	100		95.31	mg/L	95	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.6	0.6			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	50.31093		49.37	mg/L	98	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	251.55465	U	249.8	mg/L	99	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	251.55465	U	246.5	mg/L	98	85	115	1	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

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ACZ Project ID: ***L52539***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	2		1.903	mg/L	95	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.03	0.03			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	.4995		.525	mg/L	105	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	2.4975	U	2.519	mg/L	101	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	2.4975	U	2.551	mg/L	102	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.913	mg/L	96	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.03	0.03			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	.4995		.512	mg/L	103	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	2.4975	U	2.57	mg/L	103	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	2.4975	U	2.539	mg/L	102	85	115	1	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476883													
WG476883ICV	ICV	07/15/19 11:49	MS190630-2	.0199		.01848	mg/L	93	90	110			
WG476883ICB	ICB	07/15/19 11:51				U	mg/L		-0.00044	0.00044			
WG476883LFB	LFB	07/15/19 11:53	MS190606-3	.0501		.04365	mg/L	87	85	115			
L52539-03AS	AS	07/15/19 11:58	MS190606-3	.2505	.002	.2322	mg/L	92	70	130			
L52539-03ASD	ASD	07/15/19 12:00	MS190606-3	.2505	.002	.2319	mg/L	92	70	130	0	20	
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.0199		.02043	mg/L	103	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00044	0.00044			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.0501		.04605	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.002	U	1.0056	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.002	U	1.0739	mg/L	107	70	130	7	20	

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

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ACZ Project ID: ***L52539***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
L52539-02AS	AS	07/16/19 21:20	WI190704-2	.5	.03	.522	mg/L	98	90	110			
L52539-03DUP	DUP	07/16/19 21:22			.05	.05	mg/L				0	20	RA
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	20		19.39	mg/L	97	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.6	0.6			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	99.96426		100.1	mg/L	100	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	499.8213	U	490.4	mg/L	98	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	499.8213	U	493.6	mg/L	99	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	20		19.44	mg/L	97	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.6	0.6			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	99.96426		99.56	mg/L	100	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	499.8213	U	504	mg/L	101	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	499.8213	U	499.7	mg/L	100	85	115	1	20	

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476883													
WG476883ICV	ICV	07/15/19 11:49	MS190630-2	.05		.05038	mg/L	101	90	110			
WG476883ICB	ICB	07/15/19 11:51				U	mg/L		-0.00022	0.00022			
WG476883LFB	LFB	07/15/19 11:53	MS190606-3	.05005		.04732	mg/L	95	85	115			
L52539-03AS	AS	07/15/19 11:58	MS190606-3	.25025	U	.25676	mg/L	103	70	130			
L52539-03ASD	ASD	07/15/19 12:00	MS190606-3	.25025	U	.26059	mg/L	104	70	130	1	20	
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.04886	mg/L	98	90	110			
WG476973ICB	ICB	07/16/19 12:41				.00015	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05005		.04643	mg/L	93	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.001	.003	1.0064	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.001	.003	1.0867	mg/L	108	70	130	8	20	

ARCADIS

ACZ Project ID: ***L52539***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	20		19.63	mg/L	98	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.3	0.3			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	10.008		10.69	mg/L	107	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	50.04	6.3	59.3	mg/L	106	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	50.04	6.3	60.5	mg/L	108	85	115	2	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	20		19.85	mg/L	99	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.3	0.3			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	10.008		10.7	mg/L	107	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	50.04	3.6	60.5	mg/L	114	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	50.04	3.6	60.2	mg/L	113	85	115	0	20	

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	100		100.85	mg/L	101	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.6	0.6			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	100.0471		103.4	mg/L	103	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	500.2355	367	865.5	mg/L	100	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	500.2355	367	875	mg/L	102	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	100		100.76	mg/L	101	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.6	0.6			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	100.0471		103	mg/L	103	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	500.2355	369	874	mg/L	101	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	500.2355	369	865	mg/L	99	85	115	1	20	

ARCADIS

ACZ Project ID: ***L52539***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477098													
WG477098ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477098ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477098LFB	LFB	07/17/19 10:07	WI181024-4	10.03		9.5	mg/L	95	90	110			
L50245-18AS	AS	07/17/19 10:07	WI181024-4	10.03	3.9	10.9	mg/L	70	90	110			M2
L50237-19DUP	DUP	07/17/19 10:18			668	675	mg/L				1	20	

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476883													
WG476883ICV	ICV	07/15/19 11:49	MS190630-2	.05		.04987	mg/L	100	90	110			
WG476883ICB	ICB	07/15/19 11:51				U	mg/L		-0.00022	0.00022			
WG476883LFB	LFB	07/15/19 11:53	MS190606-3	.05		.049	mg/L	98	85	115			
L52539-03AS	AS	07/15/19 11:58	MS190606-3	.25	.0014	.26066	mg/L	104	70	130			
L52539-03ASD	ASD	07/15/19 12:00	MS190606-3	.25	.0014	.26368	mg/L	105	70	130	1	20	
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1	.018	1.0581	mg/L	104	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1	.018	1.1233	mg/L	111	70	130	6	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

ARCADIS

ACZ Project ID: ***L52539***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	2		1.9488	mg/L	97	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.015	0.015			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	.5005		.5003	mg/L	100	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	2.5025	U	2.488	mg/L	99	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	2.5025	U	2.514	mg/L	100	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.9668	mg/L	98	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.015	0.015			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	.5005		.5058	mg/L	101	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	2.5025	U	2.541	mg/L	102	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	2.5025	U	2.54	mg/L	101	85	115	0	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52539***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52539-02	WG477188	Aluminum, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476997	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476883	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG476997	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476883	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52539-03	WG477188	Aluminum, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476883	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476883	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG476883	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.

Inorganic Extended Qualifier Report

ARCADIS ACZ Project ID: ***L52539***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52539-04	WG477188	Aluminum, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476973	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
		Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
		Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52539-05	WG477188	Aluminum, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L52539-06	WG477188	Aluminum, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476883	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
L52539-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52539
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52539
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L 52539

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts Payable
Company: Arcadis
E-mail: accountspayable.administration@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** Shannon Ulrich

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: custom SSE; contact Tim VanWyngarden
PO#: CO000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

	SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
1.	BK1-11.5-12.5-052119	5-21-19: 1235	SO	1	HOLD
	BK1-15-15.5-052119	5-21-19: 1315	SO	1	HOLD
	BK1-33.5-34-052119	5-21-19: 1350	SO	1	HOLD
	BK1-39-40-052119	5-21-19: 1420	SO	1	HOLD
	BK1-41-41.5-052119	5-21-19: 1600	SO	1	HOLD
	BK1-47-48-052119	5-21-19: 1630	SO	1	HOLD
	BK1-48.5-49.5-052119	5-21-19: 1725	SO	1	HOLD
	BK1-51-52-052119	5-21-19: 1750	SO	1	HOLD
	BK1-52-53-052119	5-21-19: 1820	SO	1	HOLD
	BK1-55.5-56.5-052219	5-22-19: 0855	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary.

Bottle order BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1430	FedEx	5/28/19:1430
			5/29/19 13:21

L52539 Chain of Custod

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 18, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52540

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52540. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52540. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 14, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 18, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52540

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52540. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK1-39-40-052119

ACZ Sample ID: ***L52540-01***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.1		*	%	0.1	0.5	06/21/19 19:54	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 8:38	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK1-39-40-052119-DI

ACZ Sample ID: ***L52540-02***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	1.0		*	mg/L	0.1	0.5	07/18/19 0:54	jlw
Calcium, dissolved	M200.7 ICP	2	7.5		*	mg/L	0.2	1	07/16/19 14:23	aeh
Iron, dissolved	M200.7 ICP	2	1.54		*	mg/L	0.06	0.2	07/16/19 14:23	aeh
Magnesium, dissolved	M200.7 ICP	2	0.8	J	*	mg/L	0.4	2	07/16/19 14:23	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 14:23	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0037		*	mg/L	0.0004	0.001	07/15/19 12:07	mfm
Potassium, dissolved	M200.7 ICP	2	4.1		*	mg/L	0.4	2	07/16/19 14:23	aeh
Selenium, dissolved	M200.8 ICP-MS	2	0.0006		*	mg/L	0.0002	0.0005	07/15/19 12:07	mfm
Silicon, dissolved	M200.7 ICP	2	5.5		*	mg/L	0.2	1	07/16/19 14:23	aeh
Sodium, dissolved	M200.7 ICP	2	4.5		*	mg/L	0.4	2	07/16/19 14:23	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0006	J	*	mg/L	0.0002	0.001	07/15/19 12:07	mfm
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/16/19 14:23	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	33.3	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	33.3	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1		UH	*	mg/L	0.01	0.05	07/16/19 21:23	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	7.6	H	*	mg/L	1	5	07/17/19 10:07	ttg

ARCADIS
Project ID:
Sample ID: BK1-39-40-052119-STEP 1

ACZ Sample ID: ***L52540-03***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	1.1		*	mg/L	0.3	1	07/18/19 0:57	jlw
Calcium, dissolved	M200.7 ICP	5	1.6	J	*	mg/L	0.5	3	07/16/19 14:27	aeh
Iron, dissolved	M200.7 ICP	5	2.3		*	mg/L	0.2	0.4	07/16/19 14:27	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:27	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 14:27	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.005		*	mg/L	0.001	0.003	07/15/19 12:09	mfm
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/16/19 14:27	aeh
Selenium, dissolved	M200.8 ICP-MS	5	0.0008	J	*	mg/L	0.0005	0.001	07/15/19 12:09	mfm
Silicon, dissolved	M200.7 ICP	5	7.4		*	mg/L	0.5	3	07/16/19 14:27	aeh
Sodium, dissolved	M200.7 ICP	5	363		*	mg/L	1	5	07/16/19 14:27	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.003		*	mg/L	0.0005	0.003	07/15/19 12:09	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 14:27	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.11	H	*	mg/L	0.01	0.05	07/16/19 21:25	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	3.1	BH	*	mg/L	1	5	07/17/19 10:07	ttg

ARCADIS
Project ID:
Sample ID: BK1-39-40-052119-STEP 2

ACZ Sample ID: ***L52540-04***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	17		*	mg/L	1	6	07/18/19 1:06	jlw
Calcium, dissolved	M200.7 ICP	25	1200		*	mg/L	3	10	07/16/19 14:37	aeh
Iron, dissolved	M200.7 ICP	25	50.8		*	mg/L	0.8	2	07/16/19 14:37	aeh
Magnesium, dissolved	M200.7 ICP	25	24	J	*	mg/L	5	30	07/16/19 14:37	aeh
Manganese, dissolved	M200.7 ICP	25	11.6		*	mg/L	0.3	1	07/16/19 14:37	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20	0.005	J	*	mg/L	0.004	0.01	07/16/19 13:23	bsu
Potassium, dissolved	M200.7 ICP	25	11	J	*	mg/L	5	30	07/16/19 14:37	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/16/19 13:23	bsu
Silicon, dissolved	M200.7 ICP	25	22		*	mg/L	3	10	07/16/19 14:37	aeh
Sodium, dissolved	M200.7 ICP	25	22000		*	mg/L	5	30	07/16/19 14:37	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.015		*	mg/L	0.002	0.01	07/16/19 13:23	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 14:37	aeh

ARCADIS
Project ID:
Sample ID: BK1-39-40-052119-STEP 3

ACZ Sample ID: ***L52540-05***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	33		*	mg/L	1	5	07/18/19 1:09	jlw
Calcium, dissolved	M200.7 ICP	20	39		*	mg/L	2	10	07/18/19 1:09	jlw
Iron, dissolved	M200.7 ICP	20	142		*	mg/L	0.6	2	07/18/19 1:09	jlw
Magnesium, dissolved	M200.7 ICP	20	14	J	*	mg/L	4	20	07/18/19 1:09	jlw
Manganese, dissolved	M200.7 ICP	20	1.7		*	mg/L	0.2	1	07/18/19 1:09	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.025		*	mg/L	0.001	0.003	07/15/19 12:16	mfm
Potassium, dissolved	M200.7 ICP	20	7	J	*	mg/L	4	20	07/18/19 1:09	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0022		*	mg/L	0.0005	0.001	07/15/19 12:16	mfm
Silicon, dissolved	M200.7 ICP	20	38		*	mg/L	2	10	07/18/19 1:09	jlw
Sodium, dissolved	M200.7 ICP	20	68		*	mg/L	4	20	07/18/19 1:09	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0108		*	mg/L	0.0005	0.003	07/15/19 12:16	mfm
Vanadium, dissolved	M200.7 ICP	20		U	*	mg/L	0.1	0.5	07/18/19 1:09	jlw

ARCADIS
Project ID:
Sample ID: BK1-39-40-052119-STEP 4

ACZ Sample ID: ***L52540-06***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	14.8		*	mg/L	0.3	1	07/18/19 1:12	jlw
Calcium, dissolved	M200.7 ICP	5	4.4		*	mg/L	0.5	3	07/16/19 14:43	aeh
Iron, dissolved	M200.7 ICP	5	1.2		*	mg/L	0.2	0.4	07/16/19 14:43	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:43	aeh
Manganese, dissolved	M200.7 ICP	5	0.08	J	*	mg/L	0.05	0.3	07/16/19 14:43	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10	0.035		*	mg/L	0.002	0.005	07/15/19 12:18	mfm
Potassium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 14:43	aeh
Selenium, dissolved	M200.8 ICP-MS	10	0.006		*	mg/L	0.001	0.003	07/15/19 12:18	mfm
Silicon, dissolved	M200.7 ICP	5	23.3		*	mg/L	0.5	3	07/16/19 14:43	aeh
Sodium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/16/19 14:43	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.005	07/15/19 12:18	mfm
Vanadium, dissolved	M200.7 ICP	5	0.04	J	*	mg/L	0.03	0.1	07/16/19 14:43	aeh

ARCADIS
Project ID:
Sample ID: BK1-39-40-052119-STEP 5

ACZ Sample ID: ***L52540-07***
Date Sampled: *05/21/19 14:20*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	24100			mg/Kg	300	1000	07/17/19 6:31	aeh
Calcium, total (3052)	M6010D ICP	5000	1800	J		mg/Kg	500	3000	07/17/19 6:31	aeh
Iron, total (3052)	M6010D ICP	5000	10500			mg/Kg	200	400	07/17/19 6:31	aeh
Magnesium, total (3052)	M6010D ICP	5000		U	*	mg/Kg	1000	5000	07/17/19 6:31	aeh
Manganese, total (3052)	M6010D ICP	5000	130	J		mg/Kg	50	300	07/17/19 6:31	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:44	mfm
Potassium, total (3052)	M6010D ICP	5000	15000			mg/Kg	1000	5000	07/17/19 6:31	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:27	mfm
Silicon, total (3052)	M6010D ICP	5000	421000	O	*	mg/Kg	500	3000	07/17/19 6:31	aeh
Sodium, total (3052)	M6010D ICP	5000	10000		*	mg/Kg	1000	5000	07/17/19 6:31	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:27	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 6:31	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 10:17	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

ARCADIS

ACZ Project ID: ***L52540***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L52938-05DUP	DUP	07/15/19 18:19			1310	1290	mg/L				2	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.892	mg/L	95	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.15	0.15			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	1.0006		.965	mg/L	96	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	5.003	U	6.02	mg/L	120	85	115			M1
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	5.003	U	7.18	mg/L	144	85	115	18	20	M1

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	100		99.69	mg/L	100	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.3	0.3			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	68.11783		70.83	mg/L	104	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	340.58915	2.2	350.35	mg/L	102	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	340.58915	2.2	354.1	mg/L	103	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	100		99.64	mg/L	100	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.3	0.3			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	68.11783		70.41	mg/L	103	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	340.58915	2.3	357	mg/L	104	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	340.58915	2.3	353.4	mg/L	103	85	115	1	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

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ACZ Project ID: ***L52540***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	2		1.931	mg/L	97	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.09	0.09			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	1.0018		1.102	mg/L	110	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	5.009	1.5	6.72	mg/L	104	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	5.009	1.5	6.89	mg/L	108	85	115	2	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.941	mg/L	97	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.09	0.09			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	1.0018		1.075	mg/L	107	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	5.009	.7	6.66	mg/L	119	85	115			M1
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	5.009	.7	6.69	mg/L	120	85	115	0	20	M1

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	100		95.67	mg/L	96	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.6	0.6			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	50.31093		49.61	mg/L	99	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	251.55465	U	244.6	mg/L	97	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	251.55465	U	246.2	mg/L	98	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	100		95.31	mg/L	95	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.6	0.6			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	50.31093		49.37	mg/L	98	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	251.55465	U	249.8	mg/L	99	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	251.55465	U	246.5	mg/L	98	85	115	1	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

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ACZ Project ID: ***L52540***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	2		1.903	mg/L	95	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.03	0.03			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	.4995		.525	mg/L	105	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	2.4975	U	2.519	mg/L	101	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	2.4975	U	2.551	mg/L	102	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.913	mg/L	96	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.03	0.03			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	.4995		.512	mg/L	103	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	2.4975	U	2.57	mg/L	103	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	2.4975	U	2.539	mg/L	102	85	115	1	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476883													
WG476883ICV	ICV	07/15/19 11:49	MS190630-2	.0199		.01848	mg/L	93	90	110			
WG476883ICB	ICB	07/15/19 11:51				U	mg/L		-0.00044	0.00044			
WG476883LFB	LFB	07/15/19 11:53	MS190606-3	.0501		.04365	mg/L	87	85	115			
L52539-03AS	AS	07/15/19 11:58	MS190606-3	.2505	.002	.2322	mg/L	92	70	130			
L52539-03ASD	ASD	07/15/19 12:00	MS190606-3	.2505	.002	.2319	mg/L	92	70	130	0	20	
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.0199		.02043	mg/L	103	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00044	0.00044			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.0501		.04605	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.002	U	1.0056	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.002	U	1.0739	mg/L	107	70	130	7	20	

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

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ACZ Project ID: ***L52540***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
L52539-02AS	AS	07/16/19 21:20	WI190704-2	.5	.03	.522	mg/L	98	90	110			
L52539-03DUP	DUP	07/16/19 21:22			.05	.05	mg/L				0	20	RA
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	20		19.39	mg/L	97	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.6	0.6			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	99.96426		100.1	mg/L	100	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	499.8213	U	490.4	mg/L	98	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	499.8213	U	493.6	mg/L	99	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	20		19.44	mg/L	97	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.6	0.6			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	99.96426		99.56	mg/L	100	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	499.8213	U	504	mg/L	101	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	499.8213	U	499.7	mg/L	100	85	115	1	20	

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476883													
WG476883ICV	ICV	07/15/19 11:49	MS190630-2	.05		.05038	mg/L	101	90	110			
WG476883ICB	ICB	07/15/19 11:51				U	mg/L		-0.00022	0.00022			
WG476883LFB	LFB	07/15/19 11:53	MS190606-3	.05005		.04732	mg/L	95	85	115			
L52539-03AS	AS	07/15/19 11:58	MS190606-3	.25025	U	.25676	mg/L	103	70	130			
L52539-03ASD	ASD	07/15/19 12:00	MS190606-3	.25025	U	.26059	mg/L	104	70	130	1	20	
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.04886	mg/L	98	90	110			
WG476973ICB	ICB	07/16/19 12:41				.00015	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05005		.04643	mg/L	93	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.001	.003	1.0064	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.001	.003	1.0867	mg/L	108	70	130	8	20	

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ACZ Project ID: ***L52540***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	20		19.63	mg/L	98	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.3	0.3			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	10.008		10.69	mg/L	107	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	50.04	6.3	59.3	mg/L	106	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	50.04	6.3	60.5	mg/L	108	85	115	2	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	20		19.85	mg/L	99	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.3	0.3			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	10.008		10.7	mg/L	107	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	50.04	3.6	60.5	mg/L	114	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	50.04	3.6	60.2	mg/L	113	85	115	0	20	

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	100		100.85	mg/L	101	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.6	0.6			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	100.0471		103.4	mg/L	103	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	500.2355	367	865.5	mg/L	100	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	500.2355	367	875	mg/L	102	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	100		100.76	mg/L	101	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.6	0.6			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	100.0471		103	mg/L	103	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	500.2355	369	874	mg/L	101	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	500.2355	369	865	mg/L	99	85	115	1	20	

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ACZ Project ID: ***L52540***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477098													
WG477098ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477098ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477098LFB	LFB	07/17/19 10:07	WI181024-4	10.03		9.5	mg/L	95	90	110			
L50245-18AS	AS	07/17/19 10:07	WI181024-4	10.03	3.9	10.9	mg/L	70	90	110			M2
L50237-19DUP	DUP	07/17/19 10:18			668	675	mg/L				1	20	

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476883													
WG476883ICV	ICV	07/15/19 11:49	MS190630-2	.05		.04987	mg/L	100	90	110			
WG476883ICB	ICB	07/15/19 11:51				U	mg/L		-0.00022	0.00022			
WG476883LFB	LFB	07/15/19 11:53	MS190606-3	.05		.049	mg/L	98	85	115			
L52539-03AS	AS	07/15/19 11:58	MS190606-3	.25	.0014	.26066	mg/L	104	70	130			
L52539-03ASD	ASD	07/15/19 12:00	MS190606-3	.25	.0014	.26368	mg/L	105	70	130	1	20	
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1	.018	1.0581	mg/L	104	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1	.018	1.1233	mg/L	111	70	130	6	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

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ACZ Project ID: ***L52540***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	2		1.9488	mg/L	97	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.015	0.015			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	.5005		.5003	mg/L	100	85	115			
L52539-03AS	AS	07/16/19 14:07	II190716-6	2.5025	U	2.488	mg/L	99	85	115			
L52539-03ASD	ASD	07/16/19 14:10	II190716-6	2.5025	U	2.514	mg/L	100	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.9668	mg/L	98	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.015	0.015			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	.5005		.5058	mg/L	101	85	115			
L52539-03AS	AS	07/18/19 0:38	II190716-6	2.5025	U	2.541	mg/L	102	85	115			
L52539-03ASD	ASD	07/18/19 0:41	II190716-6	2.5025	U	2.54	mg/L	101	85	115	0	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52540***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52540-02	WG477188	Aluminum, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476883	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52540-03	WG477188	Aluminum, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476883	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.

ARCADIS ACZ Project ID: ***L52540***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52540-04	WG477188	Aluminum, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476973	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
		Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52540-05	WG477188	Aluminum, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Iron, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L52540-06	WG477188	Aluminum, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476883	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
L52540-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52540
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52540
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L 52540

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: shannon.ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts Payable
Company: Arcadis
E-mail: accountspayable.administration@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** [signature]

"I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: custom SSE; contact Tim VanWyngarden
PO#: CO0000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK1-11.5-12.5-052119	5-21-19: 1235	SO	1	HOLD
BK1-15-15.5-052119	5-21-19: 1315	SO	1	HOLD
BK1-33.5-34-052119	5-21-19: 1350	SO	1	HOLD
BK1-39-40-052119	5-21-19: 1420	SO	1	HOLD
BK1-41-41.5-052119	5-21-19: 1600	SO	1	HOLD
BK1-47-48-052119	5-21-19: 1630	SO	1	HOLD
BK1-48.5-49.5-052119	5-21-19: 1725	SO	1	HOLD
BK1-51-52-052119	5-21-19: 1750	SO	1	HOLD
BK1-52-53-052119	5-21-19: 1820	SO	1	HOLD
BK1-55.5-56.5-052219	5-22-19: 0855	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

SNW

COPY

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary.

Bottle order BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19: 1430	FedEx	5/28/19: 1430
			5/29/19 13:21

L52540-1907181346

L52540 Chain of Custod

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 18, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52541

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52541. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52541. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 14, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS July 18, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52541

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52541. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK1-47-48-052119

ACZ Sample ID: ***L52541-01***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	86.7		*	%	0.1	0.5	06/22/19 0:21	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 9:17	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK1-47-48-052119-DI

ACZ Sample ID: ***L52541-02***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.2	J	*	mg/L	0.1	0.5	07/18/19 1:15	jlw
Calcium, dissolved	M200.7 ICP	2	6.7		*	mg/L	0.2	1	07/16/19 14:46	aeh
Iron, dissolved	M200.7 ICP	2	0.84		*	mg/L	0.06	0.2	07/16/19 14:46	aeh
Magnesium, dissolved	M200.7 ICP	2	1.3	J	*	mg/L	0.4	2	07/16/19 14:46	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 14:46	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0012		*	mg/L	0.0004	0.001	07/15/19 12:20	mfm
Potassium, dissolved	M200.7 ICP	2	1.4	J	*	mg/L	0.4	2	07/16/19 14:46	aeh
Selenium, dissolved	M200.8 ICP-MS	2	0.0024		*	mg/L	0.0002	0.0005	07/15/19 12:20	mfm
Silicon, dissolved	M200.7 ICP	2	5.9		*	mg/L	0.2	1	07/16/19 14:46	aeh
Sodium, dissolved	M200.7 ICP	2	9.8		*	mg/L	0.4	2	07/16/19 14:46	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0003	J	*	mg/L	0.0002	0.001	07/15/19 12:20	mfm
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/16/19 14:46	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	26.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	H	*	mg/L	0.01	0.05	07/16/19 21:26	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	21.5	H	*	mg/L	1	5	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-47-48-052119-STEP 1

ACZ Sample ID: ***L52541-03***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5		U	*	mg/L	0.3	1	07/18/19 1:18	jlw
Calcium, dissolved	M200.7 ICP	5	4.8		*	mg/L	0.5	3	07/16/19 14:50	aeh
Iron, dissolved	M200.7 ICP	5	0.6		*	mg/L	0.2	0.4	07/16/19 14:50	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:50	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 14:50	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.001	J	*	mg/L	0.001	0.003	07/15/19 12:22	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 14:50	aeh
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/15/19 12:22	mfm
Silicon, dissolved	M200.7 ICP	5	5.1		*	mg/L	0.5	3	07/16/19 14:50	aeh
Sodium, dissolved	M200.7 ICP	5	290		*	mg/L	1	5	07/16/19 14:50	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0024	J	*	mg/L	0.0005	0.003	07/15/19 12:22	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 14:50	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.07	H	*	mg/L	0.01	0.05	07/16/19 21:27	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	7.7	H	*	mg/L	1	5	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-47-48-052119-STEP 2

ACZ Sample ID: ***L52541-04***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25		U	*	mg/L	1	6	07/18/19 1:22	jlw
Calcium, dissolved	M200.7 ICP	25	2240		*	mg/L	3	10	07/16/19 14:53	aeh
Iron, dissolved	M200.7 ICP	25	3.1		*	mg/L	0.8	2	07/16/19 14:53	aeh
Magnesium, dissolved	M200.7 ICP	25	63		*	mg/L	5	30	07/16/19 14:53	aeh
Manganese, dissolved	M200.7 ICP	25	14.4		*	mg/L	0.3	1	07/16/19 14:53	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 13:25	bsu
Potassium, dissolved	M200.7 ICP	25	6	J	*	mg/L	5	30	07/16/19 14:53	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/16/19 13:25	bsu
Silicon, dissolved	M200.7 ICP	25	6	J	*	mg/L	3	10	07/16/19 14:53	aeh
Sodium, dissolved	M200.7 ICP	25	20300		*	mg/L	5	30	07/16/19 14:53	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.018		*	mg/L	0.002	0.01	07/16/19 13:25	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 14:53	aeh

ARCADIS
Project ID:
Sample ID: BK1-47-48-052119-STEP 3

ACZ Sample ID: ***L52541-05***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	15		*	mg/L	1	5	07/18/19 1:25	jlw
Calcium, dissolved	M200.7 ICP	20	130		*	mg/L	2	10	07/18/19 1:25	jlw
Iron, dissolved	M200.7 ICP	20	68.6		*	mg/L	0.6	2	07/18/19 1:25	jlw
Magnesium, dissolved	M200.7 ICP	20	47		*	mg/L	4	20	07/18/19 1:25	jlw
Manganese, dissolved	M200.7 ICP	20	1.4		*	mg/L	0.2	1	07/18/19 1:25	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 12:29	mfm
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/18/19 1:25	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0026		*	mg/L	0.0005	0.001	07/15/19 12:29	mfm
Silicon, dissolved	M200.7 ICP	20	43		*	mg/L	2	10	07/18/19 1:25	jlw
Sodium, dissolved	M200.7 ICP	20	263		*	mg/L	4	20	07/18/19 1:25	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0099		*	mg/L	0.0005	0.003	07/15/19 12:29	mfm
Vanadium, dissolved	M200.7 ICP	20	0.1	J	*	mg/L	0.1	0.5	07/18/19 1:25	jlw

ARCADIS
Project ID:
Sample ID: BK1-47-48-052119-STEP 4

ACZ Sample ID: ***L52541-06***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	34.2		*	mg/L	0.3	1	07/18/19 1:34	jlw
Calcium, dissolved	M200.7 ICP	5	55.0		*	mg/L	0.5	3	07/16/19 15:06	aeh
Iron, dissolved	M200.7 ICP	5	6.4		*	mg/L	0.2	0.4	07/16/19 15:06	aeh
Magnesium, dissolved	M200.7 ICP	5	22		*	mg/L	1	5	07/16/19 15:06	aeh
Manganese, dissolved	M200.7 ICP	5	0.57		*	mg/L	0.05	0.3	07/16/19 15:06	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.002	0.005	07/15/19 12:31	mfm
Potassium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 15:06	aeh
Selenium, dissolved	M200.8 ICP-MS	10	0.005		*	mg/L	0.001	0.003	07/15/19 12:31	mfm
Silicon, dissolved	M200.7 ICP	5	26.1		*	mg/L	0.5	3	07/16/19 15:06	aeh
Sodium, dissolved	M200.7 ICP	5	6		*	mg/L	1	5	07/16/19 15:06	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.003	J	*	mg/L	0.001	0.005	07/15/19 12:31	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 15:06	aeh

ARCADIS
Project ID:
Sample ID: BK1-47-48-052119 STEP 5

ACZ Sample ID: ***L52541-07***
Date Sampled: *05/21/19 16:30*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	55300			mg/Kg	300	1000	07/17/19 6:35	aeh
Calcium, total (3052)	M6010D ICP	5000	800	J		mg/Kg	500	3000	07/17/19 6:35	aeh
Iron, total (3052)	M6010D ICP	5000	19100			mg/Kg	200	400	07/17/19 6:35	aeh
Magnesium, total (3052)	M6010D ICP	5000	4000	J	*	mg/Kg	1000	5000	07/17/19 6:35	aeh
Manganese, total (3052)	M6010D ICP	5000	130	J		mg/Kg	50	300	07/17/19 6:35	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:46	mfm
Potassium, total (3052)	M6010D ICP	5000	21000			mg/Kg	1000	5000	07/17/19 6:35	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:29	mfm
Silicon, total (3052)	M6010D ICP	5000	363000	O	*	mg/Kg	500	3000	07/17/19 6:35	aeh
Sodium, total (3052)	M6010D ICP	5000	11000		*	mg/Kg	1000	5000	07/17/19 6:35	aeh
Uranium, total (3052)	M6020B ICP-MS	12500	2	J		mg/Kg	1	6	07/16/19 12:29	mfm
Vanadium, total (3052)	M6010D ICP	5000	60	J		mg/Kg	30	100	07/17/19 6:35	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 10:48	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

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ACZ Project ID: ***L52541***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L52938-05DUP	DUP	07/15/19 18:19			1310	1290	mg/L				2	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.892	mg/L	95	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.15	0.15			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	1.0006		.965	mg/L	96	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	20.012	15	34.7	mg/L	98	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	20.012	15	34.8	mg/L	99	85	115	0	20	

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	100		99.69	mg/L	100	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.3	0.3			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	68.11783		70.83	mg/L	104	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	340.58915	128	453.9	mg/L	96	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	340.58915	128	458.4	mg/L	97	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	100		99.64	mg/L	100	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.3	0.3			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	68.11783		70.41	mg/L	103	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	1362.3566	130	1530.4	mg/L	103	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	1362.3566	130	1523.4	mg/L	102	85	115	0	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

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ACZ Project ID: ***L52541***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	2		1.931	mg/L	97	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.09	0.09			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	1.0018		1.102	mg/L	110	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	5.009	64	64.25	mg/L	5	85	115			M3
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	5.009	64	64.75	mg/L	15	85	115	1	20	M3
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.941	mg/L	97	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.09	0.09			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	1.0018		1.075	mg/L	107	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	20.036	68.6	86.98	mg/L	92	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	20.036	68.6	85.92	mg/L	86	85	115	1	20	

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	100		95.67	mg/L	96	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.6	0.6			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	50.31093		49.61	mg/L	99	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	251.55465	46	269.6	mg/L	89	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	251.55465	46	272.3	mg/L	90	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	100		95.31	mg/L	95	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.6	0.6			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	50.31093		49.37	mg/L	98	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	1006.2186	47	1028.4	mg/L	98	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	1006.2186	47	1022.6	mg/L	97	85	115	1	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

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ACZ Project ID: ***L52541***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	2		1.903	mg/L	95	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.03	0.03			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	.4995		.525	mg/L	105	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	2.4975	1.61	3.93	mg/L	93	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	2.4975	1.61	3.969	mg/L	94	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.913	mg/L	96	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.03	0.03			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	.4995		.512	mg/L	103	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	9.99	1.4	12.02	mg/L	106	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	9.99	1.4	11.84	mg/L	105	85	115	2	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476883													
WG476883ICV	ICV	07/15/19 11:49	MS190630-2	.0199		.01848	mg/L	93	90	110			
WG476883ICB	ICB	07/15/19 11:51				U	mg/L		-0.00044	0.00044			
WG476883LFB	LFB	07/15/19 11:53	MS190606-3	.0501		.04365	mg/L	87	85	115			
L52541-04AS	AS	07/15/19 12:25	MS190606-3	.2505	U	.2638	mg/L	105	70	130			E6
L52541-04ASD	ASD	07/15/19 12:27	MS190606-3	.2505	U	.2203	mg/L	88	70	130	18	20	E6
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.0199		.02043	mg/L	103	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00044	0.00044			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.0501		.04605	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.002	U	1.0056	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.002	U	1.0739	mg/L	107	70	130	7	20	

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

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ACZ Project ID: ***L52541***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
L52539-02AS	AS	07/16/19 21:20	WI190704-2	.5	.03	.522	mg/L	98	90	110			
L52539-03DUP	DUP	07/16/19 21:22			.05	.05	mg/L				0	20	RA
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	20		19.39	mg/L	97	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.6	0.6			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	99.96426		100.1	mg/L	100	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	499.8213	2	463.1	mg/L	92	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	499.8213	2	468.8	mg/L	93	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	20		19.44	mg/L	97	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.6	0.6			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	99.96426		99.56	mg/L	100	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	1999.2852	U	1989	mg/L	99	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	1999.2852	U	1980.8	mg/L	99	85	115	0	20	

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476883													
WG476883ICV	ICV	07/15/19 11:49	MS190630-2	.05		.05038	mg/L	101	90	110			
WG476883ICB	ICB	07/15/19 11:51				U	mg/L		-0.00022	0.00022			
WG476883LFB	LFB	07/15/19 11:53	MS190606-3	.05005		.04732	mg/L	95	85	115			
L52541-04AS	AS	07/15/19 12:25	MS190606-3	.25025	.0018	.38257	mg/L	152	70	130			E6 MA
L52541-04ASD	ASD	07/15/19 12:27	MS190606-3	.25025	.0018	.3152	mg/L	125	70	130	19	20	E6
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.04886	mg/L	98	90	110			
WG476973ICB	ICB	07/16/19 12:41				.00015	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05005		.04643	mg/L	93	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.001	.003	1.0064	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.001	.003	1.0867	mg/L	108	70	130	8	20	

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ACZ Project ID: ***L52541***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	20		19.63	mg/L	98	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.3	0.3			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	10.008		10.69	mg/L	107	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	50.04	41.3	88.35	mg/L	94	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	50.04	41.3	89.3	mg/L	96	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	20		19.85	mg/L	99	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.3	0.3			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	10.008		10.7	mg/L	107	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	200.16	43	261.2	mg/L	109	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	200.16	43	257.8	mg/L	107	85	115	1	20	

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	100		100.85	mg/L	101	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.6	0.6			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	100.0471		103.4	mg/L	103	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	500.2355	252	718.5	mg/L	93	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	500.2355	252	726	mg/L	95	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	100		100.76	mg/L	101	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.6	0.6			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	100.0471		103	mg/L	103	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	2000.942	263	2356	mg/L	105	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	2000.942	263	2336	mg/L	104	85	115	1	20	

ARCADIS

ACZ Project ID: ***L52541***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477098													
WG477098ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477098ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477098LFB	LFB	07/17/19 10:07	WI181024-4	10.03		9.5	mg/L	95	90	110			
L50245-18AS	AS	07/17/19 10:07	WI181024-4	10.03	3.9	10.9	mg/L	70	90	110			M2
L50237-19DUP	DUP	07/17/19 10:18			668	675	mg/L				1	20	

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476883													
WG476883ICV	ICV	07/15/19 11:49	MS190630-2	.05		.04987	mg/L	100	90	110			
WG476883ICB	ICB	07/15/19 11:51				U	mg/L		-0.00022	0.00022			
WG476883LFB	LFB	07/15/19 11:53	MS190606-3	.05		.049	mg/L	98	85	115			
L52541-04AS	AS	07/15/19 12:25	MS190606-3	.25	.0208	.36182	mg/L	136	70	130			E6 MA
L52541-04ASD	ASD	07/15/19 12:27	MS190606-3	.25	.0208	.30251	mg/L	113	70	130	18	20	E6
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1	.018	1.0581	mg/L	104	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1	.018	1.1233	mg/L	111	70	130	6	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

ARCADIS

ACZ Project ID: ***L52541***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	2		1.9488	mg/L	97	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.015	0.015			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	.5005		.5003	mg/L	100	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	2.5025	.13	2.511	mg/L	95	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	2.5025	.13	2.543	mg/L	96	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.9668	mg/L	98	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.015	0.015			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	.5005		.5058	mg/L	101	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	10.01	.1	10.71	mg/L	106	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	10.01	.1	10.45	mg/L	103	85	115	2	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52541***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52541-02	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476886	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476883	Selenium, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476883	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
			M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.

ARCADIS ACZ Project ID: ***L52541***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52541-03	WG476886	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476883	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476883	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG476883	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
L52541-04	WG476886	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476973	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
		Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52541-05	WG476883	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Selenium, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Uranium, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.

Inorganic Extended Qualifier Report

ARCADIS ACZ Project ID: ***L52541***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52541-06	WG476886	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476883	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Selenium, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
L52541-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52541
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID:	L52541
Date Received:	05/29/2019 13:21
Received By:	
Date Printed:	6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L 52541

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich	Address: 630 Plaza Drive, Ste 200
Company: Arcadis	Highlands Ranch, CO 80129
E-mail: shannon.ulrich@arcadis.com	Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello	E-mail: aarguello@barrick.com
Company: Homestake Mining Company	Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts Payable	Address: 630 Plaza Drive Ste 200
Company: Arcadis	Highlands Ranch, CO 80129
E-mail: accountspayable.administration@arcadis.com	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich Sampler's Site Information State NM Zip code 87021 Time Zone MST

*Sampler's Signature: [signature]

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: custom SSE; contact Tim VanWyngarden

PO#: CO0001120.1901.30007

Reporting state for compliance testing: NA

Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK1-11.5-12.5-052119	5-21-19: 1235	SO	1	HOLD
BK1-15-15.5-052119	5-21-19: 1315	SO	1	HOLD
BK1-33.5-34-052119	5-21-19: 1350	SO	1	HOLD
BK1-39-40-052119	5-21-19: 1420	SO	1	HOLD
BK1-41-41.5-052119	5-21-19: 1600	SO	1	HOLD
BK1-47-48-052119	5-21-19: 1630	SO	1	HOLD
BK1-48.5-49.5-052119	5-21-19: 1725	SO	1	HOLD
BK1-51-52-052119	5-21-19: 1750	SO	1	HOLD
BK1-52-53-052119	5-21-19: 1820	SO	1	HOLD
BK1-55.5-56.5-052219	5-22-19: 0855	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

custom selective sequential extraction; contact Tim VanWyngarden

Samples are background soil but are inside NRC licensed boundary.

Bottle order BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19: 1430	FedEx	5/28/19 · 1430
			5/29/19 13:21

L52541-1907181346

L52541 Chain of Custody

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 18, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52542

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52542. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52542. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 14, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 18, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52542

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52542. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK1-51-52-052119

ACZ Sample ID: ***L52542-01***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.1		*	%	0.1	0.5	06/22/19 4:48	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 9:55	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK1-51-52-052119-DI

ACZ Sample ID: ***L52542-02***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2		U	*	mg/L	0.1	0.5	07/18/19 1:43	jlw
Calcium, dissolved	M200.7 ICP	2	8.4		*	mg/L	0.2	1	07/16/19 15:16	aeh
Iron, dissolved	M200.7 ICP	2	0.11	J	*	mg/L	0.06	0.2	07/16/19 15:16	aeh
Magnesium, dissolved	M200.7 ICP	2	1.3	J	*	mg/L	0.4	2	07/16/19 15:16	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 15:16	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0019		*	mg/L	0.0004	0.001	07/15/19 12:36	mfm
Potassium, dissolved	M200.7 ICP	2	0.8	J	*	mg/L	0.4	2	07/16/19 15:16	aeh
Selenium, dissolved	M200.8 ICP-MS	2	0.0034		*	mg/L	0.0002	0.0005	07/15/19 12:36	mfm
Silicon, dissolved	M200.7 ICP	2	2.1		*	mg/L	0.2	1	07/16/19 15:16	aeh
Sodium, dissolved	M200.7 ICP	2	7.5		*	mg/L	0.4	2	07/16/19 15:16	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0004	J	*	mg/L	0.0002	0.001	07/15/19 12:36	mfm
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/16/19 15:16	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	20.0	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	20.0	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	07/16/19 21:28	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	26.4	H	*	mg/L	1	5	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-51-52-052119-STEP-1

ACZ Sample ID: ***L52542-03***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5		U	*	mg/L	0.3	1	07/18/19 1:46	jlw
Calcium, dissolved	M200.7 ICP	5	1.6	J	*	mg/L	0.5	3	07/16/19 15:19	aeh
Iron, dissolved	M200.7 ICP	5	0.5		*	mg/L	0.2	0.4	07/16/19 15:19	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 15:19	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 15:19	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 12:38	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 15:19	aeh
Selenium, dissolved	M200.8 ICP-MS	5	0.0005	J	*	mg/L	0.0005	0.001	07/15/19 12:38	mfm
Silicon, dissolved	M200.7 ICP	5	2.6	J	*	mg/L	0.5	3	07/16/19 15:19	aeh
Sodium, dissolved	M200.7 ICP	5	343		*	mg/L	1	5	07/16/19 15:19	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0058		*	mg/L	0.0005	0.003	07/15/19 12:38	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 15:19	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.13	H	*	mg/L	0.01	0.05	07/16/19 21:31	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	6.1	H	*	mg/L	1	5	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-51-52-052119-STEP-2

ACZ Sample ID: ***L52542-04***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25		U	*	mg/L	1	6	07/18/19 1:49	jlw
Calcium, dissolved	M200.7 ICP	25	5700		*	mg/L	3	10	07/16/19 15:22	aeh
Iron, dissolved	M200.7 ICP	25	6.1		*	mg/L	0.8	2	07/16/19 15:22	aeh
Magnesium, dissolved	M200.7 ICP	25	51		*	mg/L	5	30	07/16/19 15:22	aeh
Manganese, dissolved	M200.7 ICP	25	34.0		*	mg/L	0.3	1	07/16/19 15:22	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 13:30	bsu
Potassium, dissolved	M200.7 ICP	25		U	*	mg/L	5	30	07/16/19 15:22	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.005		*	mg/L	0.002	0.005	07/16/19 13:30	bsu
Silicon, dissolved	M200.7 ICP	25	5	J	*	mg/L	3	10	07/16/19 15:22	aeh
Sodium, dissolved	M200.7 ICP	25	19200		*	mg/L	5	30	07/16/19 15:22	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.042		*	mg/L	0.002	0.01	07/16/19 13:30	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 15:22	aeh

ARCADIS
Project ID:
Sample ID: BK1-51-52-052119-STEP-3

ACZ Sample ID: ***L52542-05***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	17		*	mg/L	1	5	07/18/19 1:52	jlw
Calcium, dissolved	M200.7 ICP	20	171		*	mg/L	2	10	07/18/19 1:52	jlw
Iron, dissolved	M200.7 ICP	20	103		*	mg/L	0.6	2	07/18/19 1:52	jlw
Magnesium, dissolved	M200.7 ICP	20	31		*	mg/L	4	20	07/18/19 1:52	jlw
Manganese, dissolved	M200.7 ICP	20	15.4		*	mg/L	0.2	1	07/18/19 1:52	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.004		*	mg/L	0.001	0.003	07/15/19 12:41	mfm
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/18/19 1:52	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0026		*	mg/L	0.0005	0.001	07/15/19 12:41	mfm
Silicon, dissolved	M200.7 ICP	20	30		*	mg/L	2	10	07/18/19 1:52	jlw
Sodium, dissolved	M200.7 ICP	20	92		*	mg/L	4	20	07/18/19 1:52	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0128		*	mg/L	0.0005	0.003	07/15/19 12:41	mfm
Vanadium, dissolved	M200.7 ICP	20	0.2	J	*	mg/L	0.1	0.5	07/18/19 1:52	jlw

ARCADIS
Project ID:
Sample ID: BK1-51-52-052119-STEP-4

ACZ Sample ID: ***L52542-06***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	19.8		*	mg/L	0.3	1	07/18/19 1:55	jlw
Calcium, dissolved	M200.7 ICP	5	29.6		*	mg/L	0.5	3	07/16/19 15:29	aeh
Iron, dissolved	M200.7 ICP	5	2.0		*	mg/L	0.2	0.4	07/16/19 15:29	aeh
Magnesium, dissolved	M200.7 ICP	5	6		*	mg/L	1	5	07/16/19 15:29	aeh
Manganese, dissolved	M200.7 ICP	5	1.37		*	mg/L	0.05	0.3	07/16/19 15:29	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10	0.006		*	mg/L	0.002	0.005	07/15/19 12:43	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 15:29	aeh
Selenium, dissolved	M200.8 ICP-MS	10	0.004		*	mg/L	0.001	0.003	07/15/19 12:43	mfm
Silicon, dissolved	M200.7 ICP	5	19.0		*	mg/L	0.5	3	07/16/19 15:29	aeh
Sodium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/16/19 15:29	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.001	J	*	mg/L	0.001	0.005	07/15/19 12:43	mfm
Vanadium, dissolved	M200.7 ICP	5	0.09	J	*	mg/L	0.03	0.1	07/16/19 15:29	aeh

ARCADIS
Project ID:
Sample ID: BK1-51-52-052119 STEP 5

ACZ Sample ID: ***L52542-07***
Date Sampled: *05/21/19 17:50*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	41200			mg/Kg	300	1000	07/17/19 6:39	aeh
Calcium, total (3052)	M6010D ICP	5000	2500	J		mg/Kg	500	3000	07/17/19 6:39	aeh
Iron, total (3052)	M6010D ICP	5000	29300			mg/Kg	200	400	07/17/19 6:39	aeh
Magnesium, total (3052)	M6010D ICP	5000	2000	J	*	mg/Kg	1000	5000	07/17/19 6:39	aeh
Manganese, total (3052)	M6010D ICP	5000	290	J		mg/Kg	50	300	07/17/19 6:39	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:47	mfm
Potassium, total (3052)	M6010D ICP	5000	19000			mg/Kg	1000	5000	07/17/19 6:39	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:32	mfm
Silicon, total (3052)	M6010D ICP	5000	374000	O	*	mg/Kg	500	3000	07/17/19 6:39	aeh
Sodium, total (3052)	M6010D ICP	5000	14000		*	mg/Kg	1000	5000	07/17/19 6:39	aeh
Uranium, total (3052)	M6020B ICP-MS	12500	1	J		mg/Kg	1	6	07/16/19 12:32	mfm
Vanadium, total (3052)	M6010D ICP	5000	50	J		mg/Kg	30	100	07/17/19 6:39	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 11:19	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

ARCADIS

ACZ Project ID: ***L52542***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L52938-05DUP	DUP	07/15/19 18:19			1310	1290	mg/L				2	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.892	mg/L	95	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.15	0.15			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	1.0006		.965	mg/L	96	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	20.012	15	34.7	mg/L	98	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	20.012	15	34.8	mg/L	99	85	115	0	20	

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	100		99.69	mg/L	100	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.3	0.3			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	68.11783		70.83	mg/L	104	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	340.58915	128	453.9	mg/L	96	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	340.58915	128	458.4	mg/L	97	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	100		99.64	mg/L	100	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.3	0.3			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	68.11783		70.41	mg/L	103	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	1362.3566	130	1530.4	mg/L	103	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	1362.3566	130	1523.4	mg/L	102	85	115	0	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

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ACZ Project ID: ***L52542***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	2		1.931	mg/L	97	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.09	0.09			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	1.0018		1.102	mg/L	110	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	5.009	64	64.25	mg/L	5	85	115			M3
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	5.009	64	64.75	mg/L	15	85	115	1	20	M3
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.941	mg/L	97	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.09	0.09			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	1.0018		1.075	mg/L	107	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	20.036	68.6	86.98	mg/L	92	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	20.036	68.6	85.92	mg/L	86	85	115	1	20	

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	100		95.67	mg/L	96	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.6	0.6			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	50.31093		49.61	mg/L	99	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	251.55465	46	269.6	mg/L	89	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	251.55465	46	272.3	mg/L	90	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	100		95.31	mg/L	95	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.6	0.6			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	50.31093		49.37	mg/L	98	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	1006.2186	47	1028.4	mg/L	98	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	1006.2186	47	1022.6	mg/L	97	85	115	1	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

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ACZ Project ID: ***L52542***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	2		1.903	mg/L	95	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.03	0.03			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	.4995		.525	mg/L	105	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	2.4975	1.61	3.93	mg/L	93	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	2.4975	1.61	3.969	mg/L	94	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.913	mg/L	96	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.03	0.03			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	.4995		.512	mg/L	103	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	9.99	1.4	12.02	mg/L	106	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	9.99	1.4	11.84	mg/L	105	85	115	2	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476883													
WG476883ICV	ICV	07/15/19 11:49	MS190630-2	.0199		.01848	mg/L	93	90	110			
WG476883ICB	ICB	07/15/19 11:51				U	mg/L		-0.00044	0.00044			
WG476883LFB	LFB	07/15/19 11:53	MS190606-3	.0501		.04365	mg/L	87	85	115			
L52541-04AS	AS	07/15/19 12:25	MS190606-3	.2505	U	.2638	mg/L	105	70	130			E6
L52541-04ASD	ASD	07/15/19 12:27	MS190606-3	.2505	U	.2203	mg/L	88	70	130	18	20	E6
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.0199		.02043	mg/L	103	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00044	0.00044			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.0501		.04605	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.002	U	1.0056	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.002	U	1.0739	mg/L	107	70	130	7	20	

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

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ACZ Project ID: ***L52542***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
L52539-02AS	AS	07/16/19 21:20	WI190704-2	.5	.03	.522	mg/L	98	90	110			
L52539-03DUP	DUP	07/16/19 21:22			.05	.05	mg/L				0	20	RA
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	20		19.39	mg/L	97	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.6	0.6			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	99.96426		100.1	mg/L	100	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	499.8213	2	463.1	mg/L	92	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	499.8213	2	468.8	mg/L	93	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	20		19.44	mg/L	97	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.6	0.6			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	99.96426		99.56	mg/L	100	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	1999.2852	U	1989	mg/L	99	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	1999.2852	U	1980.8	mg/L	99	85	115	0	20	

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476883													
WG476883ICV	ICV	07/15/19 11:49	MS190630-2	.05		.05038	mg/L	101	90	110			
WG476883ICB	ICB	07/15/19 11:51				U	mg/L		-0.00022	0.00022			
WG476883LFB	LFB	07/15/19 11:53	MS190606-3	.05005		.04732	mg/L	95	85	115			
L52541-04AS	AS	07/15/19 12:25	MS190606-3	.25025	.0018	.38257	mg/L	152	70	130			E6 MA
L52541-04ASD	ASD	07/15/19 12:27	MS190606-3	.25025	.0018	.3152	mg/L	125	70	130	19	20	E6
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.04886	mg/L	98	90	110			
WG476973ICB	ICB	07/16/19 12:41				.00015	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05005		.04643	mg/L	93	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.001	.003	1.0064	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.001	.003	1.0867	mg/L	108	70	130	8	20	

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ACZ Project ID: ***L52542***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	20		19.63	mg/L	98	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.3	0.3			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	10.008		10.69	mg/L	107	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	50.04	41.3	88.35	mg/L	94	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	50.04	41.3	89.3	mg/L	96	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	20		19.85	mg/L	99	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.3	0.3			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	10.008		10.7	mg/L	107	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	200.16	43	261.2	mg/L	109	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	200.16	43	257.8	mg/L	107	85	115	1	20	

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	100		100.85	mg/L	101	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.6	0.6			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	100.0471		103.4	mg/L	103	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	500.2355	252	718.5	mg/L	93	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	500.2355	252	726	mg/L	95	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	100		100.76	mg/L	101	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.6	0.6			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	100.0471		103	mg/L	103	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	2000.942	263	2356	mg/L	105	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	2000.942	263	2336	mg/L	104	85	115	1	20	

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ACZ Project ID: ***L52542***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477098													
WG477098ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477098ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477098LFB	LFB	07/17/19 10:07	WI181024-4	10.03		9.5	mg/L	95	90	110			
L50245-18AS	AS	07/17/19 10:07	WI181024-4	10.03	3.9	10.9	mg/L	70	90	110			M2
L52543-02DUP	DUP	07/17/19 10:09			38.7	37.7	mg/L				3	20	RA
L52543-03AS	AS	07/17/19 10:09	WI181024-4	100.3	12.3	107	mg/L	94	90	110			
L50237-19DUP	DUP	07/17/19 10:18			668	675	mg/L				1	20	

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476883													
WG476883ICV	ICV	07/15/19 11:49	MS190630-2	.05		.04987	mg/L	100	90	110			
WG476883ICB	ICB	07/15/19 11:51				U	mg/L		-0.00022	0.00022			
WG476883LFB	LFB	07/15/19 11:53	MS190606-3	.05		.049	mg/L	98	85	115			
L52541-04AS	AS	07/15/19 12:25	MS190606-3	.25	.0208	.36182	mg/L	136	70	130			E6 MA
L52541-04ASD	ASD	07/15/19 12:27	MS190606-3	.25	.0208	.30251	mg/L	113	70	130	18	20	E6
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1	.018	1.0581	mg/L	104	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1	.018	1.1233	mg/L	111	70	130	6	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

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ACZ Project ID: ***L52542***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476886													
WG476886ICV	ICV	07/16/19 13:38	II190702-1	2		1.9488	mg/L	97	95	105			
WG476886ICB	ICB	07/16/19 13:44				U	mg/L		-0.015	0.015			
WG476886LFB	LFB	07/16/19 13:57	II190716-6	.5005		.5003	mg/L	100	85	115			
L52541-05AS	AS	07/16/19 15:00	II190716-6	2.5025	.13	2.511	mg/L	95	85	115			
L52541-05ASD	ASD	07/16/19 15:03	II190716-6	2.5025	.13	2.543	mg/L	96	85	115	1	20	
WG477188													
WG477188ICV	ICV	07/18/19 0:11	II190715-2	2		1.9668	mg/L	98	95	105			
WG477188ICB	ICB	07/18/19 0:17				U	mg/L		-0.015	0.015			
WG477188LFB	LFB	07/18/19 0:29	II190716-6	.5005		.5058	mg/L	101	85	115			
L52541-05AS	AS	07/18/19 1:28	II190716-6	10.01	.1	10.71	mg/L	106	85	115			
L52541-05ASD	ASD	07/18/19 1:31	II190716-6	10.01	.1	10.45	mg/L	103	85	115	2	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52542***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52542-02	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476886	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476883	Selenium, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476883	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
			M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.

ARCADIS ACZ Project ID: ***L52542***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52542-03	WG476886	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476883	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476883	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476883	Uranium, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
L52542-04	WG476886	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476973	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52542-05	WG476883	Selenium, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Uranium, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
L52542-06	WG476886	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476883	Selenium, dissolved	M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.

Inorganic Extended Qualifier Report

ARCADIS ACZ Project ID: ***L52542***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52542-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52542
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52542
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L 52542

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: shannon.ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts Payable
Company: Arcadis
E-mail: accountspayable.administration@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** [signature]

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: custom SSE; contact Tim VanWyngarden
PO#: CO0000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK1-11.5-12.5-052119	5-21-19: 1235	SO	1	HOLD
BK1-15-15.5-052119	5-21-19: 1315	SO	1	HOLD
BK1-33.5-34-052119	5-21-19: 1350	SO	1	HOLD
BK1-39-40-052119	5-21-19: 1420	SO	1	HOLD
BK1-41-41.5-052119	5-21-19: 1600	SO	1	HOLD
BK1-47-48-052119	5-21-19: 1630	SO	1	HOLD
BK1-48.5-49.5-052119	5-21-19: 1725	SO	1	HOLD
BK1-51-52-052119	5-21-19: 1750	SO	1	HOLD
BK1-52-53-052119	5-21-19: 1820	SO	1	HOLD
BK1-55.5-56.5-052219	5-22-19: 0855	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary.

Bottle order BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19: 1430	FedEx	5/28/19 · 1430
			5/29/19 13:21

L52542-1907181346

COPY

L52542 Chain of Custod

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 19, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52543

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52543. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52543. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 15, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 19, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52543

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52543. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK1-52-53-052119

ACZ Sample ID: ***L52543-01***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	86.7		*	%	0.1	0.5	06/22/19 9:15	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 10:34	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK1-52-53-052119-DI

ACZ Sample ID: ***L52543-02***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.5		*	mg/L	0.1	0.5	07/18/19 16:34	jlw
Calcium, dissolved	M200.7 ICP	2	9.7		*	mg/L	0.2	1	07/16/19 22:16	dcm
Iron, dissolved	M200.7 ICP	2	0.35		*	mg/L	0.06	0.2	07/16/19 22:16	dcm
Magnesium, dissolved	M200.7 ICP	2	1.9	J	*	mg/L	0.4	2	07/16/19 22:16	dcm
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 22:16	dcm
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0018		*	mg/L	0.0004	0.001	07/15/19 14:53	mfm
Potassium, dissolved	M200.7 ICP	2	1.7	J	*	mg/L	0.4	2	07/16/19 22:16	dcm
Selenium, dissolved	M200.8 ICP-MS	2	0.0039		*	mg/L	0.0002	0.0005	07/15/19 14:53	mfm
Silicon, dissolved	M200.7 ICP	2	4.2		*	mg/L	0.2	1	07/16/19 22:16	dcm
Sodium, dissolved	M200.7 ICP	2	15.4		*	mg/L	0.4	2	07/16/19 22:16	dcm
Uranium, dissolved	M200.8 ICP-MS	2	0.0008	J	*	mg/L	0.0002	0.001	07/15/19 14:53	mfm
Vanadium, dissolved	M200.7 ICP	2	0.01	J	*	mg/L	0.01	0.05	07/16/19 22:16	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	26.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	H	*	mg/L	0.01	0.05	07/16/19 21:32	pjb
Sulfate	D516-02/-07 - Turbidimetric	20	38.7	BH	*	mg/L	20	100	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-52-53-052119-STEP 1

ACZ Sample ID: ***L52543-03***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5		U	*	mg/L	0.3	1	07/18/19 16:37	jlw
Calcium, dissolved	M200.7 ICP	5	6.8		*	mg/L	0.5	3	07/16/19 22:19	dcm
Iron, dissolved	M200.7 ICP	5		U	*	mg/L	0.2	0.4	07/16/19 22:19	dcm
Magnesium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 22:19	dcm
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 22:19	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 14:55	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 22:19	dcm
Selenium, dissolved	M200.8 ICP-MS	5	0.0006	J	*	mg/L	0.0005	0.001	07/15/19 14:55	mfm
Silicon, dissolved	M200.7 ICP	5	3.1		*	mg/L	0.5	3	07/16/19 22:19	dcm
Sodium, dissolved	M200.7 ICP	5	282		*	mg/L	1	5	07/16/19 22:19	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.0079		*	mg/L	0.0005	0.003	07/15/19 14:55	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 22:19	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.08	H	*	mg/L	0.01	0.05	07/16/19 21:34	pjb
Sulfate	D516-02/-07 - Turbidimetric	10	12.3	BH	*	mg/L	10	50	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-52-53-052119-STEP 2

ACZ Sample ID: ***L52543-04***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	1	J	*	mg/L	1	6	07/18/19 16:40	jlw
Calcium, dissolved	M200.7 ICP	25	3170		*	mg/L	3	10	07/16/19 22:22	dcm
Iron, dissolved	M200.7 ICP	25	2.1		*	mg/L	0.8	2	07/16/19 22:22	dcm
Magnesium, dissolved	M200.7 ICP	25	88		*	mg/L	5	30	07/16/19 22:22	dcm
Manganese, dissolved	M200.7 ICP	25	19.2		*	mg/L	0.3	1	07/16/19 22:22	dcm
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 13:32	bsu
Potassium, dissolved	M200.7 ICP	25	5	J	*	mg/L	5	30	07/16/19 22:22	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.003	07/15/19 14:56	mfm
Silicon, dissolved	M200.7 ICP	25	7	J	*	mg/L	3	10	07/16/19 22:22	dcm
Sodium, dissolved	M200.7 ICP	25	20600		*	mg/L	5	30	07/16/19 22:22	dcm
Uranium, dissolved	M200.8 ICP-MS	20	0.041		*	mg/L	0.002	0.01	07/16/19 13:32	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 22:22	dcm

ARCADIS
Project ID:
Sample ID: BK1-52-53-052119-STEP 3

ACZ Sample ID: ***L52543-05***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	17.6		*	mg/L	0.3	1	07/18/19 16:43	jlw
Calcium, dissolved	M200.7 ICP	5	174		*	mg/L	0.5	3	07/16/19 22:26	dcm
Iron, dissolved	M200.7 ICP	5	77.0		*	mg/L	0.2	0.4	07/16/19 22:26	dcm
Magnesium, dissolved	M200.7 ICP	5	52		*	mg/L	1	5	07/16/19 22:26	dcm
Manganese, dissolved	M200.7 ICP	5	5.11		*	mg/L	0.05	0.3	07/16/19 22:26	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 14:58	mfm
Potassium, dissolved	M200.7 ICP	5	3	J	*	mg/L	1	5	07/16/19 22:26	dcm
Selenium, dissolved	M200.8 ICP-MS	5	0.0036		*	mg/L	0.0005	0.001	07/15/19 14:58	mfm
Silicon, dissolved	M200.7 ICP	5	49.8		*	mg/L	0.5	3	07/16/19 22:26	dcm
Sodium, dissolved	M200.7 ICP	5	290		*	mg/L	1	5	07/16/19 22:26	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.0162		*	mg/L	0.0005	0.003	07/15/19 14:58	mfm
Vanadium, dissolved	M200.7 ICP	5	0.24		*	mg/L	0.03	0.1	07/16/19 22:26	dcm

ARCADIS
Project ID:
Sample ID: BK1-52-53-052119-STEP 4

ACZ Sample ID: ***L52543-06***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	43.1		*	mg/L	0.3	1	07/18/19 16:52	jlw
Calcium, dissolved	M200.7 ICP	5	81.6		*	mg/L	0.5	3	07/16/19 22:35	dcm
Iron, dissolved	M200.7 ICP	5	10.2		*	mg/L	0.2	0.4	07/16/19 22:35	dcm
Magnesium, dissolved	M200.7 ICP	5	28		*	mg/L	1	5	07/16/19 22:35	dcm
Manganese, dissolved	M200.7 ICP	5	1.72		*	mg/L	0.05	0.3	07/16/19 22:35	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.002	0.005	07/15/19 15:03	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 22:35	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.013		*	mg/L	0.001	0.003	07/15/19 15:03	mfm
Silicon, dissolved	M200.7 ICP	5	32.0		*	mg/L	0.5	3	07/16/19 22:35	dcm
Sodium, dissolved	M200.7 ICP	5	7		*	mg/L	1	5	07/16/19 22:35	dcm
Uranium, dissolved	M200.8 ICP-MS	10	0.009		*	mg/L	0.001	0.005	07/15/19 15:03	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 22:35	dcm

ARCADIS
Project ID:
Sample ID: BK1-52-53-052119-STEP 5

ACZ Sample ID: ***L52543-07***
Date Sampled: *05/21/19 18:20*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	68100			mg/Kg	300	1000	07/17/19 6:43	aeh
Calcium, total (3052)	M6010D ICP	5000	1800	J		mg/Kg	500	3000	07/17/19 6:43	aeh
Iron, total (3052)	M6010D ICP	5000	30300			mg/Kg	200	400	07/17/19 6:43	aeh
Magnesium, total (3052)	M6010D ICP	5000	6000		*	mg/Kg	1000	5000	07/17/19 6:43	aeh
Manganese, total (3052)	M6010D ICP	5000	200	J		mg/Kg	50	300	07/17/19 6:43	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:51	mfm
Potassium, total (3052)	M6010D ICP	5000	23000			mg/Kg	1000	5000	07/17/19 6:43	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:34	mfm
Silicon, total (3052)	M6010D ICP	5000	331000	O	*	mg/Kg	500	3000	07/17/19 6:43	aeh
Sodium, total (3052)	M6010D ICP	5000	12000		*	mg/Kg	1000	5000	07/17/19 6:43	aeh
Uranium, total (3052)	M6020B ICP-MS	12500	2	J		mg/Kg	1	6	07/16/19 12:34	mfm
Vanadium, total (3052)	M6010D ICP	5000	70	J		mg/Kg	30	100	07/17/19 6:43	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 11:50	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

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ACZ Project ID: ***L52543***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L52938-05DUP	DUP	07/15/19 18:19			1310	1290	mg/L				2	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477163													
WG477163ICV	ICV	07/18/19 16:13	II190715-2	2		1.98	mg/L	99	95	105			
WG477163ICB	ICB	07/18/19 16:19				U	mg/L		-0.15	0.15			
WG477163LFB	LFB	07/18/19 16:31	II190716-6	1.0006		1.036	mg/L	104	85	115			
L52543-05AS	AS	07/18/19 16:46	II190716-6	5.003	17.6	22.15	mg/L	91	85	115			
L52543-05ASD	ASD	07/18/19 16:49	II190716-6	5.003	17.6	22.31	mg/L	94	85	115	1	20	

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	100		99.9	mg/L	100	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.3	0.3			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	68.11783		69.74	mg/L	102	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	340.58915	174	504.5	mg/L	97	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	340.58915	174	510.5	mg/L	99	85	115	1	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	2		1.93	mg/L	97	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.09	0.09			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	1.0018		1.078	mg/L	108	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	5.009	77	79.9	mg/L	58	85	115			M3
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	5.009	77	80.85	mg/L	77	85	115	1	20	M3

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ACZ Project ID: ***L52543***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	100		95.75	mg/L	96	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.6	0.6			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	50.31093		49.1	mg/L	98	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	251.55465	52	280.2	mg/L	91	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	251.55465	52	284.7	mg/L	93	85	115	2	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	2		1.922	mg/L	96	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.03	0.03			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	.4995		.513	mg/L	103	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	2.4975	5.11	7.4	mg/L	92	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	2.4975	5.11	7.525	mg/L	97	85	115	2	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

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ACZ Project ID: ***L52543***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476916													
WG476916ICV	ICV	07/15/19 14:47	MS190630-2	.0199		.01798	mg/L	90	90	110			
WG476916ICB	ICB	07/15/19 14:49				U	mg/L		-0.00044	0.00044			
WG476916LFB	LFB	07/15/19 14:51	MS190606-3	.0501		.04342	mg/L	87	85	115			
L52543-05AS	AS	07/15/19 15:00	MS190606-3	.2505	.002	.2151	mg/L	85	70	130			
L52543-05ASD	ASD	07/15/19 15:02	MS190606-3	.2505	.002	.2089	mg/L	83	70	130	3	20	
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.0199		.02043	mg/L	103	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00044	0.00044			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.0501		.04605	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.002	U	1.0056	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.002	U	1.0739	mg/L	107	70	130	7	20	

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
L52539-02AS	AS	07/16/19 21:20	WI190704-2	.5	.03	.522	mg/L	98	90	110			
L52539-03DUP	DUP	07/16/19 21:22			.05	.05	mg/L				0	20	RA
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	20		19.65	mg/L	98	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.6	0.6			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	99.96426		98.9	mg/L	99	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	499.8213	3	474.2	mg/L	94	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	499.8213	3	482	mg/L	96	85	115	2	20	

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

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ACZ Project ID: ***L52543***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476916													
WG476916ICV	ICV	07/15/19 14:47	MS190630-2	.05		.04944	mg/L	99	90	110			
WG476916ICB	ICB	07/15/19 14:49				U	mg/L		-0.00022	0.00022			
WG476916LFB	LFB	07/15/19 14:51	MS190606-3	.05005		.04751	mg/L	95	85	115			
L52543-05AS	AS	07/15/19 15:00	MS190606-3	.25025	.0036	.60493	mg/L	240	70	130			M1
L52543-05ASD	ASD	07/15/19 15:02	MS190606-3	.25025	.0036	.58487	mg/L	232	70	130	3	20	M1

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	20		19.58	mg/L	98	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.3	0.3			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	10.008		10.66	mg/L	107	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	50.04	49.8	98.5	mg/L	97	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	50.04	49.8	99.05	mg/L	98	85	115	1	20	

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	100		101.88	mg/L	102	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.6	0.6			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	100.0471		102.9	mg/L	103	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	500.2355	290	772.5	mg/L	96	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	500.2355	290	782.5	mg/L	98	85	115	1	20	

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

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ACZ Project ID: ***L52543***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477098													
WG477098ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477098ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477098LFB	LFB	07/17/19 10:07	WI181024-4	10.03		9.5	mg/L	95	90	110			
L52543-02DUP	DUP	07/17/19 10:09			38.7	37.7	mg/L				3	20	RA
L52543-03AS	AS	07/17/19 10:09	WI181024-4	100.3	12.3	107	mg/L	94	90	110			

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476916													
WG476916ICV	ICV	07/15/19 14:47	MS190630-2	.05		.04928	mg/L	99	90	110			
WG476916ICB	ICB	07/15/19 14:49				U	mg/L		-0.00022	0.00022			
WG476916LFB	LFB	07/15/19 14:51	MS190606-3	.05		.04783	mg/L	96	85	115			
L52543-05AS	AS	07/15/19 15:00	MS190606-3	.25	.0162	.27288	mg/L	103	70	130			
L52543-05ASD	ASD	07/15/19 15:02	MS190606-3	.25	.0162	.26413	mg/L	99	70	130	3	20	
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1	.018	1.0581	mg/L	104	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1	.018	1.1233	mg/L	111	70	130	6	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	2		1.948	mg/L	97	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.015	0.015			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	.5005		.5026	mg/L	100	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	2.5025	.24	2.643	mg/L	96	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	2.5025	.24	2.689	mg/L	98	85	115	2	20	

ARCADIS

ACZ Project ID: ***L52543***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52543***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52543-02	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG477048	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476916	Selenium, dissolved	M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	DJ	Sample dilution required due to insufficient sample.
			D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476916	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.

ARCADIS ACZ Project ID: ***L52543***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52543-03	WG477163	Aluminum, dissolved	M200.7 ICP	D1	Sample required dilution due to matrix.
	WG477048	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476916	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	DJ	Sample dilution required due to insufficient sample.
			D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L52543-04	WG477163	Aluminum, dissolved	M200.7 ICP	D1	Sample required dilution due to matrix.
	WG477048	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476973	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG476916	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L52543-05	WG477048	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Selenium, dissolved	M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L52543-06	WG477048	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Selenium, dissolved	M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

Inorganic Extended Qualifier Report

ARCADIS ACZ Project ID: ***L52543***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52543-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52543
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID:	L52543
Date Received:	05/29/2019 13:21
Received By:	
Date Printed:	6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L52543

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts Payable
Company: Arcadis
E-mail: accountspayable.administration@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** [signature]

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: custom SSE; contact Tim VanWyngarden
PO#: CO0000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK1-11.5-12.5-052119	5-21-19 : 1235	SO	1	HOLD
BK1-15-15.5-052119	5-21-19 : 1315	SO	1	HOLD
BK1-33.5-34-052119	5-21-19 : 1350	SO	1	HOLD
BK1-39-40-052119	5-21-19 : 1420	SO	1	HOLD
BK1-41-41.5-052119	5-21-19 : 1600	SO	1	HOLD
BK1-47-48-052119	5-21-19 : 1630	SO	1	HOLD
BK1-48.5-49.5-052119	5-21-19 : 1725	SO	1	HOLD
BK1-51-52-052119	5-21-19 : 1750	SO	1	HOLD
BK1-52-53-052119	5-21-19 : 1820	SO	1	HOLD
BK1-55.5-56.5-052219	5-22-19 : 0855	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary.

Bottle order BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1430	FedEx	5/28/19 :1430
			5/29/19 13:21

L52543-1907191123

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 19, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52544

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52544. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52544. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 15, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 19, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52544

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52544. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK1-55.5-56.5-052219

ACZ Sample ID: ***L52544-01***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	88.1		*	%	0.1	0.5	06/22/19 13:43	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 11:12	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK1-55.5-56.5-052219-DI

ACZ Sample ID: ***L52544-02***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	3.4		*	mg/L	0.1	0.5	07/18/19 16:55	jlw
Calcium, dissolved	M200.7 ICP	2	6.1		*	mg/L	0.2	1	07/16/19 22:39	dcm
Iron, dissolved	M200.7 ICP	2	0.46		*	mg/L	0.06	0.2	07/16/19 22:39	dcm
Magnesium, dissolved	M200.7 ICP	2	1.1	J	*	mg/L	0.4	2	07/16/19 22:39	dcm
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 22:39	dcm
Molybdenum, dissolved	M200.8 ICP-MS	2	0.001		*	mg/L	0.0004	0.001	07/15/19 15:05	mfm
Potassium, dissolved	M200.7 ICP	2	1.1	J	*	mg/L	0.4	2	07/16/19 22:39	dcm
Selenium, dissolved	M200.8 ICP-MS	2	0.0015		*	mg/L	0.0002	0.0005	07/15/19 15:05	mfm
Silicon, dissolved	M200.7 ICP	2	5.0		*	mg/L	0.2	1	07/16/19 22:39	dcm
Sodium, dissolved	M200.7 ICP	2	12.8		*	mg/L	0.4	2	07/16/19 22:39	dcm
Uranium, dissolved	M200.8 ICP-MS	2	0.0003	J	*	mg/L	0.0002	0.001	07/15/19 15:05	mfm
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/16/19 22:39	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	26.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	07/16/19 21:35	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	19.0	H	*	mg/L	1	5	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-55.5-56.5-052219-STEP 1

ACZ Sample ID: ***L52544-03***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	0.9	J	*	mg/L	0.3	1	07/18/19 16:59	jlw
Calcium, dissolved	M200.7 ICP	5	5.0		*	mg/L	0.5	3	07/16/19 22:42	dcm
Iron, dissolved	M200.7 ICP	5	0.5		*	mg/L	0.2	0.4	07/16/19 22:42	dcm
Magnesium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 22:42	dcm
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 22:42	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.001	J	*	mg/L	0.001	0.003	07/15/19 15:07	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 22:42	dcm
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/15/19 15:07	mfm
Silicon, dissolved	M200.7 ICP	5	5.3		*	mg/L	0.5	3	07/16/19 22:42	dcm
Sodium, dissolved	M200.7 ICP	5	285		*	mg/L	1	5	07/16/19 22:42	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.0022	J	*	mg/L	0.0005	0.003	07/15/19 15:07	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 22:42	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	H	*	mg/L	0.01	0.05	07/16/19 21:37	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	5.6	H	*	mg/L	1	5	07/17/19 10:09	ttg

ARCADIS
Project ID:
Sample ID: BK1-55.5-56.5-052219-STEP 2

ACZ Sample ID: ***L52544-04***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	2	J	*	mg/L	1	6	07/18/19 17:08	jlw
Calcium, dissolved	M200.7 ICP	25	2080		*	mg/L	3	10	07/16/19 22:52	dcm
Iron, dissolved	M200.7 ICP	25	1.5	J	*	mg/L	0.8	2	07/16/19 22:52	dcm
Magnesium, dissolved	M200.7 ICP	25	68		*	mg/L	5	30	07/16/19 22:52	dcm
Manganese, dissolved	M200.7 ICP	25	32.8		*	mg/L	0.3	1	07/16/19 22:52	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.002	0.005	07/15/19 15:12	mfm
Potassium, dissolved	M200.7 ICP	25		U	*	mg/L	5	30	07/16/19 22:52	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.003		*	mg/L	0.001	0.003	07/15/19 15:12	mfm
Silicon, dissolved	M200.7 ICP	25	8	J	*	mg/L	3	10	07/16/19 22:52	dcm
Sodium, dissolved	M200.7 ICP	25	17100		*	mg/L	5	30	07/16/19 22:52	dcm
Uranium, dissolved	M200.8 ICP-MS	20	0.016		*	mg/L	0.002	0.01	07/16/19 13:34	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 22:52	dcm

ARCADIS
Project ID:
Sample ID: BK1-55.5-56.5-052219-STEP 3

ACZ Sample ID: ***L52544-05***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	13.8		*	mg/L	0.3	1	07/18/19 17:11	jlw
Calcium, dissolved	M200.7 ICP	5	133		*	mg/L	0.5	3	07/16/19 22:55	dcm
Iron, dissolved	M200.7 ICP	5	36.6		*	mg/L	0.2	0.4	07/16/19 22:55	dcm
Magnesium, dissolved	M200.7 ICP	5	51		*	mg/L	1	5	07/16/19 22:55	dcm
Manganese, dissolved	M200.7 ICP	5	2.98		*	mg/L	0.05	0.3	07/16/19 22:55	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 15:14	mfm
Potassium, dissolved	M200.7 ICP	5	3	J	*	mg/L	1	5	07/16/19 22:55	dcm
Selenium, dissolved	M200.8 ICP-MS	5	0.002		*	mg/L	0.0005	0.001	07/15/19 15:14	mfm
Silicon, dissolved	M200.7 ICP	5	32.2		*	mg/L	0.5	3	07/16/19 22:55	dcm
Sodium, dissolved	M200.7 ICP	5	298		*	mg/L	1	5	07/16/19 22:55	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.0086		*	mg/L	0.0005	0.003	07/15/19 15:14	mfm
Vanadium, dissolved	M200.7 ICP	5	0.15		*	mg/L	0.03	0.1	07/16/19 22:55	dcm

ARCADIS
Project ID:
Sample ID: BK1-55.5-56.5-052219-STEP 4

ACZ Sample ID: ***L52544-06***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	38.7		*	mg/L	0.3	1	07/18/19 17:14	jlw
Calcium, dissolved	M200.7 ICP	5	80.7		*	mg/L	0.5	3	07/16/19 22:58	dcm
Iron, dissolved	M200.7 ICP	5	3.5		*	mg/L	0.2	0.4	07/16/19 22:58	dcm
Magnesium, dissolved	M200.7 ICP	5	34		*	mg/L	1	5	07/16/19 22:58	dcm
Manganese, dissolved	M200.7 ICP	5	1.27		*	mg/L	0.05	0.3	07/16/19 22:58	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.002	0.005	07/15/19 15:16	mfm
Potassium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 22:58	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.003		*	mg/L	0.001	0.003	07/15/19 15:16	mfm
Silicon, dissolved	M200.7 ICP	5	27.0		*	mg/L	0.5	3	07/16/19 22:58	dcm
Sodium, dissolved	M200.7 ICP	5	8		*	mg/L	1	5	07/16/19 22:58	dcm
Uranium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.005	07/15/19 15:16	mfm
Vanadium, dissolved	M200.7 ICP	5	0.10		*	mg/L	0.03	0.1	07/16/19 22:58	dcm

ARCADIS
Project ID:
Sample ID: BK1-55.5-56.5-052219-STEP 5

ACZ Sample ID: ***L52544-07***
Date Sampled: *05/22/19 08:55*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	57800			mg/Kg	300	1000	07/17/19 6:47	aeh
Calcium, total (3052)	M6010D ICP	5000	900	J		mg/Kg	500	3000	07/17/19 6:47	aeh
Iron, total (3052)	M6010D ICP	5000	24900			mg/Kg	200	400	07/17/19 6:47	aeh
Magnesium, total (3052)	M6010D ICP	5000	10000		*	mg/Kg	1000	5000	07/17/19 6:47	aeh
Manganese, total (3052)	M6010D ICP	5000	150	J		mg/Kg	50	300	07/17/19 6:47	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:53	mfm
Potassium, total (3052)	M6010D ICP	5000	16000			mg/Kg	1000	5000	07/17/19 6:47	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:36	mfm
Silicon, total (3052)	M6010D ICP	5000	348000	O	*	mg/Kg	500	3000	07/17/19 6:47	aeh
Sodium, total (3052)	M6010D ICP	5000	10000		*	mg/Kg	1000	5000	07/17/19 6:47	aeh
Uranium, total (3052)	M6020B ICP-MS	12500	2	J		mg/Kg	1	6	07/16/19 12:36	mfm
Vanadium, total (3052)	M6010D ICP	5000	70	J		mg/Kg	30	100	07/17/19 6:47	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 12:21	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

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ACZ Project ID: ***L52544***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L52938-05DUP	DUP	07/15/19 18:19			1310	1290	mg/L				2	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477163													
WG477163ICV	ICV	07/18/19 16:13	II190715-2	2		1.98	mg/L	99	95	105			
WG477163ICB	ICB	07/18/19 16:19				U	mg/L		-0.15	0.15			
WG477163LFB	LFB	07/18/19 16:31	II190716-6	1.0006		1.036	mg/L	104	85	115			
L52543-05AS	AS	07/18/19 16:46	II190716-6	5.003	17.6	22.15	mg/L	91	85	115			
L52543-05ASD	ASD	07/18/19 16:49	II190716-6	5.003	17.6	22.31	mg/L	94	85	115	1	20	

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	100		99.9	mg/L	100	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.3	0.3			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	68.11783		69.74	mg/L	102	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	340.58915	174	504.5	mg/L	97	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	340.58915	174	510.5	mg/L	99	85	115	1	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	2		1.93	mg/L	97	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.09	0.09			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	1.0018		1.078	mg/L	108	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	5.009	77	79.9	mg/L	58	85	115			M3
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	5.009	77	80.85	mg/L	77	85	115	1	20	M3

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ACZ Project ID: ***L52544***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	100		95.75	mg/L	96	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.6	0.6			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	50.31093		49.1	mg/L	98	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	251.55465	52	280.2	mg/L	91	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	251.55465	52	284.7	mg/L	93	85	115	2	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	2		1.922	mg/L	96	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.03	0.03			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	.4995		.513	mg/L	103	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	2.4975	5.11	7.4	mg/L	92	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	2.4975	5.11	7.525	mg/L	97	85	115	2	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476916													
WG476916ICV	ICV	07/15/19 14:47	MS190630-2	.0199		.01798	mg/L	90	90	110			
WG476916ICB	ICB	07/15/19 14:49				U	mg/L		-0.00044	0.00044			
WG476916LFB	LFB	07/15/19 14:51	MS190606-3	.0501		.04342	mg/L	87	85	115			
L52543-05AS	AS	07/15/19 15:00	MS190606-3	.2505	.002	.2151	mg/L	85	70	130			
L52543-05ASD	ASD	07/15/19 15:02	MS190606-3	.2505	.002	.2089	mg/L	83	70	130	3	20	

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ACZ Project ID: ***L52544***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
L52544-02AS	AS	07/16/19 21:36	WI190704-2	.5	.03	.539	mg/L	102	90	110			
L52544-03DUP	DUP	07/16/19 21:38			.05	.043	mg/L				15	20	RA
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	20		19.65	mg/L	98	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.6	0.6			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	99.96426		98.9	mg/L	99	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	499.8213	3	474.2	mg/L	94	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	499.8213	3	482	mg/L	96	85	115	2	20	

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476916													
WG476916ICV	ICV	07/15/19 14:47	MS190630-2	.05		.04944	mg/L	99	90	110			
WG476916ICB	ICB	07/15/19 14:49				U	mg/L		-0.00022	0.00022			
WG476916LFB	LFB	07/15/19 14:51	MS190606-3	.05005		.04751	mg/L	95	85	115			
L52543-05AS	AS	07/15/19 15:00	MS190606-3	.25025	.0036	.60493	mg/L	240	70	130			M1
L52543-05ASD	ASD	07/15/19 15:02	MS190606-3	.25025	.0036	.58487	mg/L	232	70	130	3	20	M1

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

ARCADIS

ACZ Project ID: ***L52544***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	20		19.58	mg/L	98	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.3	0.3			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	10.008		10.66	mg/L	107	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	50.04	49.8	98.5	mg/L	97	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	50.04	49.8	99.05	mg/L	98	85	115	1	20	

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	100		101.88	mg/L	102	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.6	0.6			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	100.0471		102.9	mg/L	103	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	500.2355	290	772.5	mg/L	96	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	500.2355	290	782.5	mg/L	98	85	115	1	20	

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477098													
WG477098ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477098ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477098LFB	LFB	07/17/19 10:07	WI181024-4	10.03		9.5	mg/L	95	90	110			
L52543-02DUP	DUP	07/17/19 10:09			38.7	37.7	mg/L				3	20	RA
L52543-03AS	AS	07/17/19 10:09	WI181024-4	100.3	12.3	107	mg/L	94	90	110			

ARCADIS

ACZ Project ID: ***L52544***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476916													
WG476916ICV	ICV	07/15/19 14:47	MS190630-2	.05		.04928	mg/L	99	90	110			
WG476916ICB	ICB	07/15/19 14:49				U	mg/L		-0.00022	0.00022			
WG476916LFB	LFB	07/15/19 14:51	MS190606-3	.05		.04783	mg/L	96	85	115			
L52543-05AS	AS	07/15/19 15:00	MS190606-3	.25	.0162	.27288	mg/L	103	70	130			
L52543-05ASD	ASD	07/15/19 15:02	MS190606-3	.25	.0162	.26413	mg/L	99	70	130	3	20	
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1	.018	1.0581	mg/L	104	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1	.018	1.1233	mg/L	111	70	130	6	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	2		1.948	mg/L	97	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.015	0.015			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	.5005		.5026	mg/L	100	85	115			
L52543-05AS	AS	07/16/19 22:29	II190716-6	2.5025	.24	2.643	mg/L	96	85	115			
L52543-05ASD	ASD	07/16/19 22:32	II190716-6	2.5025	.24	2.689	mg/L	98	85	115	2	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52544***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52544-02	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG477048	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476916	Selenium, dissolved	M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476916	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.

ARCADIS ACZ Project ID: ***L52544***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52544-03	WG477163	Aluminum, dissolved	M200.7 ICP	D1	Sample required dilution due to matrix.
	WG477048	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476916	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476916	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
L52544-04	WG477163	Aluminum, dissolved	M200.7 ICP	D1	Sample required dilution due to matrix.
	WG477048	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Selenium, dissolved	M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L52544-05	WG477048	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Selenium, dissolved	M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L52544-06	WG477048	Iron, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Selenium, dissolved	M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.

Inorganic Extended Qualifier Report

ARCADIS ACZ Project ID: ***L52544***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52544-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52544
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52544
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L52544

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich	Address: 630 Plaza Drive, Ste 200
Company: Arcadis	Highlands Ranch, CO 80129
E-mail: shannon.ulrich@arcadis.com	Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello	E-mail: aarguello@barrick.com
Company: Homestake Mining Company	Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts Payable	Address: 630 Plaza Drive Ste 200
Company: Arcadis	Highlands Ranch, CO 80129
E-mail: accountspayable.administration@arcadis.com	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** **State** NM **Zip code** 87021 **Time Zone** MST

***Sampler's Signature:** [signature]

"I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: custom SSE; contact Tim VanWyngarden

PO#: CO0001200.1901.30007

Reporting state for compliance testing: NA

Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK1-11.5-12.5-052119	5-21-19: 1235	SO	1	HOLD
BK1-15-15.5-052119	5-21-19: 1315	SO	1	HOLD
BK1-33.5-34-052119	5-21-19: 1350	SO	1	HOLD
BK1-39-40-052119	5-21-19: 1420	SO	1	HOLD
BK1-41-41.5-052119	5-21-19: 1600	SO	1	HOLD
BK1-47-48-052119	5-21-19: 1630	SO	1	HOLD
BK1-48.5-49.5-052119	5-21-19: 1725	SO	1	HOLD
BK1-51-52-052119	5-21-19: 1750	SO	1	HOLD
BK1-52-53-052119	5-21-19: 1820	SO	1	HOLD
BK1-55.5-56.5-052219	5-22-19: 0855	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden

*Samples are background soil but are inside NRC licensed boundary.

Bottle order BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19: 1430	FedEx	5/28/19: 1430
			5/29/19 1321

L52544-1907191124

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L52544 Chain of Custody

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 19, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52545

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52545. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52545. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 15, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 19, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52545

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52545. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK2-35-36-051519

ACZ Sample ID: ***L52545-01***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	96.8		*	%	0.1	0.5	06/22/19 18:10	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 11:51	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK2-35-36-051519-DI

ACZ Sample ID: ***L52545-02***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.9		*	mg/L	0.1	0.5	07/18/19 17:17	jlw
Calcium, dissolved	M200.7 ICP	2	6.0		*	mg/L	0.2	1	07/16/19 23:02	dcm
Iron, dissolved	M200.7 ICP	2	0.89		*	mg/L	0.06	0.2	07/16/19 23:02	dcm
Magnesium, dissolved	M200.7 ICP	2		U	*	mg/L	0.4	2	07/16/19 23:02	dcm
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 23:02	dcm
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0041		*	mg/L	0.0004	0.001	07/15/19 15:18	mfm
Potassium, dissolved	M200.7 ICP	2	2.6		*	mg/L	0.4	2	07/16/19 23:02	dcm
Selenium, dissolved	M200.8 ICP-MS	2	0.0002	J	*	mg/L	0.0002	0.0005	07/15/19 15:18	mfm
Silicon, dissolved	M200.7 ICP	2	3.6		*	mg/L	0.2	1	07/16/19 23:02	dcm
Sodium, dissolved	M200.7 ICP	2	3.7		*	mg/L	0.4	2	07/16/19 23:02	dcm
Uranium, dissolved	M200.8 ICP-MS	2	0.0004	J	*	mg/L	0.0002	0.001	07/15/19 15:18	mfm
Vanadium, dissolved	M200.7 ICP	2	0.01	J	*	mg/L	0.01	0.05	07/16/19 23:02	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	26.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	07/16/19 21:39	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	3.6	BH	*	mg/L	1	5	07/17/19 10:10	ttg

ARCADIS
Project ID:
Sample ID: BK2-35-36-051519-STEP 1

ACZ Sample ID: ***L52545-03***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	3.2		*	mg/L	0.3	1	07/18/19 17:20	jlw
Calcium, dissolved	M200.7 ICP	5	1.1	J	*	mg/L	0.5	3	07/16/19 23:05	dcm
Iron, dissolved	M200.7 ICP	5	1.6		*	mg/L	0.2	0.4	07/16/19 23:05	dcm
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:05	dcm
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 23:05	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.005		*	mg/L	0.001	0.003	07/15/19 15:19	mfm
Potassium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 23:05	dcm
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/15/19 15:19	mfm
Silicon, dissolved	M200.7 ICP	5	4.7		*	mg/L	0.5	3	07/16/19 23:05	dcm
Sodium, dissolved	M200.7 ICP	5	394		*	mg/L	1	5	07/16/19 23:05	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.0016	J	*	mg/L	0.0005	0.003	07/15/19 15:19	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 23:05	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.09	H	*	mg/L	0.01	0.05	07/16/19 21:40	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	9.9	H	*	mg/L	1	5	07/17/19 10:10	ttg

ARCADIS
Project ID:
Sample ID: BK2-35-36-051519-STEP 2

ACZ Sample ID: ***L52545-04***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	7		*	mg/L	1	6	07/18/19 17:23	jlw
Calcium, dissolved	M200.7 ICP	25	719		*	mg/L	3	10	07/16/19 23:08	dcm
Iron, dissolved	M200.7 ICP	25	15.8		*	mg/L	0.8	2	07/16/19 23:08	dcm
Magnesium, dissolved	M200.7 ICP	25	7	J	*	mg/L	5	30	07/16/19 23:08	dcm
Manganese, dissolved	M200.7 ICP	25	6.5		*	mg/L	0.3	1	07/16/19 23:08	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.002	0.005	07/15/19 15:21	mfm
Potassium, dissolved	M200.7 ICP	25		U	*	mg/L	5	30	07/16/19 23:08	dcm
Selenium, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.001	0.003	07/15/19 15:21	mfm
Silicon, dissolved	M200.7 ICP	25	10		*	mg/L	3	10	07/16/19 23:08	dcm
Sodium, dissolved	M200.7 ICP	25	18900		*	mg/L	5	30	07/16/19 23:08	dcm
Uranium, dissolved	M200.8 ICP-MS	20	0.009	J	*	mg/L	0.002	0.01	07/16/19 17:34	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 23:08	dcm

ARCADIS
Project ID:
Sample ID: BK2-35-36-051519-STEP 3

ACZ Sample ID: ***L52545-05***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	21.3		*	mg/L	0.3	1	07/18/19 17:26	jlw
Calcium, dissolved	M200.7 ICP	5	21.2		*	mg/L	0.5	3	07/16/19 23:12	dcm
Iron, dissolved	M200.7 ICP	5	85.6		*	mg/L	0.2	0.4	07/16/19 23:12	dcm
Magnesium, dissolved	M200.7 ICP	5	6		*	mg/L	1	5	07/16/19 23:12	dcm
Manganese, dissolved	M200.7 ICP	5	1.37		*	mg/L	0.05	0.3	07/16/19 23:12	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.013		*	mg/L	0.001	0.003	07/15/19 15:23	mfm
Potassium, dissolved	M200.7 ICP	5	3	J	*	mg/L	1	5	07/16/19 23:12	dcm
Selenium, dissolved	M200.8 ICP-MS	5	0.0012		*	mg/L	0.0005	0.001	07/15/19 15:23	mfm
Silicon, dissolved	M200.7 ICP	5	28.4		*	mg/L	0.5	3	07/16/19 23:12	dcm
Sodium, dissolved	M200.7 ICP	5	29		*	mg/L	1	5	07/16/19 23:12	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.005		*	mg/L	0.0005	0.003	07/15/19 15:23	mfm
Vanadium, dissolved	M200.7 ICP	5	0.10		*	mg/L	0.03	0.1	07/16/19 23:12	dcm

ARCADIS
Project ID:
Sample ID: BK2-35-36-051519-STEP 4

ACZ Sample ID: ***L52545-06***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	8.4		*	mg/L	0.3	1	07/18/19 17:29	jlw
Calcium, dissolved	M200.7 ICP	5	1.7	J	*	mg/L	0.5	3	07/16/19 23:15	dcm
Iron, dissolved	M200.7 ICP	5	0.8		*	mg/L	0.2	0.4	07/16/19 23:15	dcm
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:15	dcm
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 23:15	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10	0.016		*	mg/L	0.002	0.005	07/15/19 15:25	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:15	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.001	J	*	mg/L	0.001	0.003	07/15/19 15:25	mfm
Silicon, dissolved	M200.7 ICP	5	14.1		*	mg/L	0.5	3	07/16/19 23:15	dcm
Sodium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 23:15	dcm
Uranium, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.001	0.005	07/15/19 15:25	mfm
Vanadium, dissolved	M200.7 ICP	5	0.04	J	*	mg/L	0.03	0.1	07/16/19 23:15	dcm

ARCADIS
Project ID:
Sample ID: BK2-35-36-051519-STEP 5

ACZ Sample ID: ***L52545-07***
Date Sampled: *05/15/19 17:40*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	16200			mg/Kg	300	1000	07/17/19 6:55	aeh
Calcium, total (3052)	M6010D ICP	5000	900	J		mg/Kg	500	3000	07/17/19 6:55	aeh
Iron, total (3052)	M6010D ICP	5000	4800			mg/Kg	200	400	07/17/19 6:55	aeh
Magnesium, total (3052)	M6010D ICP	5000		U	*	mg/Kg	1000	5000	07/17/19 6:55	aeh
Manganese, total (3052)	M6010D ICP	5000	60	J		mg/Kg	50	300	07/17/19 6:55	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:54	mfm
Potassium, total (3052)	M6010D ICP	5000	11000			mg/Kg	1000	5000	07/17/19 6:55	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:37	mfm
Silicon, total (3052)	M6010D ICP	5000	418000	O	*	mg/Kg	500	3000	07/17/19 6:55	aeh
Sodium, total (3052)	M6010D ICP	5000	7000		*	mg/Kg	1000	5000	07/17/19 6:55	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:37	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 6:55	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 12:52	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

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ACZ Project ID: ***L52545***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L52938-05DUP	DUP	07/15/19 18:19			1310	1290	mg/L				2	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477163													
WG477163ICV	ICV	07/18/19 16:13	II190715-2	2		1.98	mg/L	99	95	105			
WG477163ICB	ICB	07/18/19 16:19				U	mg/L		-0.15	0.15			
WG477163LFB	LFB	07/18/19 16:31	II190716-6	1.0006		1.036	mg/L	104	85	115			
L52546-03AS	AS	07/18/19 17:45	II190716-6	5.003	1.5	6.84	mg/L	107	85	115			
L52546-03ASD	ASD	07/18/19 17:48	II190716-6	5.003	1.5	6.86	mg/L	107	85	115	0	20	

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	100		99.9	mg/L	100	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.3	0.3			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	68.11783		69.74	mg/L	102	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	340.58915	.7	358.65	mg/L	105	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	340.58915	.7	359.85	mg/L	105	85	115	0	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	2		1.93	mg/L	97	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.09	0.09			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	1.0018		1.078	mg/L	108	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	5.009	.4	5.87	mg/L	109	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	5.009	.4	5.93	mg/L	110	85	115	1	20	

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ACZ Project ID: ***L52545***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	100		95.75	mg/L	96	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.6	0.6			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	50.31093		49.1	mg/L	98	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	251.55465	U	249.6	mg/L	99	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	251.55465	U	250	mg/L	99	85	115	0	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	2		1.922	mg/L	96	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.03	0.03			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	.4995		.513	mg/L	103	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	2.4975	U	2.589	mg/L	104	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	2.4975	U	2.588	mg/L	104	85	115	0	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476916													
WG476916ICV	ICV	07/15/19 14:47	MS190630-2	.0199		.01798	mg/L	90	90	110			
WG476916ICB	ICB	07/15/19 14:49				U	mg/L		-0.00044	0.00044			
WG476916LFB	LFB	07/15/19 14:51	MS190606-3	.0501		.04342	mg/L	87	85	115			
L52546-03AS	AS	07/15/19 15:34	MS190606-3	.2505	.001	.2215	mg/L	88	70	130			
L52546-03ASD	ASD	07/15/19 15:35	MS190606-3	.2505	.001	.2177	mg/L	87	70	130	2	20	

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ACZ Project ID: ***L52545***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
L52544-02AS	AS	07/16/19 21:36	WI190704-2	.5	.03	.539	mg/L	102	90	110			
L52544-03DUP	DUP	07/16/19 21:38			.05	.043	mg/L				15	20	RA
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	20		19.65	mg/L	98	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.6	0.6			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	99.96426		98.9	mg/L	99	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	499.8213	U	505	mg/L	101	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	499.8213	U	506	mg/L	101	85	115	0	20	

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476916													
WG476916ICV	ICV	07/15/19 14:47	MS190630-2	.05		.04944	mg/L	99	90	110			
WG476916ICB	ICB	07/15/19 14:49				U	mg/L		-0.00022	0.00022			
WG476916LFB	LFB	07/15/19 14:51	MS190606-3	.05005		.04751	mg/L	95	85	115			
L52546-03AS	AS	07/15/19 15:34	MS190606-3	.25025	.0007	.26305	mg/L	105	70	130			
L52546-03ASD	ASD	07/15/19 15:35	MS190606-3	.25025	.0007	.26099	mg/L	104	70	130	1	20	

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

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ACZ Project ID: ***L52545***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	20		19.58	mg/L	98	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.3	0.3			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	10.008		10.66	mg/L	107	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	50.04	2.3	56.55	mg/L	108	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	50.04	2.3	56.5	mg/L	108	85	115	0	20	

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	100		101.88	mg/L	102	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.6	0.6			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	100.0471		102.9	mg/L	103	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	500.2355	378	909.5	mg/L	106	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	500.2355	378	905.5	mg/L	105	85	115	0	20	

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477098													
WG477098ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477098ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477098LFB	LFB	07/17/19 10:07	WI181024-4	10.03		9.5	mg/L	95	90	110			
L52543-02DUP	DUP	07/17/19 10:09			38.7	37.7	mg/L				3	20	RA
L52543-03AS	AS	07/17/19 10:09	WI181024-4	100.3	12.3	107	mg/L	94	90	110			

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ACZ Project ID: ***L52545***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476916													
WG476916ICV	ICV	07/15/19 14:47	MS190630-2	.05		.04928	mg/L	99	90	110			
WG476916ICB	ICB	07/15/19 14:49				U	mg/L		-0.00022	0.00022			
WG476916LFB	LFB	07/15/19 14:51	MS190606-3	.05		.04783	mg/L	96	85	115			
L52546-03AS	AS	07/15/19 15:34	MS190606-3	.25	.002	.27179	mg/L	108	70	130			
L52546-03ASD	ASD	07/15/19 15:35	MS190606-3	.25	.002	.27699	mg/L	110	70	130	2	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05064	mg/L	101	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05		.0471	mg/L	94	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1	.053	1.2008	mg/L	115	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1	.053	1.17	mg/L	112	70	130	3	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	2		1.948	mg/L	97	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.015	0.015			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	.5005		.5026	mg/L	100	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	2.5025	U	2.542	mg/L	102	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	2.5025	U	2.556	mg/L	102	85	115	1	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52545***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52545-02	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476916	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476916	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52545-03	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476916	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476916	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.

Inorganic Extended Qualifier Report

ARCADIS ACZ Project ID: ***L52545***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52545-04	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
	WG477002	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52545-06	WG476916	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
L52545-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52545
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID:	L52545
Date Received:	05/29/2019 13:21
Received By:	
Date Printed:	6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L52545

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts payable
Company: Arcadis
E-mail: accountspayable.administration.arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** SW

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract
BK2-12-13-051519	5-15-19:1620	SO	1	HOLD
BK2-20-21-051519	5-15-19:1650	SO	1	HOLD
BK2-35-36-051519	5-15-19:1740	SO	1	HOLD
BK2-38-39-051519	5-15-19:1825	SO	1	HOLD
BK2-41.5-42.5-051519	5-15-19:1920	SO	1	HOLD
BK2-44-44.5-051619	5-16-19:0930	SO	1	HOLD
BK2-59-60-051619	5-16-19:1055	SO	1	HOLD
BK2-63.5-64-051619	5-16-19:1135	SO	1	HOLD
BK2-72.5-73.5-051619	5-16-19:1205	SO	1	HOLD
BK2-77-77.5-051619	5-16-19:1345	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

1.

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1430	FedEx	5/28/19:1430
			13:21 5/29/19

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 19, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52546

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52546. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52546. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 15, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 19, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52546

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52546. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK2-59-60-051619

ACZ Sample ID: ***L52546-01***
Date Sampled: *05/16/19 10:55*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	91.5		*	%	0.1	0.5	06/22/19 22:37	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 12:29	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK2-59-60-051619-DI

ACZ Sample ID: ***L52546-02***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.4	J	*	mg/L	0.1	0.5	07/18/19 17:32	jlw
Calcium, dissolved	M200.7 ICP	2	6.7		*	mg/L	0.2	1	07/16/19 23:18	dcm
Iron, dissolved	M200.7 ICP	2	0.26		*	mg/L	0.06	0.2	07/16/19 23:18	dcm
Magnesium, dissolved	M200.7 ICP	2	0.5	J	*	mg/L	0.4	2	07/16/19 23:18	dcm
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/16/19 23:18	dcm
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0009	J	*	mg/L	0.0004	0.001	07/15/19 15:27	mfm
Potassium, dissolved	M200.7 ICP	2		U	*	mg/L	0.4	2	07/16/19 23:18	dcm
Selenium, dissolved	M200.8 ICP-MS	2	0.0044		*	mg/L	0.0002	0.0005	07/15/19 15:27	mfm
Silicon, dissolved	M200.7 ICP	2	1.9		*	mg/L	0.2	1	07/16/19 23:18	dcm
Sodium, dissolved	M200.7 ICP	2	5.1		*	mg/L	0.4	2	07/16/19 23:18	dcm
Uranium, dissolved	M200.8 ICP-MS	2		U	*	mg/L	0.0002	0.001	07/15/19 15:27	mfm
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/16/19 23:18	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	20.0	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	20.0	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.01	BH	*	mg/L	0.01	0.05	07/16/19 21:41	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	15.3	H	*	mg/L	1	5	07/17/19 10:10	ttg

ARCADIS
Project ID:
Sample ID: BK2-59-60-051619-STEP 1

ACZ Sample ID: ***L52546-03***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	1.5		*	mg/L	0.3	1	07/18/19 17:36	jlw
Calcium, dissolved	M200.7 ICP	5	0.7	J	*	mg/L	0.5	3	07/16/19 23:22	dcm
Iron, dissolved	M200.7 ICP	5	0.4		*	mg/L	0.2	0.4	07/16/19 23:22	dcm
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:22	dcm
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/16/19 23:22	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.001	J	*	mg/L	0.001	0.003	07/15/19 15:28	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:22	dcm
Selenium, dissolved	M200.8 ICP-MS	5	0.0007	J	*	mg/L	0.0005	0.001	07/15/19 15:28	mfm
Silicon, dissolved	M200.7 ICP	5	2.3	J	*	mg/L	0.5	3	07/16/19 23:22	dcm
Sodium, dissolved	M200.7 ICP	5	378		*	mg/L	1	5	07/16/19 23:22	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.0005	0.003	07/15/19 15:28	mfm
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/16/19 23:22	dcm

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	07/16/19 21:45	pjb
Sulfate	D516-02/-07 - Turbidimetric	100		UH	*	mg/L	100	500	07/17/19 10:10	ttg

ARCADIS
Project ID:
Sample ID: BK2-59-60-051619-STEP 2

ACZ Sample ID: ***L52546-04***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25		U	*	mg/L	1	6	07/18/19 17:51	jlw
Calcium, dissolved	M200.7 ICP	25	1160		*	mg/L	3	10	07/16/19 23:38	dcm
Iron, dissolved	M200.7 ICP	25	4.6		*	mg/L	0.8	2	07/16/19 23:38	dcm
Magnesium, dissolved	M200.7 ICP	25	6	J	*	mg/L	5	30	07/16/19 23:38	dcm
Manganese, dissolved	M200.7 ICP	25	8.9		*	mg/L	0.3	1	07/16/19 23:38	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.002	0.005	07/15/19 15:37	mfm
Potassium, dissolved	M200.7 ICP	25		U	*	mg/L	5	30	07/16/19 23:38	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.003	07/15/19 15:37	mfm
Silicon, dissolved	M200.7 ICP	25		U	*	mg/L	3	10	07/16/19 23:38	dcm
Sodium, dissolved	M200.7 ICP	25	16800		*	mg/L	5	30	07/16/19 23:38	dcm
Uranium, dissolved	M200.8 ICP-MS	20	0.010		*	mg/L	0.002	0.01	07/16/19 17:36	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/16/19 23:38	dcm

ARCADIS
Project ID:
Sample ID: BK2-59-60-051619-STEP 3

ACZ Sample ID: ***L52546-05***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	12.6		*	mg/L	0.3	1	07/18/19 17:54	jlw
Calcium, dissolved	M200.7 ICP	5	39.9		*	mg/L	0.5	3	07/16/19 23:41	dcm
Iron, dissolved	M200.7 ICP	5	51.4		*	mg/L	0.2	0.4	07/16/19 23:41	dcm
Magnesium, dissolved	M200.7 ICP	5	11		*	mg/L	1	5	07/16/19 23:41	dcm
Manganese, dissolved	M200.7 ICP	5	0.98		*	mg/L	0.05	0.3	07/16/19 23:41	dcm
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/15/19 15:39	mfm
Potassium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 23:41	dcm
Selenium, dissolved	M200.8 ICP-MS	5	0.0013		*	mg/L	0.0005	0.001	07/15/19 15:39	mfm
Silicon, dissolved	M200.7 ICP	5	18.4		*	mg/L	0.5	3	07/16/19 23:41	dcm
Sodium, dissolved	M200.7 ICP	5	29		*	mg/L	1	5	07/16/19 23:41	dcm
Uranium, dissolved	M200.8 ICP-MS	5	0.0055		*	mg/L	0.0005	0.003	07/15/19 15:39	mfm
Vanadium, dissolved	M200.7 ICP	5	0.08	J	*	mg/L	0.03	0.1	07/16/19 23:41	dcm

ARCADIS
Project ID:
Sample ID: BK2-59-60-051619-STEP 4

ACZ Sample ID: ***L52546-06***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	8.2		*	mg/L	0.3	1	07/18/19 17:57	jlw
Calcium, dissolved	M200.7 ICP	5	3.4		*	mg/L	0.5	3	07/16/19 23:45	dcm
Iron, dissolved	M200.7 ICP	5	1.0		*	mg/L	0.2	0.4	07/16/19 23:45	dcm
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:45	dcm
Manganese, dissolved	M200.7 ICP	5	0.18	J	*	mg/L	0.05	0.3	07/16/19 23:45	dcm
Molybdenum, dissolved	M200.8 ICP-MS	10	0.004	J	*	mg/L	0.002	0.005	07/15/19 15:41	mfm
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/16/19 23:45	dcm
Selenium, dissolved	M200.8 ICP-MS	10	0.001	J	*	mg/L	0.001	0.003	07/15/19 15:41	mfm
Silicon, dissolved	M200.7 ICP	5	9.9		*	mg/L	0.5	3	07/16/19 23:45	dcm
Sodium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/16/19 23:45	dcm
Uranium, dissolved	M200.8 ICP-MS	10	0.001	J	*	mg/L	0.001	0.005	07/15/19 15:41	mfm
Vanadium, dissolved	M200.7 ICP	5	0.03	J	*	mg/L	0.03	0.1	07/16/19 23:45	dcm

ARCADIS
Project ID:
Sample ID: BK2-59-60-051619-STEP 5

ACZ Sample ID: ***L52546-07***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	20500			mg/Kg	300	1000	07/17/19 6:59	aeh
Calcium, total (3052)	M6010D ICP	5000	1400	J		mg/Kg	500	3000	07/17/19 6:59	aeh
Iron, total (3052)	M6010D ICP	5000	12300			mg/Kg	200	400	07/17/19 6:59	aeh
Magnesium, total (3052)	M6010D ICP	5000		U	*	mg/Kg	1000	5000	07/17/19 6:59	aeh
Manganese, total (3052)	M6010D ICP	5000	180	J		mg/Kg	50	300	07/17/19 6:59	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 12:56	mfm
Potassium, total (3052)	M6010D ICP	5000	14000			mg/Kg	1000	5000	07/17/19 6:59	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:39	mfm
Silicon, total (3052)	M6010D ICP	5000	408000	O	*	mg/Kg	500	3000	07/17/19 6:59	aeh
Sodium, total (3052)	M6010D ICP	5000	8000		*	mg/Kg	1000	5000	07/17/19 6:59	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:39	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 6:59	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 13:23	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

ARCADIS

ACZ Project ID: ***L52546***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L52938-05DUP	DUP	07/15/19 18:19			1310	1290	mg/L				2	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477163													
WG477163ICV	ICV	07/18/19 16:13	II190715-2	2		1.98	mg/L	99	95	105			
WG477163ICB	ICB	07/18/19 16:19				U	mg/L		-0.15	0.15			
WG477163LFB	LFB	07/18/19 16:31	II190716-6	1.0006		1.036	mg/L	104	85	115			
L52546-03AS	AS	07/18/19 17:45	II190716-6	5.003	1.5	6.84	mg/L	107	85	115			
L52546-03ASD	ASD	07/18/19 17:48	II190716-6	5.003	1.5	6.86	mg/L	107	85	115	0	20	

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	100		99.9	mg/L	100	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.3	0.3			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	68.11783		69.74	mg/L	102	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	340.58915	.7	358.65	mg/L	105	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	340.58915	.7	359.85	mg/L	105	85	115	0	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	2		1.93	mg/L	97	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.09	0.09			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	1.0018		1.078	mg/L	108	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	5.009	.4	5.87	mg/L	109	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	5.009	.4	5.93	mg/L	110	85	115	1	20	

ARCADIS

ACZ Project ID: ***L52546***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	100		95.75	mg/L	96	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.6	0.6			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	50.31093		49.1	mg/L	98	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	251.55465	U	249.6	mg/L	99	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	251.55465	U	250	mg/L	99	85	115	0	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	2		1.922	mg/L	96	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.03	0.03			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	.4995		.513	mg/L	103	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	2.4975	U	2.589	mg/L	104	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	2.4975	U	2.588	mg/L	104	85	115	0	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476916													
WG476916ICV	ICV	07/15/19 14:47	MS190630-2	.0199		.01798	mg/L	90	90	110			
WG476916ICB	ICB	07/15/19 14:49				U	mg/L		-0.00044	0.00044			
WG476916LFB	LFB	07/15/19 14:51	MS190606-3	.0501		.04342	mg/L	87	85	115			
L52546-03AS	AS	07/15/19 15:34	MS190606-3	.2505	.001	.2215	mg/L	88	70	130			
L52546-03ASD	ASD	07/15/19 15:35	MS190606-3	.2505	.001	.2177	mg/L	87	70	130	2	20	

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ACZ Project ID: ***L52546***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
L52544-02AS	AS	07/16/19 21:36	WI190704-2	.5	.03	.539	mg/L	102	90	110			
L52544-03DUP	DUP	07/16/19 21:38			.05	.043	mg/L				15	20	RA
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	20		19.65	mg/L	98	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.6	0.6			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	99.96426		98.9	mg/L	99	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	499.8213	U	505	mg/L	101	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	499.8213	U	506	mg/L	101	85	115	0	20	

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476916													
WG476916ICV	ICV	07/15/19 14:47	MS190630-2	.05		.04944	mg/L	99	90	110			
WG476916ICB	ICB	07/15/19 14:49				U	mg/L		-0.00022	0.00022			
WG476916LFB	LFB	07/15/19 14:51	MS190606-3	.05005		.04751	mg/L	95	85	115			
L52546-03AS	AS	07/15/19 15:34	MS190606-3	.25025	.0007	.26305	mg/L	105	70	130			
L52546-03ASD	ASD	07/15/19 15:35	MS190606-3	.25025	.0007	.26099	mg/L	104	70	130	1	20	

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

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ACZ Project ID: ***L52546***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	20		19.58	mg/L	98	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.3	0.3			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	10.008		10.66	mg/L	107	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	50.04	2.3	56.55	mg/L	108	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	50.04	2.3	56.5	mg/L	108	85	115	0	20	

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	100		101.88	mg/L	102	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.6	0.6			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	100.0471		102.9	mg/L	103	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	500.2355	378	909.5	mg/L	106	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	500.2355	378	905.5	mg/L	105	85	115	0	20	

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477098													
WG477098ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477098ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477098LFB	LFB	07/17/19 10:07	WI181024-4	10.03		9.5	mg/L	95	90	110			
L52543-02DUP	DUP	07/17/19 10:09			38.7	37.7	mg/L				3	20	RA
L52543-03AS	AS	07/17/19 10:09	WI181024-4	100.3	12.3	107	mg/L	94	90	110			

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ACZ Project ID: ***L52546***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476916													
WG476916ICV	ICV	07/15/19 14:47	MS190630-2	.05		.04928	mg/L	99	90	110			
WG476916ICB	ICB	07/15/19 14:49				U	mg/L		-0.00022	0.00022			
WG476916LFB	LFB	07/15/19 14:51	MS190606-3	.05		.04783	mg/L	96	85	115			
L52546-03AS	AS	07/15/19 15:34	MS190606-3	.25	.002	.27179	mg/L	108	70	130			
L52546-03ASD	ASD	07/15/19 15:35	MS190606-3	.25	.002	.27699	mg/L	110	70	130	2	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05064	mg/L	101	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05		.0471	mg/L	94	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1	.053	1.2008	mg/L	115	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1	.053	1.17	mg/L	112	70	130	3	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477048													
WG477048ICV	ICV	07/16/19 21:53	II190715-2	2		1.948	mg/L	97	95	105			
WG477048ICB	ICB	07/16/19 21:59				U	mg/L		-0.015	0.015			
WG477048LFB	LFB	07/16/19 22:12	II190716-6	.5005		.5026	mg/L	100	85	115			
L52546-03AS	AS	07/16/19 23:31	II190716-6	2.5025	U	2.542	mg/L	102	85	115			
L52546-03ASD	ASD	07/16/19 23:35	II190716-6	2.5025	U	2.556	mg/L	102	85	115	1	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52546***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52546-02	WG477163	Aluminum, dissolved	M200.7 ICP	D1	Sample required dilution due to matrix.
	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476916	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52546-03	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476916	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	DJ	Sample dilution required due to insufficient sample.
			D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476916	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.

Inorganic Extended Qualifier Report

ARCADIS ACZ Project ID: ***L52546***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52546-04	WG477163	Aluminum, dissolved	M200.7 ICP	D1	Sample required dilution due to matrix.
	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
L52546-05	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
L52546-06	WG476916	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
		Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
L52546-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52546
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52546
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L52546

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts payable
Company: Arcadis
E-mail: accountspayable.administration.arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** **State** NM **Zip code** 87021 **Time Zone** MST

***Sampler's Signature:** SU

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Custom selective sequential extract
BK2-12-13-051519	5-15-19:1620	SO	1	HOLD
BK2-20-21-051519	5-15-19:1650	SO	1	HOLD
BK2-35-36-051519	5-15-19:1740	SO	1	HOLD
BK2-38-39-051519	5-15-19:1825	SO	1	HOLD
BK2-41.5-42.5-051519	5-15-19:1920	SO	1	HOLD
BK2-44-44.5-051619	5-16-19:0930	SO	1	HOLD
BK2-59-60-051619	5-16-19:1055	SO	1	HOLD
BK2-63.5-64-051619	5-16-19:1135	SO	1	HOLD
BK2-72.5-73.5-051619	5-16-19:1205	SO	1	HOLD
BK2-77-77.5-051619	5-16-19:1345	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

SW

COPY

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1430	FedEx	5/28/19:1430
			5/29/19 13:21

L52546 Chain of Custody

L52546 1007101125

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 19, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52547

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52547. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52547. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 15, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 19, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52547

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52547. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK2-63.5-64-051619

ACZ Sample ID: ***L52547-01***
Date Sampled: *05/16/19 11:35*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	96.1		*	%	0.1	0.5	06/23/19 3:04	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 13:08	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK2-63.5-64-051619-DI

ACZ Sample ID: ***L52547-02***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.3	J	*	mg/L	0.1	0.5	07/18/19 13:54	jlw
Calcium, dissolved	M200.7 ICP	2	9.2		*	mg/L	0.2	1	07/18/19 13:54	jlw
Iron, dissolved	M200.7 ICP	2	0.18	J	*	mg/L	0.06	0.2	07/17/19 18:58	aeh
Magnesium, dissolved	M200.7 ICP	2	0.8	J	*	mg/L	0.4	2	07/17/19 18:58	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/18/19 13:54	jlw
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0016		*	mg/L	0.0004	0.001	07/16/19 12:45	bsu
Potassium, dissolved	M200.7 ICP	2	1.5	J	*	mg/L	0.4	2	07/18/19 13:54	jlw
Selenium, dissolved	M200.8 ICP-MS	2	0.0053		*	mg/L	0.0002	0.0005	07/16/19 12:45	bsu
Silicon, dissolved	M200.7 ICP	2	2.6		*	mg/L	0.2	1	07/17/19 18:58	aeh
Sodium, dissolved	M200.7 ICP	2	7.5		*	mg/L	0.4	2	07/17/19 18:58	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0004	J	*	mg/L	0.0002	0.001	07/16/19 12:45	bsu
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/17/19 18:58	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	20.0	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	20.0	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.01	BH	*	mg/L	0.01	0.05	07/16/19 21:46	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	24.4	H	*	mg/L	1	5	07/17/19 10:10	ttg

ARCADIS
Project ID:
Sample ID: BK2-63.5-64-051619-STEP 1

ACZ Sample ID: ***L52547-03***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	0.6	J	*	mg/L	0.3	1	07/18/19 13:57	jlw
Calcium, dissolved	M200.7 ICP	5	1.4	J	*	mg/L	0.5	3	07/18/19 13:57	jlw
Iron, dissolved	M200.7 ICP	5	0.4		*	mg/L	0.2	0.4	07/17/19 19:02	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 19:02	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/18/19 13:57	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/16/19 13:05	bsu
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/18/19 13:57	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0007	J	*	mg/L	0.0005	0.001	07/16/19 13:05	bsu
Silicon, dissolved	M200.7 ICP	5	3.4		*	mg/L	0.5	3	07/17/19 19:02	aeh
Sodium, dissolved	M200.7 ICP	5	333		*	mg/L	1	5	07/17/19 19:02	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0039		*	mg/L	0.0005	0.003	07/16/19 13:05	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 19:02	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	H	*	mg/L	0.01	0.05	07/16/19 21:47	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	4.6	BH	*	mg/L	1	5	07/17/19 11:04	ttg

ARCADIS
Project ID:
Sample ID: BK2-63.5-64-051619-STEP 2

ACZ Sample ID: ***L52547-04***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	2	J	*	mg/L	1	6	07/18/19 14:06	jlw
Calcium, dissolved	M200.7 ICP	25	3360		*	mg/L	3	10	07/18/19 14:06	jlw
Iron, dissolved	M200.7 ICP	25	9.0		*	mg/L	0.8	2	07/17/19 19:11	aeh
Magnesium, dissolved	M200.7 ICP	25	24	J	*	mg/L	5	30	07/17/19 19:11	aeh
Manganese, dissolved	M200.7 ICP	25	29.6		*	mg/L	0.3	1	07/18/19 14:06	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:38	bsu
Potassium, dissolved	M200.7 ICP	25	7	J	*	mg/L	5	30	07/18/19 14:06	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/16/19 17:38	bsu
Silicon, dissolved	M200.7 ICP	25	4	J	*	mg/L	3	10	07/17/19 19:11	aeh
Sodium, dissolved	M200.7 ICP	25	21000		*	mg/L	5	30	07/17/19 19:11	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.053		*	mg/L	0.002	0.01	07/16/19 17:38	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 19:11	aeh

ARCADIS
Project ID:
Sample ID: BK2-63.5-64-051619-STEP 3

ACZ Sample ID: ***L52547-05***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	15		*	mg/L	1	5	07/18/19 14:10	jlw
Calcium, dissolved	M200.7 ICP	20	88		*	mg/L	2	10	07/18/19 14:10	jlw
Iron, dissolved	M200.7 ICP	20	55.0		*	mg/L	0.6	2	07/17/19 19:15	aeh
Magnesium, dissolved	M200.7 ICP	20	27		*	mg/L	4	20	07/17/19 19:15	aeh
Manganese, dissolved	M200.7 ICP	20	1.2		*	mg/L	0.2	1	07/18/19 14:10	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/17/19 15:43	bsu
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/18/19 14:10	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/18/19 10:49	mfm
Silicon, dissolved	M200.7 ICP	20	27		*	mg/L	2	10	07/17/19 19:15	aeh
Sodium, dissolved	M200.7 ICP	20	96		*	mg/L	4	20	07/17/19 19:15	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.015		*	mg/L	0.002	0.01	07/17/19 15:43	bsu
Vanadium, dissolved	M200.7 ICP	20		U	*	mg/L	0.1	0.5	07/17/19 19:15	aeh

ARCADIS
Project ID:
Sample ID: BK2-63.5-64-051619-STEP 4

ACZ Sample ID: ***L52547-06***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	20.1		*	mg/L	0.3	1	07/18/19 14:13	jlw
Calcium, dissolved	M200.7 ICP	5	17.0		*	mg/L	0.5	3	07/18/19 14:13	jlw
Iron, dissolved	M200.7 ICP	5	2.3		*	mg/L	0.2	0.4	07/17/19 19:18	aeh
Magnesium, dissolved	M200.7 ICP	5	6		*	mg/L	1	5	07/17/19 19:18	aeh
Manganese, dissolved	M200.7 ICP	5	0.27	J	*	mg/L	0.05	0.3	07/18/19 14:13	jlw
Molybdenum, dissolved	M200.8 ICP-MS	10	0.004	J	*	mg/L	0.002	0.005	07/17/19 16:02	bsu
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/18/19 14:13	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/18/19 10:54	mfm
Silicon, dissolved	M200.7 ICP	5	18.2		*	mg/L	0.5	3	07/17/19 19:18	aeh
Sodium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/17/19 19:18	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.005	07/17/19 16:02	bsu
Vanadium, dissolved	M200.7 ICP	5	0.07	J	*	mg/L	0.03	0.1	07/17/19 19:18	aeh

ARCADIS
Project ID:
Sample ID: BK2-63.5-64-051619-STEP 5

ACZ Sample ID: ***L52547-07***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	31400			mg/Kg	300	1000	07/17/19 7:11	aeh
Calcium, total (3052)	M6010D ICP	5000	1100	J		mg/Kg	500	3000	07/17/19 7:11	aeh
Iron, total (3052)	M6010D ICP	5000	14200			mg/Kg	200	400	07/17/19 7:11	aeh
Magnesium, total (3052)	M6010D ICP	5000	1000	J	*	mg/Kg	1000	5000	07/17/19 7:11	aeh
Manganese, total (3052)	M6010D ICP	5000	170	J		mg/Kg	50	300	07/17/19 7:11	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:02	mfm
Potassium, total (3052)	M6010D ICP	5000	16000			mg/Kg	1000	5000	07/17/19 7:11	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:45	mfm
Silicon, total (3052)	M6010D ICP	5000	389000	O	*	mg/Kg	500	3000	07/17/19 7:11	aeh
Sodium, total (3052)	M6010D ICP	5000	8000		*	mg/Kg	1000	5000	07/17/19 7:11	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:45	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 7:11	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 13:54	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

ARCADIS

ACZ Project ID: ***L52547***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L52938-05DUP	DUP	07/15/19 18:19			1310	1290	mg/L				2	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	2		1.996	mg/L	100	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.15	0.15			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	1.0006		1.031	mg/L	103	85	115			
L52547-03AS	AS	07/18/19 14:00	II190716-6	5.003	.6	5.91	mg/L	106	85	115			
L52547-03ASD	ASD	07/18/19 14:03	II190716-6	5.003	.6	5.99	mg/L	108	85	115	1	20	

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	100		99.82	mg/L	100	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.3	0.3			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	68.11783		70.58	mg/L	104	85	115			
L52547-03AS	AS	07/18/19 14:00	II190716-6	340.58915	1.4	355.1	mg/L	104	85	115			
L52547-03ASD	ASD	07/18/19 14:03	II190716-6	340.58915	1.4	357.35	mg/L	105	85	115	1	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	2		1.923	mg/L	96	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.09	0.09			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	1.0018		1.061	mg/L	106	85	115			
L52547-03AS	AS	07/17/19 19:05	II190716-6	5.009	.4	5.76	mg/L	107	85	115			
L52547-03ASD	ASD	07/17/19 19:08	II190716-6	5.009	.4	5.72	mg/L	106	85	115	1	20	

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ACZ Project ID: ***L52547***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	100		95.71	mg/L	96	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.6	0.6			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	50.31093		49.11	mg/L	98	85	115			
L52547-03AS	AS	07/17/19 19:05	II190716-6	251.55465	U	248.8	mg/L	99	85	115			
L52547-03ASD	ASD	07/17/19 19:08	II190716-6	251.55465	U	249.2	mg/L	99	85	115	0	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	2		1.919	mg/L	96	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.03	0.03			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	.4995		.518	mg/L	104	85	115			
L52547-03AS	AS	07/18/19 14:00	II190716-6	2.4975	U	2.584	mg/L	103	85	115			
L52547-03ASD	ASD	07/18/19 14:03	II190716-6	2.4975	U	2.575	mg/L	103	85	115	0	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

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ACZ Project ID: ***L52547***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.0199		.02043	mg/L	103	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00044	0.00044			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.0501		.04605	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.002	U	1.0056	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.002	U	1.0739	mg/L	107	70	130	7	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.0199		.02053	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00044	0.00044			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.0501		.0464	mg/L	93	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1.002	U	1.1346	mg/L	113	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1.002	U	1.0983	mg/L	110	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.0199		.02033	mg/L	102	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00044	0.00044			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.0501		.05052	mg/L	101	85	115			
L52551-05AS	AS	07/17/19 15:52	MS190606-3	1.002	U	1.065	mg/L	106	70	130			
L52551-05ASD	ASD	07/17/19 15:53	MS190606-3	1.002	U	1.0535	mg/L	105	70	130	1	20	

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
L52544-02AS	AS	07/16/19 21:36	WI190704-2	.5	.03	.539	mg/L	102	90	110			
L52544-03DUP	DUP	07/16/19 21:38			.05	.043	mg/L				15	20	RA
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	20		19.58	mg/L	98	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.6	0.6			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	99.96426		100	mg/L	100	85	115			
L52547-03AS	AS	07/18/19 14:00	II190716-6	499.8213	U	504.5	mg/L	101	85	115			
L52547-03ASD	ASD	07/18/19 14:03	II190716-6	499.8213	U	508.5	mg/L	102	85	115	1	20	

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ACZ Project ID: ***L52547***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.04886	mg/L	98	90	110			
WG476973ICB	ICB	07/16/19 12:41				.00015	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05005		.04643	mg/L	93	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.001	.003	1.0064	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.001	.003	1.0867	mg/L	108	70	130	8	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05164	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				.00015	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05005		.04786	mg/L	96	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1.001	.003	1.1806	mg/L	118	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1.001	.003	1.1558	mg/L	115	70	130	2	20	
WG477251													
WG477251ICV	ICV	07/18/19 10:43	MS190630-2	.05		.04781	mg/L	96	90	110			
WG477251ICB	ICB	07/18/19 10:45				U	mg/L		-0.00022	0.00022			
WG477251LFB	LFB	07/18/19 10:47	MS190606-3	.05005		.04778	mg/L	95	85	115			
L52547-05AS	AS	07/18/19 10:50	MS190606-3	1.001	.003	1.7341	mg/L	173	70	130			M1
L52547-05ASD	ASD	07/18/19 10:52	MS190606-3	1.001	.003	1.7046	mg/L	170	70	130	2	20	M1

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	20		19.39	mg/L	97	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.3	0.3			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	10.008		10.56	mg/L	106	85	115			
L52547-03AS	AS	07/17/19 19:05	II190716-6	50.04	3.4	56.35	mg/L	106	85	115			
L52547-03ASD	ASD	07/17/19 19:08	II190716-6	50.04	3.4	56.6	mg/L	106	85	115	0	20	

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ACZ Project ID: ***L52547***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	100		101.33	mg/L	101	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.6	0.6			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	100.0471		103.5	mg/L	103	85	115			
L52547-03AS	AS	07/17/19 19:05	II190716-6	500.2355	333	843	mg/L	102	85	115			
L52547-03ASD	ASD	07/17/19 19:08	II190716-6	500.2355	333	844	mg/L	102	85	115	0	20	

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477098													
WG477098ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477098ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477098LFB	LFB	07/17/19 10:07	WI181024-4	10.03		9.5	mg/L	95	90	110			
L52543-02DUP	DUP	07/17/19 10:09			38.7	37.7	mg/L				3	20	RA
L52543-03AS	AS	07/17/19 10:09	WI181024-4	100.3	12.3	107	mg/L	94	90	110			
WG477100													
WG477100ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477100ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477100LFB	LFB	07/17/19 11:04	WI181024-4	10.03		9.3	mg/L	93	90	110			
L52547-03DUP	DUP	07/17/19 11:04			4.6	4.3	mg/L				7	20	RA
L52548-02AS	AS	07/17/19 11:04	WI181024-4	100.3	13.5	111	mg/L	97	90	110			

ARCADIS

ACZ Project ID: ***L52547***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1	.018	1.0581	mg/L	104	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1	.018	1.1233	mg/L	111	70	130	6	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05064	mg/L	101	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05		.0471	mg/L	94	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1	.053	1.2008	mg/L	115	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1	.053	1.17	mg/L	112	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.05		.05015	mg/L	100	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00022	0.00022			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.05		.05021	mg/L	100	85	115			
L52551-05AS	AS	07/17/19 15:52	MS190606-3	1	.018	1.0593	mg/L	104	70	130			
L52551-05ASD	ASD	07/17/19 15:53	MS190606-3	1	.018	1.0582	mg/L	104	70	130	0	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	2		1.9335	mg/L	97	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.015	0.015			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	.5005		.4947	mg/L	99	85	115			
L52547-03AS	AS	07/17/19 19:05	II190716-6	2.5025	U	2.509	mg/L	100	85	115			
L52547-03ASD	ASD	07/17/19 19:08	II190716-6	2.5025	U	2.502	mg/L	100	85	115	0	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52547***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52547-02	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG477098	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476973	Uranium, dissolved	M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52547-03	WG476973	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476973	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

ARCADIS ACZ Project ID: ***L52547***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52547-04	WG477002	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
		Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52547-05	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477251	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L52547-06	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477251	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477152	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52547-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52547
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52547
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L 52547

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts payable
Company: Arcadis
E-mail: accountspayable.administration.arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich Sampler's Site Information State NM Zip code 87021 Time Zone MST

*Sampler's Signature: SU

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 6DB120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? [X*]

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract
BK2-12-13-051519	5-15-19:1620	SO	1	HOLD
BK2-20-21-051519	5-15-19:1650	SO	1	HOLD
BK2-35-36-051519	5-15-19:1740	SO	1	HOLD
BK2-38-39-051519	5-15-19:1825	SO	1	HOLD
BK2-41.5-42.5-051519	5-15-19:1920	SO	1	HOLD
BK2-44-44.5-051619	5-16-19:0930	SO	1	HOLD
BK2-59-60-051619	5-16-19:1055	SO	1	HOLD
BK2-63.5-64-051619	5-16-19:1135	SO	1	HOLD
BK2-72.5-73.5-051619	5-16-19:1205	SO	1	HOLD
BK2-77-77.5-051619	5-16-19:1345	SO	1	HOLD

SW

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1431	FedEx	5/28/19:1430
			5/29/19 13:21

L52547 1907101125

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

COPY

L52547 Chain of Custod

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 19, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52548

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52548. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52548. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 15, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 19, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52548

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52548. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK2-72.5-73.5-051619

ACZ Sample ID: ***L52548-01***
Date Sampled: *05/16/19 12:05*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	94.2		*	%	0.1	0.5	06/23/19 7:31	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 13:47	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK2-72.5-73.5-051619-DI

ACZ Sample ID: ***L52548-02***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.7		*	mg/L	0.1	0.5	07/18/19 14:16	jlw
Calcium, dissolved	M200.7 ICP	2	6.3		*	mg/L	0.2	1	07/18/19 14:16	jlw
Iron, dissolved	M200.7 ICP	2	1.22		*	mg/L	0.06	0.2	07/17/19 19:21	aeh
Magnesium, dissolved	M200.7 ICP	2	0.6	J	*	mg/L	0.4	2	07/17/19 19:21	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/18/19 14:16	jlw
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0024		*	mg/L	0.0004	0.001	07/16/19 12:47	bsu
Potassium, dissolved	M200.7 ICP	2	1.5	J	*	mg/L	0.4	2	07/18/19 14:16	jlw
Selenium, dissolved	M200.8 ICP-MS	2	0.0051		*	mg/L	0.0002	0.0005	07/16/19 12:47	bsu
Silicon, dissolved	M200.7 ICP	2	5.1		*	mg/L	0.2	1	07/17/19 19:21	aeh
Sodium, dissolved	M200.7 ICP	2	7.2		*	mg/L	0.4	2	07/17/19 19:21	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0008	J	*	mg/L	0.0002	0.001	07/16/19 12:47	bsu
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/17/19 19:21	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	33.3	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	33.3	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	07/16/19 21:48	pjb
Sulfate	D516-02/-07 - Turbidimetric	10	13.5	BH	*	mg/L	10	50	07/17/19 11:04	ttg

ARCADIS
Project ID:
Sample ID: BK2-72.5-73.5-051619-STEP 1

ACZ Sample ID: ***L52548-03***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	3.1		*	mg/L	0.3	1	07/18/19 14:19	jlw
Calcium, dissolved	M200.7 ICP	5	2.3	J	*	mg/L	0.5	3	07/18/19 14:19	jlw
Iron, dissolved	M200.7 ICP	5	1.0		*	mg/L	0.2	0.4	07/17/19 19:24	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 19:24	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/18/19 14:19	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.002	J	*	mg/L	0.001	0.003	07/16/19 13:07	bsu
Potassium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/18/19 14:19	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0032		*	mg/L	0.0005	0.001	07/16/19 13:07	bsu
Silicon, dissolved	M200.7 ICP	5	5.8		*	mg/L	0.5	3	07/17/19 19:24	aeh
Sodium, dissolved	M200.7 ICP	5	335		*	mg/L	1	5	07/17/19 19:24	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0051		*	mg/L	0.0005	0.003	07/16/19 13:07	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 19:24	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.07	H	*	mg/L	0.01	0.05	07/16/19 21:49	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	3.2	BH	*	mg/L	1	5	07/17/19 11:04	ttg

ARCADIS
Project ID:
Sample ID: BK2-72.5-73.5-051619-STEP 2

ACZ Sample ID: ***L52548-04***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	1	J	*	mg/L	1	6	07/18/19 14:28	jlw
Calcium, dissolved	M200.7 ICP	25	1440		*	mg/L	3	10	07/18/19 14:28	jlw
Iron, dissolved	M200.7 ICP	25	1.5	J	*	mg/L	0.8	2	07/17/19 19:34	aeh
Magnesium, dissolved	M200.7 ICP	25	30		*	mg/L	5	30	07/17/19 19:34	aeh
Manganese, dissolved	M200.7 ICP	25	10.9		*	mg/L	0.3	1	07/18/19 14:28	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:43	bsu
Potassium, dissolved	M200.7 ICP	25	6	J	*	mg/L	5	30	07/18/19 14:28	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.007		*	mg/L	0.002	0.005	07/16/19 17:43	bsu
Silicon, dissolved	M200.7 ICP	25	4	J	*	mg/L	3	10	07/17/19 19:34	aeh
Sodium, dissolved	M200.7 ICP	25	21100		*	mg/L	5	30	07/17/19 19:34	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.024		*	mg/L	0.002	0.01	07/16/19 17:43	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 19:34	aeh

ARCADIS
Project ID:
Sample ID: BK2-72.5-73.5-051619-STEP 3

ACZ Sample ID: ***L52548-05***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	16		*	mg/L	1	5	07/18/19 14:31	jlw
Calcium, dissolved	M200.7 ICP	20	121		*	mg/L	2	10	07/18/19 14:31	jlw
Iron, dissolved	M200.7 ICP	20	57.5		*	mg/L	0.6	2	07/17/19 19:38	aeh
Magnesium, dissolved	M200.7 ICP	20	56		*	mg/L	4	20	07/17/19 19:38	aeh
Manganese, dissolved	M200.7 ICP	20	1.5		*	mg/L	0.2	1	07/18/19 14:31	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/17/19 15:44	bsu
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/18/19 14:31	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.004	J	*	mg/L	0.002	0.005	07/18/19 10:56	mfm
Silicon, dissolved	M200.7 ICP	20	26		*	mg/L	2	10	07/17/19 19:38	aeh
Sodium, dissolved	M200.7 ICP	20	108		*	mg/L	4	20	07/17/19 19:38	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.011		*	mg/L	0.002	0.01	07/17/19 15:44	bsu
Vanadium, dissolved	M200.7 ICP	20		U	*	mg/L	0.1	0.5	07/17/19 19:38	aeh

ARCADIS
Project ID:
Sample ID: BK2-72.5-73.5-051619-STEP 4

ACZ Sample ID: ***L52548-06***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	19.0		*	mg/L	0.3	1	07/18/19 14:34	jlw
Calcium, dissolved	M200.7 ICP	5	17.0		*	mg/L	0.5	3	07/18/19 14:34	jlw
Iron, dissolved	M200.7 ICP	5	3.4		*	mg/L	0.2	0.4	07/17/19 19:41	aeh
Magnesium, dissolved	M200.7 ICP	5	8		*	mg/L	1	5	07/17/19 19:41	aeh
Manganese, dissolved	M200.7 ICP	5	0.22	J	*	mg/L	0.05	0.3	07/18/19 14:34	jlw
Molybdenum, dissolved	M200.8 ICP-MS	10	0.003	J	*	mg/L	0.002	0.005	07/17/19 16:04	bsu
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/18/19 14:34	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.028		*	mg/L	0.002	0.005	07/18/19 10:58	mfm
Silicon, dissolved	M200.7 ICP	5	16.3		*	mg/L	0.5	3	07/17/19 19:41	aeh
Sodium, dissolved	M200.7 ICP	5	1	J	*	mg/L	1	5	07/17/19 19:41	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.005		*	mg/L	0.001	0.005	07/17/19 16:04	bsu
Vanadium, dissolved	M200.7 ICP	5	0.05	J	*	mg/L	0.03	0.1	07/17/19 19:41	aeh

ARCADIS
Project ID:
Sample ID: BK2-72.5-73.5-051619-STEP 5

ACZ Sample ID: ***L52548-07***
Date Sampled: *05/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	29700			mg/Kg	300	1000	07/17/19 7:15	aeh
Calcium, total (3052)	M6010D ICP	5000	600	J		mg/Kg	500	3000	07/17/19 7:15	aeh
Iron, total (3052)	M6010D ICP	5000	7500			mg/Kg	200	400	07/17/19 7:15	aeh
Magnesium, total (3052)	M6010D ICP	5000		U	*	mg/Kg	1000	5000	07/17/19 7:15	aeh
Manganese, total (3052)	M6010D ICP	5000	70	J		mg/Kg	50	300	07/17/19 7:15	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:03	mfm
Potassium, total (3052)	M6010D ICP	5000	19000			mg/Kg	1000	5000	07/17/19 7:15	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	3	07/16/19 12:46	mfm
Silicon, total (3052)	M6010D ICP	5000	418000	O	*	mg/Kg	500	3000	07/17/19 7:15	aeh
Sodium, total (3052)	M6010D ICP	5000	9000		*	mg/Kg	1000	5000	07/17/19 7:15	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:46	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 7:15	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 14:25	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

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ACZ Project ID: ***L52548***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L53239-02DUP	DUP	07/15/19 19:05			328	332	mg/L				1	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	2		1.996	mg/L	100	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.15	0.15			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	1.0006		1.031	mg/L	103	85	115			
L52547-03AS	AS	07/18/19 14:00	II190716-6	5.003	.6	5.91	mg/L	106	85	115			
L52547-03ASD	ASD	07/18/19 14:03	II190716-6	5.003	.6	5.99	mg/L	108	85	115	1	20	

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	100		99.82	mg/L	100	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.3	0.3			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	68.11783		70.58	mg/L	104	85	115			
L52547-03AS	AS	07/18/19 14:00	II190716-6	340.58915	1.4	355.1	mg/L	104	85	115			
L52547-03ASD	ASD	07/18/19 14:03	II190716-6	340.58915	1.4	357.35	mg/L	105	85	115	1	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	2		1.923	mg/L	96	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.09	0.09			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	1.0018		1.061	mg/L	106	85	115			
L52547-03AS	AS	07/17/19 19:05	II190716-6	5.009	.4	5.76	mg/L	107	85	115			
L52547-03ASD	ASD	07/17/19 19:08	II190716-6	5.009	.4	5.72	mg/L	106	85	115	1	20	

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ACZ Project ID: ***L52548***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	100		95.71	mg/L	96	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.6	0.6			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	50.31093		49.11	mg/L	98	85	115			
L52547-03AS	AS	07/17/19 19:05	II190716-6	251.55465	U	248.8	mg/L	99	85	115			
L52547-03ASD	ASD	07/17/19 19:08	II190716-6	251.55465	U	249.2	mg/L	99	85	115	0	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	2		1.919	mg/L	96	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.03	0.03			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	.4995		.518	mg/L	104	85	115			
L52547-03AS	AS	07/18/19 14:00	II190716-6	2.4975	U	2.584	mg/L	103	85	115			
L52547-03ASD	ASD	07/18/19 14:03	II190716-6	2.4975	U	2.575	mg/L	103	85	115	0	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

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ACZ Project ID: ***L52548***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.0199		.02043	mg/L	103	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00044	0.00044			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.0501		.04605	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.002	U	1.0056	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.002	U	1.0739	mg/L	107	70	130	7	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.0199		.02053	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00044	0.00044			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.0501		.0464	mg/L	93	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1.002	U	1.1346	mg/L	113	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1.002	U	1.0983	mg/L	110	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.0199		.02033	mg/L	102	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00044	0.00044			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.0501		.05052	mg/L	101	85	115			
L52551-05AS	AS	07/17/19 15:52	MS190606-3	1.002	U	1.065	mg/L	106	70	130			
L52551-05ASD	ASD	07/17/19 15:53	MS190606-3	1.002	U	1.0535	mg/L	105	70	130	1	20	

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
L52544-02AS	AS	07/16/19 21:36	WI190704-2	.5	.03	.539	mg/L	102	90	110			
L52544-03DUP	DUP	07/16/19 21:38			.05	.043	mg/L				15	20	RA
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	20		19.58	mg/L	98	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.6	0.6			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	99.96426		100	mg/L	100	85	115			
L52547-03AS	AS	07/18/19 14:00	II190716-6	499.8213	U	504.5	mg/L	101	85	115			
L52547-03ASD	ASD	07/18/19 14:03	II190716-6	499.8213	U	508.5	mg/L	102	85	115	1	20	

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ACZ Project ID: ***L52548***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.04886	mg/L	98	90	110			
WG476973ICB	ICB	07/16/19 12:41				.00015	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05005		.04643	mg/L	93	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1.001	.003	1.0064	mg/L	100	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1.001	.003	1.0867	mg/L	108	70	130	8	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05164	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				.00015	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05005		.04786	mg/L	96	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1.001	.003	1.1806	mg/L	118	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1.001	.003	1.1558	mg/L	115	70	130	2	20	
WG477251													
WG477251ICV	ICV	07/18/19 10:43	MS190630-2	.05		.04781	mg/L	96	90	110			
WG477251ICB	ICB	07/18/19 10:45				U	mg/L		-0.00022	0.00022			
WG477251LFB	LFB	07/18/19 10:47	MS190606-3	.05005		.04778	mg/L	95	85	115			
L52547-05AS	AS	07/18/19 10:50	MS190606-3	1.001	.003	1.7341	mg/L	173	70	130			M1
L52547-05ASD	ASD	07/18/19 10:52	MS190606-3	1.001	.003	1.7046	mg/L	170	70	130	2	20	M1

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	20		19.39	mg/L	97	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.3	0.3			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	10.008		10.56	mg/L	106	85	115			
L52547-03AS	AS	07/17/19 19:05	II190716-6	50.04	3.4	56.35	mg/L	106	85	115			
L52547-03ASD	ASD	07/17/19 19:08	II190716-6	50.04	3.4	56.6	mg/L	106	85	115	0	20	

ARCADIS

ACZ Project ID: ***L52548***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	100		101.33	mg/L	101	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.6	0.6			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	100.0471		103.5	mg/L	103	85	115			
L52547-03AS	AS	07/17/19 19:05	II190716-6	500.2355	333	843	mg/L	102	85	115			
L52547-03ASD	ASD	07/17/19 19:08	II190716-6	500.2355	333	844	mg/L	102	85	115	0	20	

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477100													
WG477100ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477100ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477100LFB	LFB	07/17/19 11:04	WI181024-4	10.03		9.3	mg/L	93	90	110			
L52547-03DUP	DUP	07/17/19 11:04			4.6	4.3	mg/L				7	20	RA
L52548-02AS	AS	07/17/19 11:04	WI181024-4	100.3	13.5	111	mg/L	97	90	110			

ARCADIS

ACZ Project ID: ***L52548***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52541-04AS	AS	07/16/19 13:27	MS190606-3	1	.018	1.0581	mg/L	104	70	130			
L52541-04ASD	ASD	07/16/19 13:28	MS190606-3	1	.018	1.1233	mg/L	111	70	130	6	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05064	mg/L	101	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05		.0471	mg/L	94	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1	.053	1.2008	mg/L	115	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1	.053	1.17	mg/L	112	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.05		.05015	mg/L	100	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00022	0.00022			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.05		.05021	mg/L	100	85	115			
L52551-05AS	AS	07/17/19 15:52	MS190606-3	1	.018	1.0593	mg/L	104	70	130			
L52551-05ASD	ASD	07/17/19 15:53	MS190606-3	1	.018	1.0582	mg/L	104	70	130	0	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	2		1.9335	mg/L	97	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.015	0.015			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	.5005		.4947	mg/L	99	85	115			
L52547-03AS	AS	07/17/19 19:05	II190716-6	2.5025	U	2.509	mg/L	100	85	115			
L52547-03ASD	ASD	07/17/19 19:08	II190716-6	2.5025	U	2.502	mg/L	100	85	115	0	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52548***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52548-02	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	DJ	Sample dilution required due to insufficient sample.
			D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476973	Uranium, dissolved	M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52548-03	WG476973	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L52548-04	WG477002	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.

ARCADIS ACZ Project ID: ***L52548***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52548-05	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477251	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L52548-06	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477251	Selenium, dissolved	M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L52548-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52548
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52548
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L52548

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts payable
Company: Arcadis
E-mail: accountspayable.administration.arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich Sampler's Site Information State NM Zip code 87021 Time Zone MST

*Sampler's Signature: SW

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? [X*]

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract
BK2-12-13-051519	5-15-19:1620	SO	1	HOLD
BK2-20-21-051519	5-15-19:1650	SO	1	HOLD
BK2-35-36-051519	5-15-19:1740	SO	1	HOLD
BK2-38-39-051519	5-15-19:1825	SO	1	HOLD
BK2-41.5-42.5-051519	5-15-19:1920	SO	1	HOLD
BK2-44-44.5-051619	5-16-19:0930	SO	1	HOLD
BK2-59-60-051619	5-16-19:1055	SO	1	HOLD
BK2-63.5-64-051619	5-16-19:1135	SO	1	HOLD
BK2-72.5-73.5-051619	5-16-19:1205	SO	1	HOLD
BK2-77-77.5-051619	5-16-19:1345	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

COPY

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
*Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1430	FedEx	5/28/19:1430
		JZ	5/29/19 13:21

L52548 1007191125

L52548 Chain of Custod

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 19, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52549

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52549. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52549. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 15, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 19, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52549

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52549. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK2-77-77.5-051619

ACZ Sample ID: ***L52549-01***
Date Sampled: *06/16/19 13:45*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	93.4		*	%	0.1	0.5	06/23/19 11:59	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 14:25	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK2-77-77.5-051619-DI

ACZ Sample ID: ***L52549-02***
Date Sampled: *06/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.8		*	mg/L	0.1	0.5	07/18/19 14:37	jlw
Calcium, dissolved	M200.7 ICP	2	6.0		*	mg/L	0.2	1	07/18/19 14:37	jlw
Iron, dissolved	M200.7 ICP	2	1.38		*	mg/L	0.06	0.2	07/17/19 19:44	aeh
Magnesium, dissolved	M200.7 ICP	2	0.7	J	*	mg/L	0.4	2	07/17/19 19:44	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/18/19 14:37	jlw
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0021		*	mg/L	0.0004	0.001	07/16/19 12:49	bsu
Potassium, dissolved	M200.7 ICP	2	1.8	J	*	mg/L	0.4	2	07/18/19 14:37	jlw
Selenium, dissolved	M200.8 ICP-MS	2	0.0039		*	mg/L	0.0002	0.0005	07/16/19 12:49	bsu
Silicon, dissolved	M200.7 ICP	2	7.1		*	mg/L	0.2	1	07/17/19 19:44	aeh
Sodium, dissolved	M200.7 ICP	2	8.7		*	mg/L	0.4	2	07/17/19 19:44	aeh
Uranium, dissolved	M200.8 ICP-MS	2	0.0006	J	*	mg/L	0.0002	0.001	07/16/19 12:49	bsu
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/17/19 19:44	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	26.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.04	BH	*	mg/L	0.01	0.05	07/16/19 21:52	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	13.3	H	*	mg/L	1	5	07/17/19 11:04	ttg

ARCADIS
Project ID:
Sample ID: BK2-77-77.5-051619-STEP 1

ACZ Sample ID: ***L52549-03***
Date Sampled: *06/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	1.7		*	mg/L	0.3	1	07/18/19 14:40	jlw
Calcium, dissolved	M200.7 ICP	5	2.8	J	*	mg/L	0.5	3	07/18/19 14:40	jlw
Iron, dissolved	M200.7 ICP	5	1.3		*	mg/L	0.2	0.4	07/17/19 19:48	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 19:48	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/18/19 14:40	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.001	J	*	mg/L	0.001	0.003	07/16/19 13:09	bsu
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/18/19 14:40	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0022		*	mg/L	0.0005	0.001	07/16/19 13:09	bsu
Silicon, dissolved	M200.7 ICP	5	7.1		*	mg/L	0.5	3	07/17/19 19:48	aeh
Sodium, dissolved	M200.7 ICP	5	330		*	mg/L	1	5	07/17/19 19:48	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0037		*	mg/L	0.0005	0.003	07/16/19 13:09	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 19:48	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.08	H	*	mg/L	0.01	0.05	07/16/19 21:54	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	3.7	BH	*	mg/L	1	5	07/17/19 11:04	ttg

ARCADIS
Project ID:
Sample ID: BK2-77-77.5-051619-STEP 2

ACZ Sample ID: ***L52549-04***
Date Sampled: *06/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	2	J	*	mg/L	1	6	07/18/19 14:44	jlw
Calcium, dissolved	M200.7 ICP	25	1620		*	mg/L	3	10	07/18/19 14:44	jlw
Iron, dissolved	M200.7 ICP	25	2.2		*	mg/L	0.8	2	07/17/19 19:51	aeh
Magnesium, dissolved	M200.7 ICP	25	38		*	mg/L	5	30	07/17/19 19:51	aeh
Manganese, dissolved	M200.7 ICP	25	13.1		*	mg/L	0.3	1	07/18/19 14:44	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:45	bsu
Potassium, dissolved	M200.7 ICP	25	8	J	*	mg/L	5	30	07/18/19 14:44	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.005		*	mg/L	0.002	0.005	07/16/19 17:45	bsu
Silicon, dissolved	M200.7 ICP	25	5	J	*	mg/L	3	10	07/17/19 19:51	aeh
Sodium, dissolved	M200.7 ICP	25	21300		*	mg/L	5	30	07/17/19 19:51	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.026		*	mg/L	0.002	0.01	07/16/19 17:45	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 19:51	aeh

ARCADIS
Project ID:
Sample ID: BK2-77-77.5-051619-STEP 3

ACZ Sample ID: ***L52549-05***
Date Sampled: *06/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	18		*	mg/L	1	5	07/18/19 14:53	jlw
Calcium, dissolved	M200.7 ICP	20	123		*	mg/L	2	10	07/18/19 14:53	jlw
Iron, dissolved	M200.7 ICP	20	65.4		*	mg/L	0.6	2	07/17/19 20:01	aeh
Magnesium, dissolved	M200.7 ICP	20	55		*	mg/L	4	20	07/17/19 20:01	aeh
Manganese, dissolved	M200.7 ICP	20	1.8		*	mg/L	0.2	1	07/18/19 14:53	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/17/19 15:46	bsu
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/18/19 14:53	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.004	J	*	mg/L	0.002	0.005	07/18/19 10:59	mfm
Silicon, dissolved	M200.7 ICP	20	32		*	mg/L	2	10	07/17/19 20:01	aeh
Sodium, dissolved	M200.7 ICP	20	173		*	mg/L	4	20	07/17/19 20:01	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.010		*	mg/L	0.002	0.01	07/17/19 15:46	bsu
Vanadium, dissolved	M200.7 ICP	20	0.1	J	*	mg/L	0.1	0.5	07/17/19 20:01	aeh

ARCADIS
Project ID:
Sample ID: BK2-77-77.5-051619-STEP 4

ACZ Sample ID: ***L52549-06***
Date Sampled: *06/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	22.8		*	mg/L	0.3	1	07/18/19 14:56	jlw
Calcium, dissolved	M200.7 ICP	5	20.3		*	mg/L	0.5	3	07/18/19 14:56	jlw
Iron, dissolved	M200.7 ICP	5	3.7		*	mg/L	0.2	0.4	07/17/19 20:04	aeh
Magnesium, dissolved	M200.7 ICP	5	11		*	mg/L	1	5	07/17/19 20:04	aeh
Manganese, dissolved	M200.7 ICP	5	0.31		*	mg/L	0.05	0.3	07/18/19 14:56	jlw
Molybdenum, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.002	0.005	07/17/19 16:06	bsu
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/18/19 14:56	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.009		*	mg/L	0.002	0.005	07/18/19 11:01	mfm
Silicon, dissolved	M200.7 ICP	5	18.9		*	mg/L	0.5	3	07/17/19 20:04	aeh
Sodium, dissolved	M200.7 ICP	5	3	J	*	mg/L	1	5	07/17/19 20:04	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.004	J	*	mg/L	0.001	0.005	07/17/19 16:06	bsu
Vanadium, dissolved	M200.7 ICP	5	0.04	J	*	mg/L	0.03	0.1	07/17/19 20:04	aeh

ARCADIS
Project ID:
Sample ID: BK2-77-77.5-051619-STEP 5

ACZ Sample ID: ***L52549-07***
Date Sampled: *06/16/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	36300			mg/Kg	300	1000	07/17/19 7:19	aeh
Calcium, total (3052)	M6010D ICP	5000	1000	J		mg/Kg	500	3000	07/17/19 7:19	aeh
Iron, total (3052)	M6010D ICP	5000	11400			mg/Kg	200	400	07/17/19 7:19	aeh
Magnesium, total (3052)	M6010D ICP	5000	2000	J	*	mg/Kg	1000	5000	07/17/19 7:19	aeh
Manganese, total (3052)	M6010D ICP	5000	100	J		mg/Kg	50	300	07/17/19 7:19	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:05	mfm
Potassium, total (3052)	M6010D ICP	5000	19000			mg/Kg	1000	5000	07/17/19 7:19	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	1	3	07/16/19 12:48	mfm
Silicon, total (3052)	M6010D ICP	5000	406000	O	*	mg/Kg	500	3000	07/17/19 7:19	aeh
Sodium, total (3052)	M6010D ICP	5000	9000		*	mg/Kg	1000	5000	07/17/19 7:19	aeh
Uranium, total (3052)	M6020B ICP-MS	12500	1	J		mg/Kg	1	6	07/16/19 12:48	mfm
Vanadium, total (3052)	M6010D ICP	5000	40	J		mg/Kg	30	100	07/17/19 7:19	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 14:56	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

ARCADIS

ACZ Project ID: ***L52549***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L53239-02DUP	DUP	07/15/19 19:05			328	332	mg/L				1	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	2		1.996	mg/L	100	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.15	0.15			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	1.0006		1.031	mg/L	103	85	115			
L52549-04AS	AS	07/18/19 14:47	II190716-6	25.015	2	28	mg/L	104	85	115			
L52549-04ASD	ASD	07/18/19 14:50	II190716-6	25.015	2	27.8	mg/L	103	85	115	1	20	

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	100		99.82	mg/L	100	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.3	0.3			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	68.11783		70.58	mg/L	104	85	115			
L52549-04AS	AS	07/18/19 14:47	II190716-6	1702.94575	1620	3292.5	mg/L	98	85	115			
L52549-04ASD	ASD	07/18/19 14:50	II190716-6	1702.94575	1620	3250	mg/L	96	85	115	1	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	2		1.923	mg/L	96	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.09	0.09			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	1.0018		1.061	mg/L	106	85	115			
L52549-04AS	AS	07/17/19 19:54	II190716-6	25.045	2.2	28.4	mg/L	105	85	115			
L52549-04ASD	ASD	07/17/19 19:58	II190716-6	25.045	2.2	27.95	mg/L	103	85	115	2	20	

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ACZ Project ID: ***L52549***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	100		95.71	mg/L	96	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.6	0.6			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	50.31093		49.11	mg/L	98	85	115			
L52549-04AS	AS	07/17/19 19:54	II190716-6	1257.77325	38	1262.8	mg/L	97	85	115			
L52549-04ASD	ASD	07/17/19 19:58	II190716-6	1257.77325	38	1256.8	mg/L	97	85	115	0	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	2		1.919	mg/L	96	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.03	0.03			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	.4995		.518	mg/L	104	85	115			
L52549-04AS	AS	07/18/19 14:47	II190716-6	12.4875	13.1	25.4	mg/L	98	85	115			
L52549-04ASD	ASD	07/18/19 14:50	II190716-6	12.4875	13.1	25.03	mg/L	96	85	115	1	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

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ACZ Project ID: ***L52549***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.0199		.02043	mg/L	103	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00044	0.00044			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.0501		.04605	mg/L	92	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.2505	.024	.271	mg/L	99	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.2505	.024	.273	mg/L	99	70	130	1	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.0199		.02053	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00044	0.00044			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.0501		.0464	mg/L	93	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1.002	U	1.1346	mg/L	113	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1.002	U	1.0983	mg/L	110	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.0199		.02033	mg/L	102	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00044	0.00044			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.0501		.05052	mg/L	101	85	115			
L52551-05AS	AS	07/17/19 15:52	MS190606-3	1.002	U	1.065	mg/L	106	70	130			
L52551-05ASD	ASD	07/17/19 15:53	MS190606-3	1.002	U	1.0535	mg/L	105	70	130	1	20	

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			
L52549-02AS	AS	07/16/19 21:53	WI190704-2	.5	.04	.571	mg/L	106	90	110			
L52549-03DUP	DUP	07/16/19 21:55			.08	.085	mg/L				6	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	20		19.58	mg/L	98	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.6	0.6			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	99.96426		100	mg/L	100	85	115			
L52549-04AS	AS	07/18/19 14:47	II190716-6	2499.1065	8	2627.5	mg/L	105	85	115			
L52549-04ASD	ASD	07/18/19 14:50	II190716-6	2499.1065	8	2610	mg/L	104	85	115	1	20	

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ACZ Project ID: ***L52549***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.04886	mg/L	98	90	110			
WG476973ICB	ICB	07/16/19 12:41				.00015	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05005		.04643	mg/L	93	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.25025	.0018	.25275	mg/L	100	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.25025	.0018	.25289	mg/L	100	70	130	0	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05164	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				.00015	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05005		.04786	mg/L	96	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1.001	.003	1.1806	mg/L	118	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1.001	.003	1.1558	mg/L	115	70	130	2	20	
WG477251													
WG477251ICV	ICV	07/18/19 10:43	MS190630-2	.05		.04781	mg/L	96	90	110			
WG477251ICB	ICB	07/18/19 10:45				U	mg/L		-0.00022	0.00022			
WG477251LFB	LFB	07/18/19 10:47	MS190606-3	.05005		.04778	mg/L	95	85	115			
L52547-05AS	AS	07/18/19 10:50	MS190606-3	1.001	.003	1.7341	mg/L	173	70	130			M1
L52547-05ASD	ASD	07/18/19 10:52	MS190606-3	1.001	.003	1.7046	mg/L	170	70	130	2	20	M1

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	20		19.39	mg/L	97	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.3	0.3			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	10.008		10.56	mg/L	106	85	115			
L52549-04AS	AS	07/17/19 19:54	II190716-6	250.2	5	267.5	mg/L	105	85	115			
L52549-04ASD	ASD	07/17/19 19:58	II190716-6	250.2	5	266.8	mg/L	105	85	115	0	20	

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ACZ Project ID: ***L52549***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	100		101.33	mg/L	101	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.6	0.6			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	100.0471		103.5	mg/L	103	85	115			
L52549-04AS	AS	07/17/19 19:54	II190716-6	2501.1775	21300	22925	mg/L	65	85	115			M3
L52549-04ASD	ASD	07/17/19 19:58	II190716-6	2501.1775	21300	22857.5	mg/L	62	85	115	0	20	M3

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477100													
WG477100ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477100ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477100LFB	LFB	07/17/19 11:04	WI181024-4	10.03		9.3	mg/L	93	90	110			
L52547-03DUP	DUP	07/17/19 11:04			4.6	4.3	mg/L				7	20	RA
L52548-02AS	AS	07/17/19 11:04	WI181024-4	100.3	13.5	111	mg/L	97	90	110			

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ACZ Project ID: ***L52549***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.25	.0006	.24604	mg/L	98	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.25	.0006	.24985	mg/L	100	70	130	2	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05064	mg/L	101	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05		.0471	mg/L	94	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1	.053	1.2008	mg/L	115	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1	.053	1.17	mg/L	112	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.05		.05015	mg/L	100	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00022	0.00022			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.05		.05021	mg/L	100	85	115			
L52551-05AS	AS	07/17/19 15:52	MS190606-3	1	.018	1.0593	mg/L	104	70	130			
L52551-05ASD	ASD	07/17/19 15:53	MS190606-3	1	.018	1.0582	mg/L	104	70	130	0	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	2		1.9335	mg/L	97	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.015	0.015			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	.5005		.4947	mg/L	99	85	115			
L52549-04AS	AS	07/17/19 19:54	II190716-6	12.5125	U	12.42	mg/L	99	85	115			
L52549-04ASD	ASD	07/17/19 19:58	II190716-6	12.5125	U	12.47	mg/L	100	85	115	0	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52549***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52549-02	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG477116	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476973	Uranium, dissolved	M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52549-03	WG476973	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG477116	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

ARCADIS ACZ Project ID: ***L52549***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52549-04	WG477002	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477116	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L52549-05	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477251	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477116	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L52549-06	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477251	Selenium, dissolved	M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477116	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477152	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52549-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	IA	Internal standard recovery exceeded the acceptance limits. Concentration of associated target analyte(s) in the sample is < MDL.
			M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG476983	Selenium, total (3052)	M6020B ICP-MS	IA	Internal standard recovery exceeded the acceptance limits. Concentration of associated target analyte(s) in the sample is < MDL.
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52549
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52549
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L52549

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: Shannon.Ulrich@arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: Accounts payable
Company: Arcadis
E-mail: accountspayable.administration.arcadis.com
Address: 630 Plaza Drive, Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich Sampler's Site Information State NM Zip code 87021 Time Zone MST

*Sampler's Signature: SU

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 6DB120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? [X*]

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Custom selective sequential extract
BK2-12-13-051519	5-15-19:1620	SO	1	HOLD
BK2-20-21-051519	5-15-19:1650	SO	1	HOLD
BK2-35-36-051519	5-15-19:1740	SO	1	HOLD
BK2-38-39-051519	5-15-19:1825	SO	1	HOLD
BK2-41.5-42.5-051519	5-15-19:1920	SO	1	HOLD
BK2-44-44.5-051619	5-16-19:0930	SO	1	HOLD
BK2-59-60-051619	5-16-19:1055	SO	1	HOLD
BK2-63.5-64-051619	5-16-19:1135	SO	1	HOLD
BK2-72.5-73.5-051619	5-16-19:1205	SO	1	HOLD
BK2-77-77.5-051619	5-16-19:1345	SO	1	HOLD

SWM

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom selective sequential extraction; contact Tim VanWyngarden
Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/28/19:1430	FedEx	5/28/19:1430
			5/29/19 13:21

L52549 1007191126

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 19, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52550

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52550. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52550. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 15, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 19, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52550

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52550. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK3-31.5-32.5-052219

ACZ Sample ID: ***L52550-01***
Date Sampled: *05/22/19 11:30*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	97.1		*	%	0.1	0.5	06/23/19 16:26	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 15:04	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK3-31.5-32.5-052219-DI

ACZ Sample ID: ***L52550-02***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.7		*	mg/L	0.1	0.5	07/18/19 15:05	jlw
Calcium, dissolved	M200.7 ICP	2	3.9		*	mg/L	0.2	1	07/18/19 15:05	jlw
Iron, dissolved	M200.7 ICP	2	1.22		*	mg/L	0.06	0.2	07/17/19 20:14	aeh
Magnesium, dissolved	M200.7 ICP	2	0.5	J	*	mg/L	0.4	2	07/17/19 20:14	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/18/19 15:05	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.024		*	mg/L	0.001	0.003	07/16/19 12:50	bsu
Potassium, dissolved	M200.7 ICP	2	1.6	J	*	mg/L	0.4	2	07/18/19 15:05	jlw
Selenium, dissolved	M200.8 ICP-MS	5	0.0018		*	mg/L	0.0005	0.001	07/16/19 12:50	bsu
Silicon, dissolved	M200.7 ICP	2	6.9		*	mg/L	0.2	1	07/17/19 20:14	aeh
Sodium, dissolved	M200.7 ICP	2	20.1		*	mg/L	0.4	2	07/17/19 20:14	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0006	J	*	mg/L	0.0005	0.003	07/16/19 12:50	bsu
Vanadium, dissolved	M200.7 ICP	2		U	*	mg/L	0.01	0.05	07/17/19 20:14	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	40.0	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	40.0	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.03	BH	*	mg/L	0.01	0.05	07/16/19 21:58	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	15.1	H	*	mg/L	1	5	07/17/19 11:04	ttg

ARCADIS
Project ID:
Sample ID: BK3-31.5-32.5-052219-STEP 1

ACZ Sample ID: ***L52550-03***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	0.8	J	*	mg/L	0.3	1	07/18/19 15:08	jlw
Calcium, dissolved	M200.7 ICP	5	2.5	J	*	mg/L	0.5	3	07/18/19 15:08	jlw
Iron, dissolved	M200.7 ICP	5	1.0		*	mg/L	0.2	0.4	07/17/19 20:17	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 20:17	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/18/19 15:08	jlw
Molybdenum, dissolved	M200.8 ICP-MS	5	0.017		*	mg/L	0.001	0.003	07/16/19 13:10	bsu
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/18/19 15:08	jlw
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/16/19 13:10	bsu
Silicon, dissolved	M200.7 ICP	5	6.6		*	mg/L	0.5	3	07/17/19 20:17	aeh
Sodium, dissolved	M200.7 ICP	5	340		*	mg/L	1	5	07/17/19 20:17	aeh
Uranium, dissolved	M200.8 ICP-MS	5	0.0019	J	*	mg/L	0.0005	0.003	07/16/19 13:10	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 20:17	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.04	BH	*	mg/L	0.01	0.05	07/16/19 22:00	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	3.5	BH	*	mg/L	1	5	07/17/19 11:05	ttg

ARCADIS
Project ID:
Sample ID: BK3-31.5-32.5-052219-STEP 2

ACZ Sample ID: ***L52550-04***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	9		*	mg/L	1	6	07/18/19 15:11	jlw
Calcium, dissolved	M200.7 ICP	25	1590		*	mg/L	3	10	07/18/19 15:11	jlw
Iron, dissolved	M200.7 ICP	25	17.9		*	mg/L	0.8	2	07/17/19 20:21	aeh
Magnesium, dissolved	M200.7 ICP	25	51		*	mg/L	5	30	07/17/19 20:21	aeh
Manganese, dissolved	M200.7 ICP	25	13.1		*	mg/L	0.3	1	07/18/19 15:11	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:50	bsu
Potassium, dissolved	M200.7 ICP	25	13	J	*	mg/L	5	30	07/18/19 15:11	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.004	J	*	mg/L	0.002	0.005	07/16/19 17:50	bsu
Silicon, dissolved	M200.7 ICP	25	14		*	mg/L	3	10	07/17/19 20:21	aeh
Sodium, dissolved	M200.7 ICP	25	20800		*	mg/L	5	30	07/17/19 20:21	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.014		*	mg/L	0.002	0.01	07/16/19 17:50	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 20:21	aeh

ARCADIS
Project ID:
Sample ID: BK3-31.5-32.5-052219-STEP 3

ACZ Sample ID: ***L52550-05***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	19		*	mg/L	1	5	07/18/19 15:14	jlw
Calcium, dissolved	M200.7 ICP	20	125		*	mg/L	2	10	07/18/19 15:14	jlw
Iron, dissolved	M200.7 ICP	20	97.6		*	mg/L	0.6	2	07/17/19 20:24	aeh
Magnesium, dissolved	M200.7 ICP	20	54		*	mg/L	4	20	07/17/19 20:24	aeh
Manganese, dissolved	M200.7 ICP	20	1.3		*	mg/L	0.2	1	07/18/19 15:14	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20	0.025		*	mg/L	0.004	0.01	07/17/19 15:48	bsu
Potassium, dissolved	M200.7 ICP	20	6	J	*	mg/L	4	20	07/18/19 15:14	jlw
Selenium, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.002	0.005	07/17/19 15:48	bsu
Silicon, dissolved	M200.7 ICP	20	34		*	mg/L	2	10	07/17/19 20:24	aeh
Sodium, dissolved	M200.7 ICP	20	195		*	mg/L	4	20	07/17/19 20:24	aeh
Uranium, dissolved	M200.8 ICP-MS	20	0.010		*	mg/L	0.002	0.01	07/17/19 15:48	bsu
Vanadium, dissolved	M200.7 ICP	20	0.1	J	*	mg/L	0.1	0.5	07/17/19 20:24	aeh

ARCADIS
Project ID:
Sample ID: BK3-31.5-32.5-052219-STEP 4

ACZ Sample ID: ***L52550-06***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	28.3		*	mg/L	0.3	1	07/18/19 15:17	jlw
Calcium, dissolved	M200.7 ICP	5	27.1		*	mg/L	0.5	3	07/18/19 15:17	jlw
Iron, dissolved	M200.7 ICP	5	5.3		*	mg/L	0.2	0.4	07/17/19 20:27	aeh
Magnesium, dissolved	M200.7 ICP	5	12		*	mg/L	1	5	07/17/19 20:27	aeh
Manganese, dissolved	M200.7 ICP	5	0.30		*	mg/L	0.05	0.3	07/18/19 15:17	jlw
Molybdenum, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.002	0.005	07/17/19 16:08	bsu
Potassium, dissolved	M200.7 ICP	5	3	J	*	mg/L	1	5	07/18/19 15:17	jlw
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/18/19 11:03	mfm
Silicon, dissolved	M200.7 ICP	5	24.3		*	mg/L	0.5	3	07/17/19 20:27	aeh
Sodium, dissolved	M200.7 ICP	5	4	J	*	mg/L	1	5	07/17/19 20:27	aeh
Uranium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.005	07/17/19 16:08	bsu
Vanadium, dissolved	M200.7 ICP	5	0.05	J	*	mg/L	0.03	0.1	07/17/19 20:27	aeh

ARCADIS
Project ID:
Sample ID: BK3-31.5-32.5-052219-STEP 5

ACZ Sample ID: ***L52550-07***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	35500			mg/Kg	300	1000	07/17/19 7:23	aeh
Calcium, total (3052)	M6010D ICP	5000	1600	J		mg/Kg	500	3000	07/17/19 7:23	aeh
Iron, total (3052)	M6010D ICP	5000	13900			mg/Kg	200	400	07/17/19 7:23	aeh
Magnesium, total (3052)	M6010D ICP	5000	2000	J	*	mg/Kg	1000	5000	07/17/19 7:23	aeh
Manganese, total (3052)	M6010D ICP	5000	110	J		mg/Kg	50	300	07/17/19 7:23	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:07	mfm
Potassium, total (3052)	M6010D ICP	5000	18000			mg/Kg	1000	5000	07/17/19 7:23	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	1	3	07/16/19 12:50	mfm
Silicon, total (3052)	M6010D ICP	5000	390000	O	*	mg/Kg	500	3000	07/17/19 7:23	aeh
Sodium, total (3052)	M6010D ICP	5000	9000		*	mg/Kg	1000	5000	07/17/19 7:23	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:50	mfm
Vanadium, total (3052)	M6010D ICP	5000	50	J		mg/Kg	30	100	07/17/19 7:23	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 15:27	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

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ACZ Project ID: ***L52550***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L53239-02DUP	DUP	07/15/19 19:05			328	332	mg/L				1	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	2		1.996	mg/L	100	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.15	0.15			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	1.0006		1.031	mg/L	103	85	115			
L52549-04AS	AS	07/18/19 14:47	II190716-6	25.015	2	28	mg/L	104	85	115			
L52549-04ASD	ASD	07/18/19 14:50	II190716-6	25.015	2	27.8	mg/L	103	85	115	1	20	

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	100		99.82	mg/L	100	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.3	0.3			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	68.11783		70.58	mg/L	104	85	115			
L52549-04AS	AS	07/18/19 14:47	II190716-6	1702.94575	1620	3292.5	mg/L	98	85	115			
L52549-04ASD	ASD	07/18/19 14:50	II190716-6	1702.94575	1620	3250	mg/L	96	85	115	1	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	2		1.923	mg/L	96	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.09	0.09			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	1.0018		1.061	mg/L	106	85	115			
L52549-04AS	AS	07/17/19 19:54	II190716-6	25.045	2.2	28.4	mg/L	105	85	115			
L52549-04ASD	ASD	07/17/19 19:58	II190716-6	25.045	2.2	27.95	mg/L	103	85	115	2	20	

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ACZ Project ID: ***L52550***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	100		95.71	mg/L	96	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.6	0.6			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	50.31093		49.11	mg/L	98	85	115			
L52549-04AS	AS	07/17/19 19:54	II190716-6	1257.77325	38	1262.8	mg/L	97	85	115			
L52549-04ASD	ASD	07/17/19 19:58	II190716-6	1257.77325	38	1256.8	mg/L	97	85	115	0	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	2		1.919	mg/L	96	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.03	0.03			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	.4995		.518	mg/L	104	85	115			
L52549-04AS	AS	07/18/19 14:47	II190716-6	12.4875	13.1	25.4	mg/L	98	85	115			
L52549-04ASD	ASD	07/18/19 14:50	II190716-6	12.4875	13.1	25.03	mg/L	96	85	115	1	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

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ACZ Project ID: ***L52550***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.0199		.02043	mg/L	103	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00044	0.00044			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.0501		.04605	mg/L	92	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.2505	.024	.271	mg/L	99	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.2505	.024	.273	mg/L	99	70	130	1	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.0199		.02053	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00044	0.00044			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.0501		.0464	mg/L	93	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1.002	U	1.1346	mg/L	113	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1.002	U	1.0983	mg/L	110	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.0199		.02033	mg/L	102	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00044	0.00044			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.0501		.05052	mg/L	101	85	115			
L52551-05AS	AS	07/17/19 15:52	MS190606-3	1.002	U	1.065	mg/L	106	70	130			
L52551-05ASD	ASD	07/17/19 15:53	MS190606-3	1.002	U	1.0535	mg/L	105	70	130	1	20	

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			
L52549-02AS	AS	07/16/19 21:53	WI190704-2	.5	.04	.571	mg/L	106	90	110			
L52549-03DUP	DUP	07/16/19 21:55			.08	.085	mg/L				6	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477242													
WG477242ICV	ICV	07/18/19 13:33	II190715-2	20		19.58	mg/L	98	95	105			
WG477242ICB	ICB	07/18/19 13:39				U	mg/L		-0.6	0.6			
WG477242LFB	LFB	07/18/19 13:51	II190716-6	99.96426		100	mg/L	100	85	115			
L52549-04AS	AS	07/18/19 14:47	II190716-6	2499.1065	8	2627.5	mg/L	105	85	115			
L52549-04ASD	ASD	07/18/19 14:50	II190716-6	2499.1065	8	2610	mg/L	104	85	115	1	20	

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ACZ Project ID: ***L52550***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.04886	mg/L	98	90	110			
WG476973ICB	ICB	07/16/19 12:41				.00015	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05005		.04643	mg/L	93	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.25025	.0018	.25275	mg/L	100	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.25025	.0018	.25289	mg/L	100	70	130	0	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05164	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				.00015	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05005		.04786	mg/L	96	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1.001	.003	1.1806	mg/L	118	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1.001	.003	1.1558	mg/L	115	70	130	2	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.05		.04989	mg/L	100	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00022	0.00022			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.05005		.04989	mg/L	100	85	115			
L52551-05AS	AS	07/17/19 15:52	MS190606-3	1.001	.002	1.7947	mg/L	179	70	130			M1
L52551-05ASD	ASD	07/17/19 15:53	MS190606-3	1.001	.002	1.7727	mg/L	177	70	130	1	20	M1
WG477251													
WG477251ICV	ICV	07/18/19 10:43	MS190630-2	.05		.04781	mg/L	96	90	110			
WG477251ICB	ICB	07/18/19 10:45				U	mg/L		-0.00022	0.00022			
WG477251LFB	LFB	07/18/19 10:47	MS190606-3	.05005		.04778	mg/L	95	85	115			
L52547-05AS	AS	07/18/19 10:50	MS190606-3	1.001	.003	1.7341	mg/L	173	70	130			M1
L52547-05ASD	ASD	07/18/19 10:52	MS190606-3	1.001	.003	1.7046	mg/L	170	70	130	2	20	M1

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	20		19.39	mg/L	97	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.3	0.3			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	10.008		10.56	mg/L	106	85	115			
L52549-04AS	AS	07/17/19 19:54	II190716-6	250.2	5	267.5	mg/L	105	85	115			
L52549-04ASD	ASD	07/17/19 19:58	II190716-6	250.2	5	266.8	mg/L	105	85	115	0	20	

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ACZ Project ID: ***L52550***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	100		101.33	mg/L	101	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.6	0.6			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	100.0471		103.5	mg/L	103	85	115			
L52549-04AS	AS	07/17/19 19:54	II190716-6	2501.1775	21300	22925	mg/L	65	85	115			M3
L52549-04ASD	ASD	07/17/19 19:58	II190716-6	2501.1775	21300	22857.5	mg/L	62	85	115	0	20	M3

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477100													
WG477100ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477100ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477100LFB	LFB	07/17/19 11:04	WI181024-4	10.03		9.3	mg/L	93	90	110			
L52547-03DUP	DUP	07/17/19 11:04			4.6	4.3	mg/L				7	20	RA
L52548-02AS	AS	07/17/19 11:04	WI181024-4	100.3	13.5	111	mg/L	97	90	110			

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ACZ Project ID: ***L52550***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.25	.0006	.24604	mg/L	98	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.25	.0006	.24985	mg/L	100	70	130	2	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05064	mg/L	101	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05		.0471	mg/L	94	85	115			
L52547-04AS	AS	07/16/19 17:40	MS190606-3	1	.053	1.2008	mg/L	115	70	130			
L52547-04ASD	ASD	07/16/19 17:41	MS190606-3	1	.053	1.17	mg/L	112	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.05		.05015	mg/L	100	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00022	0.00022			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.05		.05021	mg/L	100	85	115			
L52551-05AS	AS	07/17/19 15:52	MS190606-3	1	.018	1.0593	mg/L	104	70	130			
L52551-05ASD	ASD	07/17/19 15:53	MS190606-3	1	.018	1.0582	mg/L	104	70	130	0	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477116													
WG477116ICV	ICV	07/17/19 18:35	II190715-2	2		1.9335	mg/L	97	95	105			
WG477116ICB	ICB	07/17/19 18:42				U	mg/L		-0.015	0.015			
WG477116LFB	LFB	07/17/19 18:55	II190716-6	.5005		.4947	mg/L	99	85	115			
L52549-04AS	AS	07/17/19 19:54	II190716-6	12.5125	U	12.42	mg/L	99	85	115			
L52549-04ASD	ASD	07/17/19 19:58	II190716-6	12.5125	U	12.47	mg/L	100	85	115	0	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52550***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52550-02	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG477116	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476973	Uranium, dissolved	M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.

ARCADIS ACZ Project ID: ***L52550***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52550-03	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476973	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477116	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476973	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52550-04	WG477002	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
		Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477116	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L52550-05	WG477152	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG477116	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Inorganic Extended Qualifier Report

ARCADIS ACZ Project ID: ***L52550***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52550-06	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477251	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477116	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477152	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52550-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG476983	Selenium, total (3052)	M6020B ICP-MS	IA	Internal standard recovery exceeded the acceptance limits. Concentration of associated target analyte(s) in the sample is < MDL.
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52550
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?	X		

A change was made in the Invoice to section prior to ACZ custody.

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52550
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L52550

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: shannon.ulrich@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: ~~Shannon Ulrich~~ Accounts Payable
Company: Arcadis
E-mail: accounts payable.administration ~~shannon.ulrich~~@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** SW

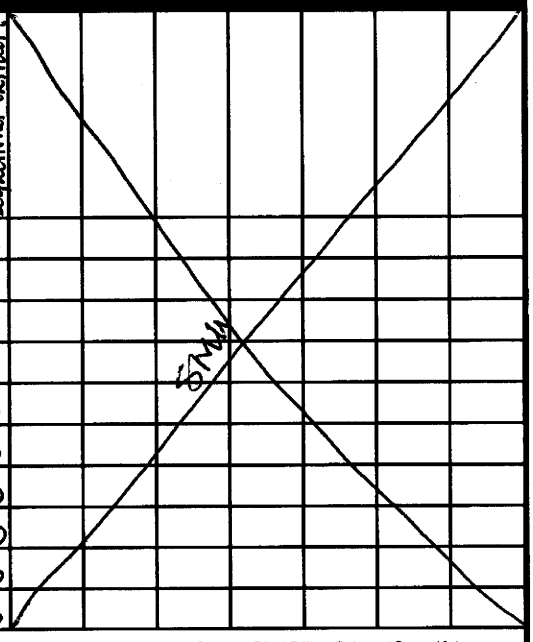
*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK3-14.5-15-052219	5-22-19:1035	SO	1	HOLD
BK3-23-23.5-052219	5-22-19:1055	SO	1	HOLD
BK3-26-27-052219	5-22-19:1115	SO	1	HOLD
1. BK3-31.5-32.5-052219	5-22-19:1130	SO	1	HOLD
BK3-35-35.5-052219	5-22-19:1200	SO	1	HOLD
BK3-46.5-47.5-052219	5-22-19:1230	SO	1	HOLD
BK3-47.5-48.5-052219	5-22-19:1300	SO	1	HOLD
BK3-50.5-52-052219	5-22-19:1320	SO	1	HOLD
BK3-55-56-052219	5-22-19:1400	SO	1	HOLD
BK3-42.5-43.5-052219	5-22-19:1505	SO	1	HOLD



Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom Selective sequential extraction; contact Tim Van Wyngarden
Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/20/19: 1430	FedEx	5/20/19: 1430
			5/21/19 13:21

L52550 Chain of Custod

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 19, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52551

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52551. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52551. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 15, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 19, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52551

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52551. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK3-42.5-43.5-052219

ACZ Sample ID: ***L52551-01***
Date Sampled: *05/22/19 15:05*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	88.9		*	%	0.1	0.5	06/23/19 20:53	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 15:42	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK3-42.5-43.5-052219-DI

ACZ Sample ID: ***L52551-02***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	2.6		*	mg/L	0.1	0.5	07/18/19 13:46	jlw
Calcium, dissolved	M200.7 ICP	2	7.0		*	mg/L	0.2	1	07/18/19 13:46	jlw
Iron, dissolved	M200.7 ICP	2	1.34		*	mg/L	0.06	0.2	07/17/19 21:14	aeh
Magnesium, dissolved	M200.7 ICP	2	1.3	J	*	mg/L	0.4	2	07/17/19 21:14	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/17/19 21:14	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0012		*	mg/L	0.0004	0.001	07/16/19 12:56	bsu
Potassium, dissolved	M200.7 ICP	2	1.4	J	*	mg/L	0.4	2	07/17/19 21:14	aeh
Selenium, dissolved	M200.8 ICP-MS	2	0.0019		*	mg/L	0.0002	0.0005	07/16/19 12:56	bsu
Silicon, dissolved	M200.7 ICP	2	10.0		*	mg/L	0.2	1	07/17/19 21:14	aeh
Sodium, dissolved	M200.7 ICP	2	32.8		*	mg/L	0.4	2	07/18/19 13:46	jlw
Uranium, dissolved	M200.8 ICP-MS	2	0.0017		*	mg/L	0.0002	0.001	07/16/19 12:56	bsu
Vanadium, dissolved	M200.7 ICP	2	0.03	J	*	mg/L	0.01	0.05	07/17/19 21:14	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	66.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	66.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.40	H	*	mg/L	0.01	0.05	07/16/19 22:01	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	36.0	H	*	mg/L	1	5	07/17/19 11:07	ttg

ARCADIS
Project ID:
Sample ID: BK3-42.5-43.5-052219-STEP 1

ACZ Sample ID: ***L52551-03***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	0.3	J	*	mg/L	0.3	1	07/18/19 13:49	jlw
Calcium, dissolved	M200.7 ICP	5	6.7		*	mg/L	0.5	3	07/18/19 13:49	jlw
Iron, dissolved	M200.7 ICP	5		U	*	mg/L	0.2	0.4	07/17/19 21:17	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 21:17	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/17/19 21:17	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.001	J	*	mg/L	0.001	0.003	07/16/19 13:12	bsu
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 21:17	aeh
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/16/19 13:12	bsu
Silicon, dissolved	M200.7 ICP	5	4.6		*	mg/L	0.5	3	07/17/19 21:17	aeh
Sodium, dissolved	M200.7 ICP	5	283		*	mg/L	1	5	07/18/19 13:49	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0051		*	mg/L	0.0005	0.003	07/16/19 13:12	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 21:17	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.11	H	*	mg/L	0.01	0.05	07/16/19 22:02	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	6.1	H	*	mg/L	1	5	07/17/19 11:07	ttg

ARCADIS
Project ID:
Sample ID: BK3-42.5-43.5-052219-STEP 2

ACZ Sample ID: ***L52551-04***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	2	J	*	mg/L	1	6	07/18/19 13:52	jlw
Calcium, dissolved	M200.7 ICP	25	3430		*	mg/L	3	10	07/18/19 13:52	jlw
Iron, dissolved	M200.7 ICP	25		U	*	mg/L	0.8	2	07/17/19 21:21	aeh
Magnesium, dissolved	M200.7 ICP	25	110		*	mg/L	5	30	07/17/19 21:21	aeh
Manganese, dissolved	M200.7 ICP	25	18.5		*	mg/L	0.3	1	07/17/19 21:21	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:52	bsu
Potassium, dissolved	M200.7 ICP	25	14	J	*	mg/L	5	30	07/17/19 21:21	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.004	J	*	mg/L	0.002	0.005	07/16/19 17:52	bsu
Silicon, dissolved	M200.7 ICP	25	13		*	mg/L	3	10	07/17/19 21:21	aeh
Sodium, dissolved	M200.7 ICP	25	20800		*	mg/L	5	30	07/18/19 13:52	jlw
Uranium, dissolved	M200.8 ICP-MS	20	0.037		*	mg/L	0.002	0.01	07/16/19 17:52	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 21:21	aeh

ARCADIS
Project ID:
Sample ID: BK3-42.5-43.5-052219-STEP 3

ACZ Sample ID: ***L52551-05***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	15		*	mg/L	1	5	07/18/19 13:56	jlw
Calcium, dissolved	M200.7 ICP	20	191		*	mg/L	2	10	07/18/19 13:56	jlw
Iron, dissolved	M200.7 ICP	20	35.3		*	mg/L	0.6	2	07/17/19 21:24	aeh
Magnesium, dissolved	M200.7 ICP	20	58		*	mg/L	4	20	07/17/19 21:24	aeh
Manganese, dissolved	M200.7 ICP	20	4.1		*	mg/L	0.2	1	07/17/19 21:24	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/17/19 15:50	bsu
Potassium, dissolved	M200.7 ICP	20	5	J	*	mg/L	4	20	07/17/19 21:24	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.003	J	*	mg/L	0.002	0.005	07/18/19 11:08	mfm
Silicon, dissolved	M200.7 ICP	20	52		*	mg/L	2	10	07/17/19 21:24	aeh
Sodium, dissolved	M200.7 ICP	20	389		*	mg/L	4	20	07/18/19 13:56	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0164		*	mg/L	0.0005	0.003	07/16/19 18:09	bsu
Vanadium, dissolved	M200.7 ICP	20	0.3	J	*	mg/L	0.1	0.5	07/17/19 21:24	aeh

ARCADIS
Project ID:
Sample ID: BK3-42.5-43.5-052219-STEP 4

ACZ Sample ID: ***L52551-06***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	50.2		*	mg/L	0.3	1	07/18/19 13:59	jlw
Calcium, dissolved	M200.7 ICP	5	127		*	mg/L	0.5	3	07/18/19 13:59	jlw
Iron, dissolved	M200.7 ICP	5	2.4		*	mg/L	0.2	0.4	07/17/19 21:27	aeh
Magnesium, dissolved	M200.7 ICP	5	47		*	mg/L	1	5	07/17/19 21:27	aeh
Manganese, dissolved	M200.7 ICP	5	1.86		*	mg/L	0.05	0.3	07/17/19 21:27	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10		U	*	mg/L	0.002	0.005	07/17/19 16:10	bsu
Potassium, dissolved	M200.7 ICP	5	7		*	mg/L	1	5	07/17/19 21:27	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.006		*	mg/L	0.002	0.005	07/18/19 11:10	mfm
Silicon, dissolved	M200.7 ICP	5	41.6		*	mg/L	0.5	3	07/17/19 21:27	aeh
Sodium, dissolved	M200.7 ICP	5	15		*	mg/L	1	5	07/18/19 13:59	jlw
Uranium, dissolved	M200.8 ICP-MS	10	0.004	J	*	mg/L	0.001	0.005	07/17/19 16:10	bsu
Vanadium, dissolved	M200.7 ICP	5	0.22		*	mg/L	0.03	0.1	07/17/19 21:27	aeh

ARCADIS
Project ID:
Sample ID: BK3-42.5-43.5-052219-STEP 5

ACZ Sample ID: ***L52551-07***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	67600			mg/Kg	300	1000	07/17/19 7:27	aeh
Calcium, total (3052)	M6010D ICP	5000	3000			mg/Kg	500	3000	07/17/19 7:27	aeh
Iron, total (3052)	M6010D ICP	5000	33000			mg/Kg	200	400	07/17/19 7:27	aeh
Magnesium, total (3052)	M6010D ICP	5000	8000		*	mg/Kg	1000	5000	07/17/19 7:27	aeh
Manganese, total (3052)	M6010D ICP	5000	250	J		mg/Kg	50	300	07/17/19 7:27	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:09	mfm
Potassium, total (3052)	M6010D ICP	5000	23000			mg/Kg	1000	5000	07/17/19 7:27	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	1	3	07/16/19 12:52	mfm
Silicon, total (3052)	M6010D ICP	5000	334000	O	*	mg/Kg	500	3000	07/17/19 7:27	aeh
Sodium, total (3052)	M6010D ICP	5000	10000		*	mg/Kg	1000	5000	07/17/19 7:27	aeh
Uranium, total (3052)	M6020B ICP-MS	12500	2	J		mg/Kg	1	6	07/16/19 12:52	mfm
Vanadium, total (3052)	M6010D ICP	5000	80	J		mg/Kg	30	100	07/17/19 7:27	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 15:58	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

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ACZ Project ID: ***L52551***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L53239-02DUP	DUP	07/15/19 19:05			328	332	mg/L				1	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477281													
WG477281ICV	ICV	07/18/19 13:23	II190715-2	2		1.964	mg/L	98	95	105			
WG477281ICB	ICB	07/18/19 13:29				U	mg/L		-0.15	0.15			
WG477281LFB	LFB	07/18/19 13:42	II190716-6	1.0006		1.055	mg/L	105	85	115			
L52551-06AS	AS	07/18/19 14:02	II190716-6	5.003	50.2	55.1	mg/L	98	85	115			
L52551-06ASD	ASD	07/18/19 14:06	II190716-6	5.003	50.2	54	mg/L	76	85	115	2	20	M3

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477281													
WG477281ICV	ICV	07/18/19 13:23	II190715-2	100		99.42	mg/L	99	95	105			
WG477281ICB	ICB	07/18/19 13:29				U	mg/L		-0.3	0.3			
WG477281LFB	LFB	07/18/19 13:42	II190716-6	68.11783		71.37	mg/L	105	85	115			
L52551-06AS	AS	07/18/19 14:02	II190716-6	340.58915	127	472.2	mg/L	101	85	115			
L52551-06ASD	ASD	07/18/19 14:06	II190716-6	340.58915	127	462.5	mg/L	99	85	115	2	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	2		1.933	mg/L	97	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.09	0.09			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	1.0018		1.105	mg/L	110	85	115			
L52551-06AS	AS	07/17/19 21:30	II190716-6	5.009	2.4	7.47	mg/L	101	85	115			
L52551-06ASD	ASD	07/17/19 21:34	II190716-6	5.009	2.4	7.48	mg/L	101	85	115	0	20	

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ACZ Project ID: ***L52551***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	100		96.78	mg/L	97	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.6	0.6			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	50.31093		50.4	mg/L	100	85	115			
L52551-06AS	AS	07/17/19 21:30	II190716-6	251.55465	47	287.7	mg/L	96	85	115			
L52551-06ASD	ASD	07/17/19 21:34	II190716-6	251.55465	47	286.9	mg/L	95	85	115	0	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	2		1.89	mg/L	95	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.03	0.03			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	.4995		.515	mg/L	103	85	115			
L52551-06AS	AS	07/17/19 21:30	II190716-6	2.4975	1.86	4.298	mg/L	98	85	115			
L52551-06ASD	ASD	07/17/19 21:34	II190716-6	2.4975	1.86	4.262	mg/L	96	85	115	1	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

ARCADIS

ACZ Project ID: ***L52551***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.0199		.02043	mg/L	103	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00044	0.00044			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.0501		.04605	mg/L	92	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.2505	.024	.271	mg/L	99	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.2505	.024	.273	mg/L	99	70	130	1	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.0199		.02053	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00044	0.00044			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.0501		.0464	mg/L	93	85	115			
L52552-05AS	AS	07/16/19 18:13	MS190606-3	.2505	.003	.268	mg/L	106	70	130			
L52552-05ASD	ASD	07/16/19 18:14	MS190606-3	.2505	.003	.2748	mg/L	109	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.0199		.02033	mg/L	102	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00044	0.00044			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.0501		.05052	mg/L	101	85	115			
L52551-05AS	AS	07/17/19 15:52	MS190606-3	1.002	U	1.065	mg/L	106	70	130			
L52551-05ASD	ASD	07/17/19 15:53	MS190606-3	1.002	U	1.0535	mg/L	105	70	130	1	20	

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			
L52549-02AS	AS	07/16/19 21:53	WI190704-2	.5	.04	.571	mg/L	106	90	110			
L52549-03DUP	DUP	07/16/19 21:55			.08	.085	mg/L				6	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	20		19.45	mg/L	97	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.6	0.6			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	99.96426		99.85	mg/L	100	85	115			
L52551-06AS	AS	07/17/19 21:30	II190716-6	499.8213	7	483.9	mg/L	95	85	115			
L52551-06ASD	ASD	07/17/19 21:34	II190716-6	499.8213	7	484.6	mg/L	96	85	115	0	20	

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ACZ Project ID: ***L52551***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.04886	mg/L	98	90	110			
WG476973ICB	ICB	07/16/19 12:41				.00015	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05005		.04643	mg/L	93	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.25025	.0018	.25275	mg/L	100	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.25025	.0018	.25289	mg/L	100	70	130	0	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05164	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				.00015	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05005		.04786	mg/L	96	85	115			
L52552-05AS	AS	07/16/19 18:13	MS190606-3	.25025	.0018	.77364	mg/L	308	70	130			M1
L52552-05ASD	ASD	07/16/19 18:14	MS190606-3	.25025	.0018	.79814	mg/L	318	70	130	3	20	M1
WG477251													
WG477251ICV	ICV	07/18/19 10:43	MS190630-2	.05		.04781	mg/L	96	90	110			
WG477251ICB	ICB	07/18/19 10:45				U	mg/L		-0.00022	0.00022			
WG477251LFB	LFB	07/18/19 10:47	MS190606-3	.05005		.04778	mg/L	95	85	115			
L52547-05AS	AS	07/18/19 10:50	MS190606-3	1.001	.003	1.7341	mg/L	173	70	130			M1
L52547-05ASD	ASD	07/18/19 10:52	MS190606-3	1.001	.003	1.7046	mg/L	170	70	130	2	20	M1

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	20		19.5	mg/L	98	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.3	0.3			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	10.008		10.66	mg/L	107	85	115			
L52551-06AS	AS	07/17/19 21:30	II190716-6	50.04	41.6	92.35	mg/L	101	85	115			
L52551-06ASD	ASD	07/17/19 21:34	II190716-6	50.04	41.6	91.6	mg/L	100	85	115	1	20	

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ACZ Project ID: ***L52551***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477281													
WG477281ICV	ICV	07/18/19 13:23	II190715-2	100		100.9	mg/L	101	95	105			
WG477281ICB	ICB	07/18/19 13:29				U	mg/L		-0.6	0.6			
WG477281LFB	LFB	07/18/19 13:42	II190716-6	100.0471		104.7	mg/L	105	85	115			
L52551-06AS	AS	07/18/19 14:02	II190716-6	500.2355	15	521	mg/L	101	85	115			
L52551-06ASD	ASD	07/18/19 14:06	II190716-6	500.2355	15	511	mg/L	99	85	115	2	20	

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477100													
WG477100ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477100ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477100LFB	LFB	07/17/19 11:04	WI181024-4	10.03		9.3	mg/L	93	90	110			
L52547-03DUP	DUP	07/17/19 11:04			4.6	4.3	mg/L				7	20	RA
L52548-02AS	AS	07/17/19 11:04	WI181024-4	100.3	13.5	111	mg/L	97	90	110			

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ACZ Project ID: ***L52551***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.25	.0006	.24604	mg/L	98	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.25	.0006	.24985	mg/L	100	70	130	2	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05064	mg/L	101	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05		.0471	mg/L	94	85	115			
L52552-05AS	AS	07/16/19 18:13	MS190606-3	.25	.0063	.25382	mg/L	99	70	130			
L52552-05ASD	ASD	07/16/19 18:14	MS190606-3	.25	.0063	.2616	mg/L	102	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.05		.05015	mg/L	100	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00022	0.00022			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.05		.05021	mg/L	100	85	115			
L52551-05AS	AS	07/17/19 15:52	MS190606-3	1	.018	1.0593	mg/L	104	70	130			
L52551-05ASD	ASD	07/17/19 15:53	MS190606-3	1	.018	1.0582	mg/L	104	70	130	0	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	2		1.9385	mg/L	97	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.015	0.015			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	.5005		.5032	mg/L	101	85	115			
L52551-06AS	AS	07/17/19 21:30	II190716-6	2.5025	.22	2.609	mg/L	95	85	115			
L52551-06ASD	ASD	07/17/19 21:34	II190716-6	2.5025	.22	2.628	mg/L	96	85	115	1	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52551***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52551-02	WG477281	Aluminum, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
L52551-03	WG477281	Aluminum, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476973	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476973	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

ARCADIS ACZ Project ID: ***L52551***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52551-04	WG477281	Aluminum, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477002	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
		Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L52551-05	WG477281	Aluminum, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477251	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L52551-06	WG477281	Aluminum, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477251	Selenium, dissolved	M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477152	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52551-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG476983	Selenium, total (3052)	M6020B ICP-MS	IA	Internal standard recovery exceeded the acceptance limits. Concentration of associated target analyte(s) in the sample is < MDL.
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52551
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?	X		

A change was made in the Invoice to section prior to ACZ custody.

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID:	L52551
Date Received:	05/29/2019 13:21
Received By:	
Date Printed:	6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L 52551

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: shannon.ulrich@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: ~~Shannon Ulrich~~ Accounts Payable
Company: Arcadis
E-mail: accounts payable.administration@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** SU

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Custom Selective Sequential Extraction
BK3-14.5-15-052219	5-22-19:1035	SO	1	HOLD
BK3-23-23.5-052219	5-22-19:1055	SO	1	HOLD
BK3-26-27-052219	5-22-19:1115	SO	1	HOLD
BK3-31.5-32.5-052219	5-22-19:1130	SO	1	HOLD
BK3-35-35.5-052219	5-22-19:1200	SO	1	HOLD
BK3-46.5-47.5-052219	5-22-19:1230	SO	1	HOLD
BK3-47.5-48.5-052219	5-22-19:1300	SO	1	HOLD
BK3-50.5-52-052219	5-22-19:1320	SO	1	HOLD
BK3-55-56-052219	5-22-19:1400	SO	1	HOLD
BK3-42.5-43.5-052219	5-22-19:1505	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom Selective Sequential extraction; contact Tim Van Wyngarden
*Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/20/19: 1430	FedEx	5/20/19: 1430
			5/29/19 13:21

L52551 1007101127

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

COPY

L52551 Chain of Custod

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 19, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52552

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52552. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52552. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 15, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 19, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52552

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52552. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK3-47.5-48.5-052219

ACZ Sample ID: ***L52552-01***
Date Sampled: *05/22/19 13:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	90.1		*	%	0.1	0.5	06/24/19 1:20	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 16:21	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK3-47.5-48.5-052219-DI

ACZ Sample ID: ***L52552-02***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	0.6		*	mg/L	0.1	0.5	07/18/19 14:09	jlw
Calcium, dissolved	M200.7 ICP	2	3.4		*	mg/L	0.2	1	07/18/19 14:09	jlw
Iron, dissolved	M200.7 ICP	2	1.27		*	mg/L	0.06	0.2	07/17/19 21:37	aeh
Magnesium, dissolved	M200.7 ICP	2		U	*	mg/L	0.4	2	07/17/19 21:37	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/17/19 21:37	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0017		*	mg/L	0.0004	0.001	07/16/19 13:01	bsu
Potassium, dissolved	M200.7 ICP	2	0.9	J	*	mg/L	0.4	2	07/17/19 21:37	aeh
Selenium, dissolved	M200.8 ICP-MS	2	0.0012		*	mg/L	0.0002	0.0005	07/16/19 13:01	bsu
Silicon, dissolved	M200.7 ICP	2	6.7		*	mg/L	0.2	1	07/17/19 21:37	aeh
Sodium, dissolved	M200.7 ICP	2	13.8		*	mg/L	0.4	2	07/18/19 14:09	jlw
Uranium, dissolved	M200.8 ICP-MS	2	0.0004	J	*	mg/L	0.0002	0.001	07/16/19 13:01	bsu
Vanadium, dissolved	M200.7 ICP	2	0.02	J	*	mg/L	0.01	0.05	07/17/19 21:37	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	26.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	26.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	H	*	mg/L	0.01	0.05	07/16/19 22:03	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	10.3	H	*	mg/L	1	5	07/17/19 11:07	ttg

ARCADIS
Project ID:
Sample ID: BK3-47.5-48.5-052219-STEP 1

ACZ Sample ID: ***L52552-03***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	0.7	J	*	mg/L	0.3	1	07/18/19 14:12	jlw
Calcium, dissolved	M200.7 ICP	5	1.8	J	*	mg/L	0.5	3	07/18/19 14:12	jlw
Iron, dissolved	M200.7 ICP	5	0.9		*	mg/L	0.2	0.4	07/17/19 21:40	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 21:40	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/17/19 21:40	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.001	J	*	mg/L	0.001	0.003	07/16/19 13:14	bsu
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 21:40	aeh
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/16/19 13:14	bsu
Silicon, dissolved	M200.7 ICP	5	5.4		*	mg/L	0.5	3	07/17/19 21:40	aeh
Sodium, dissolved	M200.7 ICP	5	355		*	mg/L	1	5	07/18/19 14:12	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0018	J	*	mg/L	0.0005	0.003	07/16/19 13:14	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 21:40	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.05	H	*	mg/L	0.01	0.05	07/16/19 22:04	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	2.3	BH	*	mg/L	1	5	07/17/19 11:07	ttg

ARCADIS
Project ID:
Sample ID: BK3-47.5-48.5-052219-STEP 2

ACZ Sample ID: ***L52552-04***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	2	J	*	mg/L	1	6	07/18/19 14:22	jlw
Calcium, dissolved	M200.7 ICP	25	1190		*	mg/L	3	10	07/18/19 14:22	jlw
Iron, dissolved	M200.7 ICP	25	4.1		*	mg/L	0.8	2	07/17/19 21:50	aeh
Magnesium, dissolved	M200.7 ICP	25	20	J	*	mg/L	5	30	07/17/19 21:50	aeh
Manganese, dissolved	M200.7 ICP	25	9.1		*	mg/L	0.3	1	07/17/19 21:50	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:54	bsu
Potassium, dissolved	M200.7 ICP	25		U	*	mg/L	5	30	07/17/19 21:50	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.004	J	*	mg/L	0.002	0.005	07/16/19 17:54	bsu
Silicon, dissolved	M200.7 ICP	25	3	J	*	mg/L	3	10	07/17/19 21:50	aeh
Sodium, dissolved	M200.7 ICP	25	21300		*	mg/L	5	30	07/18/19 14:22	jlw
Uranium, dissolved	M200.8 ICP-MS	20	0.010		*	mg/L	0.002	0.01	07/16/19 17:54	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 21:50	aeh

ARCADIS
Project ID:
Sample ID: BK3-47.5-48.5-052219-STEP 3

ACZ Sample ID: ***L52552-05***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	15		*	mg/L	1	5	07/18/19 14:25	jlw
Calcium, dissolved	M200.7 ICP	20	83		*	mg/L	2	10	07/18/19 14:25	jlw
Iron, dissolved	M200.7 ICP	20	64.3		*	mg/L	0.6	2	07/17/19 21:54	aeh
Magnesium, dissolved	M200.7 ICP	20	35		*	mg/L	4	20	07/17/19 21:54	aeh
Manganese, dissolved	M200.7 ICP	20	0.7	J	*	mg/L	0.2	1	07/17/19 21:54	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/17/19 15:55	bsu
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/17/19 21:54	aeh
Selenium, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.002	0.005	07/18/19 11:12	mfm
Silicon, dissolved	M200.7 ICP	20	28		*	mg/L	2	10	07/17/19 21:54	aeh
Sodium, dissolved	M200.7 ICP	20	81		*	mg/L	4	20	07/18/19 14:25	jlw
Uranium, dissolved	M200.8 ICP-MS	20	0.007	J	*	mg/L	0.002	0.01	07/17/19 15:55	bsu
Vanadium, dissolved	M200.7 ICP	20	0.2	J	*	mg/L	0.1	0.5	07/17/19 21:54	aeh

ARCADIS
Project ID:
Sample ID: BK3-47.5-48.5-052219-STEP 4

ACZ Sample ID: ***L52552-06***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	16.7		*	mg/L	0.3	1	07/18/19 14:29	jlw
Calcium, dissolved	M200.7 ICP	5	13.1		*	mg/L	0.5	3	07/18/19 14:29	jlw
Iron, dissolved	M200.7 ICP	5	2.7		*	mg/L	0.2	0.4	07/17/19 21:57	aeh
Magnesium, dissolved	M200.7 ICP	5	5		*	mg/L	1	5	07/17/19 21:57	aeh
Manganese, dissolved	M200.7 ICP	5	0.14	J	*	mg/L	0.05	0.3	07/17/19 21:57	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10	0.003	J	*	mg/L	0.002	0.005	07/17/19 16:12	bsu
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 21:57	aeh
Selenium, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.002	0.005	07/18/19 11:14	mfm
Silicon, dissolved	M200.7 ICP	5	16.4		*	mg/L	0.5	3	07/17/19 21:57	aeh
Sodium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/18/19 14:29	jlw
Uranium, dissolved	M200.8 ICP-MS	10	0.001	J	*	mg/L	0.001	0.005	07/17/19 16:12	bsu
Vanadium, dissolved	M200.7 ICP	5	0.05	J	*	mg/L	0.03	0.1	07/17/19 21:57	aeh

ARCADIS
Project ID:
Sample ID: BK3-47.5-48.5-052219-STEP 5

ACZ Sample ID: ***L52552-07***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	31300			mg/Kg	300	1000	07/17/19 7:31	aeh
Calcium, total (3052)	M6010D ICP	5000	8900			mg/Kg	500	3000	07/17/19 7:31	aeh
Iron, total (3052)	M6010D ICP	5000	12500			mg/Kg	200	400	07/17/19 7:31	aeh
Magnesium, total (3052)	M6010D ICP	5000	2000	J	*	mg/Kg	1000	5000	07/17/19 7:31	aeh
Manganese, total (3052)	M6010D ICP	5000	180	J		mg/Kg	50	300	07/17/19 7:31	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:10	mfm
Potassium, total (3052)	M6010D ICP	5000	19000			mg/Kg	1000	5000	07/17/19 7:31	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	1	3	07/16/19 12:53	mfm
Silicon, total (3052)	M6010D ICP	5000	395000	O	*	mg/Kg	500	3000	07/17/19 7:31	aeh
Sodium, total (3052)	M6010D ICP	5000	11000		*	mg/Kg	1000	5000	07/17/19 7:31	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:53	mfm
Vanadium, total (3052)	M6010D ICP	5000	30	J		mg/Kg	30	100	07/17/19 7:31	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 16:29	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

ARCADIS

ACZ Project ID: ***L52552***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L53239-02DUP	DUP	07/15/19 19:05			328	332	mg/L				1	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477281													
WG477281ICV	ICV	07/18/19 13:23	II190715-2	2		1.964	mg/L	98	95	105			
WG477281ICB	ICB	07/18/19 13:29				U	mg/L		-0.15	0.15			
WG477281LFB	LFB	07/18/19 13:42	II190716-6	1.0006		1.055	mg/L	105	85	115			
L52551-06AS	AS	07/18/19 14:02	II190716-6	5.003	50.2	55.1	mg/L	98	85	115			
L52551-06ASD	ASD	07/18/19 14:06	II190716-6	5.003	50.2	54	mg/L	76	85	115	2	20	M3

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477281													
WG477281ICV	ICV	07/18/19 13:23	II190715-2	100		99.42	mg/L	99	95	105			
WG477281ICB	ICB	07/18/19 13:29				U	mg/L		-0.3	0.3			
WG477281LFB	LFB	07/18/19 13:42	II190716-6	68.11783		71.37	mg/L	105	85	115			
L52551-06AS	AS	07/18/19 14:02	II190716-6	340.58915	127	472.2	mg/L	101	85	115			
L52551-06ASD	ASD	07/18/19 14:06	II190716-6	340.58915	127	462.5	mg/L	99	85	115	2	20	

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	2		1.933	mg/L	97	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.09	0.09			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	1.0018		1.105	mg/L	110	85	115			
L52551-06AS	AS	07/17/19 21:30	II190716-6	5.009	2.4	7.47	mg/L	101	85	115			
L52551-06ASD	ASD	07/17/19 21:34	II190716-6	5.009	2.4	7.48	mg/L	101	85	115	0	20	

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ACZ Project ID: ***L52552***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	100		96.78	mg/L	97	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.6	0.6			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	50.31093		50.4	mg/L	100	85	115			
L52551-06AS	AS	07/17/19 21:30	II190716-6	251.55465	47	287.7	mg/L	96	85	115			
L52551-06ASD	ASD	07/17/19 21:34	II190716-6	251.55465	47	286.9	mg/L	95	85	115	0	20	

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	2		1.89	mg/L	95	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.03	0.03			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	.4995		.515	mg/L	103	85	115			
L52551-06AS	AS	07/17/19 21:30	II190716-6	2.4975	1.86	4.298	mg/L	98	85	115			
L52551-06ASD	ASD	07/17/19 21:34	II190716-6	2.4975	1.86	4.262	mg/L	96	85	115	1	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

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ACZ Project ID: ***L52552***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.0199		.02043	mg/L	103	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00044	0.00044			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.0501		.04605	mg/L	92	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.2505	.024	.271	mg/L	99	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.2505	.024	.273	mg/L	99	70	130	1	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.0199		.02053	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00044	0.00044			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.0501		.0464	mg/L	93	85	115			
L52552-05AS	AS	07/16/19 18:13	MS190606-3	.2505	.003	.268	mg/L	106	70	130			
L52552-05ASD	ASD	07/16/19 18:14	MS190606-3	.2505	.003	.2748	mg/L	109	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.0199		.02033	mg/L	102	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00044	0.00044			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.0501		.05052	mg/L	101	85	115			
L52970-07AS	AS	07/17/19 15:30	MS190606-3	.0501	.0082	.05805	mg/L	100	70	130			
L52970-07ASD	ASD	07/17/19 15:32	MS190606-3	.0501	.0082	.05934	mg/L	102	70	130	2	20	

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			
L52549-02AS	AS	07/16/19 21:53	WI190704-2	.5	.04	.571	mg/L	106	90	110			
L52549-03DUP	DUP	07/16/19 21:55			.08	.085	mg/L				6	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	20		19.45	mg/L	97	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.6	0.6			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	99.96426		99.85	mg/L	100	85	115			
L52551-06AS	AS	07/17/19 21:30	II190716-6	499.8213	7	483.9	mg/L	95	85	115			
L52551-06ASD	ASD	07/17/19 21:34	II190716-6	499.8213	7	484.6	mg/L	96	85	115	0	20	

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ACZ Project ID: ***L52552***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.04886	mg/L	98	90	110			
WG476973ICB	ICB	07/16/19 12:41				.00015	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05005		.04643	mg/L	93	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.25025	.0018	.25275	mg/L	100	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.25025	.0018	.25289	mg/L	100	70	130	0	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05164	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				.00015	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05005		.04786	mg/L	96	85	115			
L52552-05AS	AS	07/16/19 18:13	MS190606-3	.25025	.0018	.77364	mg/L	308	70	130			M1
L52552-05ASD	ASD	07/16/19 18:14	MS190606-3	.25025	.0018	.79814	mg/L	318	70	130	3	20	M1
WG477251													
WG477251ICV	ICV	07/18/19 10:43	MS190630-2	.05		.04781	mg/L	96	90	110			
WG477251ICB	ICB	07/18/19 10:45				U	mg/L		-0.00022	0.00022			
WG477251LFB	LFB	07/18/19 10:47	MS190606-3	.05005		.04778	mg/L	95	85	115			
L52547-05AS	AS	07/18/19 10:50	MS190606-3	1.001	.003	1.7341	mg/L	173	70	130			M1
L52547-05ASD	ASD	07/18/19 10:52	MS190606-3	1.001	.003	1.7046	mg/L	170	70	130	2	20	M1
L52553-06AS	AS	07/18/19 11:19	MS190606-3	1.001	.006	1.2629	mg/L	126	70	130			
L52553-06ASD	ASD	07/18/19 11:21	MS190606-3	1.001	.006	1.2466	mg/L	124	70	130	1	20	

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	20		19.5	mg/L	98	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.3	0.3			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	10.008		10.66	mg/L	107	85	115			
L52551-06AS	AS	07/17/19 21:30	II190716-6	50.04	41.6	92.35	mg/L	101	85	115			
L52551-06ASD	ASD	07/17/19 21:34	II190716-6	50.04	41.6	91.6	mg/L	100	85	115	1	20	

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ACZ Project ID: ***L52552***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477281													
WG477281ICV	ICV	07/18/19 13:23	II190715-2	100		100.9	mg/L	101	95	105			
WG477281ICB	ICB	07/18/19 13:29				U	mg/L		-0.6	0.6			
WG477281LFB	LFB	07/18/19 13:42	II190716-6	100.0471		104.7	mg/L	105	85	115			
L52551-06AS	AS	07/18/19 14:02	II190716-6	500.2355	15	521	mg/L	101	85	115			
L52551-06ASD	ASD	07/18/19 14:06	II190716-6	500.2355	15	511	mg/L	99	85	115	2	20	

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477100													
WG477100ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477100ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477100LFB	LFB	07/17/19 11:04	WI181024-4	10.03		9.3	mg/L	93	90	110			
L52547-03DUP	DUP	07/17/19 11:04			4.6	4.3	mg/L				7	20	RA
L52548-02AS	AS	07/17/19 11:04	WI181024-4	100.3	13.5	111	mg/L	97	90	110			
L52553-02DUP	DUP	07/17/19 11:07			11.4	11.4	mg/L				0	20	
L52553-03AS	AS	07/17/19 11:07	WI181024-4	100.3	U	97.1	mg/L	97	90	110			

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ACZ Project ID: ***L52552***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.25	.0006	.24604	mg/L	98	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.25	.0006	.24985	mg/L	100	70	130	2	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05064	mg/L	101	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05		.0471	mg/L	94	85	115			
L52552-05AS	AS	07/16/19 18:13	MS190606-3	.25	.0063	.25382	mg/L	99	70	130			
L52552-05ASD	ASD	07/16/19 18:14	MS190606-3	.25	.0063	.2616	mg/L	102	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.05		.05015	mg/L	100	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00022	0.00022			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.05		.05021	mg/L	100	85	115			
L52970-07AS	AS	07/17/19 15:30	MS190606-3	.05	.0012	.05231	mg/L	102	70	130			
L52970-07ASD	ASD	07/17/19 15:32	MS190606-3	.05	.0012	.05402	mg/L	106	70	130	3	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	2		1.9385	mg/L	97	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.015	0.015			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	.5005		.5032	mg/L	101	85	115			
L52551-06AS	AS	07/17/19 21:30	II190716-6	2.5025	.22	2.609	mg/L	95	85	115			
L52551-06ASD	ASD	07/17/19 21:34	II190716-6	2.5025	.22	2.628	mg/L	96	85	115	1	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52552***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52552-02	WG477281	Aluminum, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
			D516-02/-07 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476973	Uranium, dissolved	M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.

ARCADIS ACZ Project ID: ***L52552***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52552-03	WG477281	Aluminum, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG476973	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476973	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG476973	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52552-04	WG477281	Aluminum, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477002	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
		Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

ARCADIS ACZ Project ID: ***L52552***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52552-05	WG477281	Aluminum, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477251	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477152	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52552-06	WG477281	Aluminum, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477251	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
	WG477152	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52552-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG476983	Selenium, total (3052)	M6020B ICP-MS	IA	Internal standard recovery exceeded the acceptance limits. Concentration of associated target analyte(s) in the sample is < MDL.
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52552
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?	X		

A change was made in the Invoice to section prior to ACZ custody.

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID:	L52552
Date Received:	05/29/2019 13:21
Received By:	
Date Printed:	6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L 52552

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: shannon.ulrich@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: ~~Shannon Ulrich~~ Accounts Payable
Company: Arcadis
E-mail: ~~shannon.ulrich~~ accounts payable.administration@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich **Sampler's Site Information** State NM Zip code 87021 Time Zone MST

***Sampler's Signature:** SU

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract.
BK3-14.5-15-052219	5-22-19:1035	SO	1	HOLD
BK3-23-23.5-052219	5-22-19:1055	SO	1	HOLD
BK3-26-27-052219	5-22-19:1115	SO	1	HOLD
BK3-31.5-32.5-052219	5-22-19:1130	SO	1	HOLD
BK3-35-35.5-052219	5-22-19:1200	SO	1	HOLD
BK3-46.5-47.5-052219	5-22-19:1230	SO	1	HOLD
BK3-47.5-48.5-052219	5-22-19:1300	SO	1	HOLD
BK3-50.5-52-052219	5-22-19:1320	SO	1	HOLD
BK3-55-56-052219	5-22-19:1400	SO	1	HOLD
BK3-42.5-43.5-052219	5-22-19:1505	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

COPY

REMARKS

Custom Selective sequential extraction; contact Tim Van Wyngarden
Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/20/19: 1430	FedEx	5/20/19: 1430
			5/29/19 13:21

L52552 1007101127

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L52552 Chain of Custod

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 19, 2019

Report to:
Shannon Ulrich
ARCADIS
630 Plaza Drive
Suite 100
Highlands Ranch, CO 80129

cc: Adam Arguello

Bill to:
Accounts Payable
ARCADIS
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129

Project ID: CO000120.1901.30007
ACZ Project ID: L52553

Shannon Ulrich:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 29, 2019. This project has been assigned to ACZ's project number, L52553. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52553. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 15, 2020. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ARCADIS

July 19, 2019

Project ID: CO000120.1901.30007
ACZ Project ID: L52553

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from ARCADIS on May 29, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52553. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with "H" flags (H3, H4, HD). See the Extended Qualifier Report for more information.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. Silicon (B1) - Target analyte detected in prep blank at or above the method reporting limit. The PBS is prepared using Ottowa Sand containing Si.

2. Silicon (E1) - Si concentration estimated. Analyte exceeded calibration range.

ARCADIS
Project ID: CO000120.1901.30007
Sample ID: BK3-50.5-52-052219

ACZ Sample ID: ***L52553-01***
Date Sampled: *05/22/19 13:20*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	90.7		*	%	0.1	0.5	06/24/19 5:47	qcm/ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/19/19 16:59	ajm
Sequential Batch Extraction	Tessier, et al.								06/19/19 11:00	ajm

ARCADIS
Project ID:
Sample ID: BK3-50.5-52-052219-DI

ACZ Sample ID: ***L52553-02***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2	1.1		*	mg/L	0.1	0.5	07/18/19 14:32	jlw
Calcium, dissolved	M200.7 ICP	2	3.7		*	mg/L	0.2	1	07/18/19 14:32	jlw
Iron, dissolved	M200.7 ICP	2	1.04		*	mg/L	0.06	0.2	07/17/19 22:00	aeh
Magnesium, dissolved	M200.7 ICP	2	0.4	J	*	mg/L	0.4	2	07/17/19 22:00	aeh
Manganese, dissolved	M200.7 ICP	2		U	*	mg/L	0.02	0.1	07/17/19 22:00	aeh
Molybdenum, dissolved	M200.8 ICP-MS	2	0.0182		*	mg/L	0.0004	0.001	07/16/19 13:03	bsu
Potassium, dissolved	M200.7 ICP	2	1.2	J	*	mg/L	0.4	2	07/17/19 22:00	aeh
Selenium, dissolved	M200.8 ICP-MS	2	0.0004	J	*	mg/L	0.0002	0.0005	07/16/19 13:03	bsu
Silicon, dissolved	M200.7 ICP	2	7.3		*	mg/L	0.2	1	07/17/19 22:00	aeh
Sodium, dissolved	M200.7 ICP	2	19.4		*	mg/L	0.4	2	07/18/19 14:32	jlw
Uranium, dissolved	M200.8 ICP-MS	2	0.0006	J	*	mg/L	0.0002	0.001	07/16/19 13:03	bsu
Vanadium, dissolved	M200.7 ICP	2	0.02	J	*	mg/L	0.01	0.05	07/17/19 22:00	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	46.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Carbonate as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Hydroxide as CaCO3		1		UH	*	mg/L	3	20	07/15/19 0:00	enb
Total Alkalinity		1	46.7	H	*	mg/L	3	20	07/15/19 0:00	enb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.09	H	*	mg/L	0.01	0.05	07/16/19 22:05	pjb
Sulfate	D516-02/-07 - Turbidimetric	1	11.4	H	*	mg/L	1	5	07/17/19 11:07	ttg

ARCADIS
Project ID:
Sample ID: BK3-50.5-52-052219-STEP 1

ACZ Sample ID: ***L52553-03***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	1.0		*	mg/L	0.3	1	07/18/19 14:35	jlw
Calcium, dissolved	M200.7 ICP	5	2.7	J	*	mg/L	0.5	3	07/18/19 14:35	jlw
Iron, dissolved	M200.7 ICP	5	1.6		*	mg/L	0.2	0.4	07/17/19 22:03	aeh
Magnesium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 22:03	aeh
Manganese, dissolved	M200.7 ICP	5		U	*	mg/L	0.05	0.3	07/17/19 22:03	aeh
Molybdenum, dissolved	M200.8 ICP-MS	5	0.011		*	mg/L	0.001	0.003	07/16/19 13:16	bsu
Potassium, dissolved	M200.7 ICP	5		U	*	mg/L	1	5	07/17/19 22:03	aeh
Selenium, dissolved	M200.8 ICP-MS	5		U	*	mg/L	0.0005	0.001	07/16/19 13:16	bsu
Silicon, dissolved	M200.7 ICP	5	7.4		*	mg/L	0.5	3	07/17/19 22:03	aeh
Sodium, dissolved	M200.7 ICP	5	333		*	mg/L	1	5	07/18/19 14:35	jlw
Uranium, dissolved	M200.8 ICP-MS	5	0.0018	J	*	mg/L	0.0005	0.003	07/16/19 13:16	bsu
Vanadium, dissolved	M200.7 ICP	5		U	*	mg/L	0.03	0.1	07/17/19 22:03	aeh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	1	0.06	H	*	mg/L	0.01	0.05	07/16/19 22:06	pjb
Sulfate	D516-02/-07 - Turbidimetric	10		UH	*	mg/L	10	50	07/17/19 11:07	ttg

ARCADIS
Project ID:
Sample ID: BK3-50.5-52-052219-STEP 2

ACZ Sample ID: ***L52553-04***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	25	3	J	*	mg/L	1	6	07/18/19 14:39	jlw
Calcium, dissolved	M200.7 ICP	25	1740		*	mg/L	3	10	07/18/19 14:39	jlw
Iron, dissolved	M200.7 ICP	25	3.4		*	mg/L	0.8	2	07/17/19 22:07	aeh
Magnesium, dissolved	M200.7 ICP	25	42		*	mg/L	5	30	07/17/19 22:07	aeh
Manganese, dissolved	M200.7 ICP	25	9.0		*	mg/L	0.3	1	07/17/19 22:07	aeh
Molybdenum, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.004	0.01	07/16/19 17:56	bsu
Potassium, dissolved	M200.7 ICP	25	9	J	*	mg/L	5	30	07/17/19 22:07	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.004	J	*	mg/L	0.002	0.005	07/16/19 17:56	bsu
Silicon, dissolved	M200.7 ICP	25	9	J	*	mg/L	3	10	07/17/19 22:07	aeh
Sodium, dissolved	M200.7 ICP	25	21400		*	mg/L	5	30	07/18/19 14:39	jlw
Uranium, dissolved	M200.8 ICP-MS	20	0.015		*	mg/L	0.002	0.01	07/16/19 17:56	bsu
Vanadium, dissolved	M200.7 ICP	25		U	*	mg/L	0.1	0.6	07/17/19 22:07	aeh

ARCADIS
Project ID:
Sample ID: BK3-50.5-52-052219-STEP 3

ACZ Sample ID: ***L52553-05***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	20	11		*	mg/L	1	5	07/18/19 18:33	jlw
Calcium, dissolved	M200.7 ICP	10	69		*	mg/L	1	5	07/17/19 12:21	dcm
Iron, dissolved	M200.7 ICP	10	41.2		*	mg/L	0.3	0.8	07/17/19 12:21	dcm
Magnesium, dissolved	M200.7 ICP	20	27		*	mg/L	4	20	07/18/19 18:33	jlw
Manganese, dissolved	M200.7 ICP	20	1.3		*	mg/L	0.2	1	07/18/19 18:33	jlw
Molybdenum, dissolved	M200.8 ICP-MS	20	0.005	J	*	mg/L	0.004	0.01	07/17/19 15:57	bsu
Potassium, dissolved	M200.7 ICP	20		U	*	mg/L	4	20	07/19/19 10:52	jlw
Selenium, dissolved	M200.8 ICP-MS	20		U	*	mg/L	0.002	0.005	07/18/19 11:16	mfm
Silicon, dissolved	M200.7 ICP	10	30		*	mg/L	1	5	07/17/19 12:21	dcm
Sodium, dissolved	M200.7 ICP	10	181		*	mg/L	2	10	07/17/19 12:21	dcm
Uranium, dissolved	M200.8 ICP-MS	20	0.006	J	*	mg/L	0.002	0.01	07/17/19 15:57	bsu
Vanadium, dissolved	M200.7 ICP	10	0.21	J	*	mg/L	0.05	0.3	07/17/19 12:21	dcm

ARCADIS
Project ID:
Sample ID: BK3-50.5-52-052219-STEP 4

ACZ Sample ID: ***L52553-06***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Leachate*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5	28.5		*	mg/L	0.3	1	07/18/19 14:42	jlw
Calcium, dissolved	M200.7 ICP	5	32.1		*	mg/L	0.5	3	07/18/19 14:42	jlw
Iron, dissolved	M200.7 ICP	5	3.9		*	mg/L	0.2	0.4	07/17/19 22:10	aeh
Magnesium, dissolved	M200.7 ICP	5	13		*	mg/L	1	5	07/17/19 22:10	aeh
Manganese, dissolved	M200.7 ICP	5	0.43		*	mg/L	0.05	0.3	07/17/19 22:10	aeh
Molybdenum, dissolved	M200.8 ICP-MS	10	0.004	J	*	mg/L	0.002	0.005	07/17/19 16:13	bsu
Potassium, dissolved	M200.7 ICP	5	2	J	*	mg/L	1	5	07/17/19 22:10	aeh
Selenium, dissolved	M200.8 ICP-MS	20	0.006		*	mg/L	0.002	0.005	07/18/19 11:17	mfm
Silicon, dissolved	M200.7 ICP	5	24.0		*	mg/L	0.5	3	07/17/19 22:10	aeh
Sodium, dissolved	M200.7 ICP	5	5		*	mg/L	1	5	07/18/19 14:42	jlw
Uranium, dissolved	M200.8 ICP-MS	10	0.002	J	*	mg/L	0.001	0.005	07/17/19 16:13	bsu
Vanadium, dissolved	M200.7 ICP	5	0.09	J	*	mg/L	0.03	0.1	07/17/19 22:10	aeh

ARCADIS
Project ID:
Sample ID: BK3-50.5-52-052219-STEP 5

ACZ Sample ID: ***L52553-07***
Date Sampled: *05/22/19 00:00*
Date Received: *05/29/19*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3052)	M6010D ICP	5000	26400			mg/Kg	300	1000	07/17/19 7:34	aeh
Calcium, total (3052)	M6010D ICP	5000	900	J		mg/Kg	500	3000	07/17/19 7:34	aeh
Iron, total (3052)	M6010D ICP	5000	9300			mg/Kg	200	400	07/17/19 7:34	aeh
Magnesium, total (3052)	M6010D ICP	5000		U	*	mg/Kg	1000	5000	07/17/19 7:34	aeh
Manganese, total (3052)	M6010D ICP	5000	100	J		mg/Kg	50	300	07/17/19 7:34	aeh
Molybdenum, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	3	6	07/17/19 13:12	mfm
Potassium, total (3052)	M6010D ICP	5000	16000			mg/Kg	1000	5000	07/17/19 7:34	aeh
Selenium, total (3052)	M6020B ICP-MS	12500		U	*	mg/Kg	1	3	07/16/19 12:55	mfm
Silicon, total (3052)	M6010D ICP	5000	403000	O	*	mg/Kg	500	3000	07/17/19 7:34	aeh
Sodium, total (3052)	M6010D ICP	5000	8000		*	mg/Kg	1000	5000	07/17/19 7:34	aeh
Uranium, total (3052)	M6020B ICP-MS	12500		U		mg/Kg	1	6	07/16/19 12:55	mfm
Vanadium, total (3052)	M6010D ICP	5000		U		mg/Kg	30	100	07/17/19 7:34	aeh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
ICPMS 3052 Digestion	M3052								07/15/19 17:00	cra/ajm

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

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ACZ Project ID: ***L52553***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476933													
WG476933PBW	PBW	07/15/19 15:35				4	mg/L		-20	20			
WG476933LCSW	LCSW	07/15/19 15:44	WC190709-1	820.0001		780	mg/L	95	90	110			
L53239-02DUP	DUP	07/15/19 19:05			328	332	mg/L				1	20	

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477281													
WG477281ICV	ICV	07/18/19 13:23	II190715-2	2		1.964	mg/L	98	95	105			
WG477281ICB	ICB	07/18/19 13:29				U	mg/L		-0.15	0.15			
WG477281LFB	LFB	07/18/19 13:42	II190716-6	1.0006		1.055	mg/L	105	85	115			
L52859-01AS	AS	07/18/19 15:02	II190716-6	1.0006	U	1.09	mg/L	109	85	115			
L52859-01ASD	ASD	07/18/19 15:05	II190716-6	1.0006	U	1.109	mg/L	111	85	115	2	20	
WG477288													
WG477288ICV	ICV	07/18/19 17:27	II190715-2	2		1.985	mg/L	99	95	105			
WG477288ICB	ICB	07/18/19 17:34				U	mg/L		-0.15	0.15			
WG477288LFB	LFB	07/18/19 17:47	II190716-6	1.0006		1.033	mg/L	103	85	115			
L51661-10AS	AS	07/18/19 18:26	II190716-6	1.0006	U	1.062	mg/L	106	85	115			
L51661-10ASD	ASD	07/18/19 18:30	II190716-6	1.0006	U	1.052	mg/L	105	85	115	1	20	

Aluminum, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.943	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.15	0.15			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-900	900			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477063													
WG477063ICV	ICV	07/17/19 11:16	II190715-2	100		98.51	mg/L	99	95	105			
WG477063ICB	ICB	07/17/19 11:23				U	mg/L		-0.3	0.3			
WG477063LFB	LFB	07/17/19 11:36	II190716-6	68.11783		67.9	mg/L	100	85	115			
L51661-10AS	AS	07/17/19 12:15	II190716-6	68.11783	248	305.7	mg/L	85	85	115			
L51661-10ASD	ASD	07/17/19 12:18	II190716-6	68.11783	248	306.8	mg/L	86	85	115	0	20	
WG477281													
WG477281ICV	ICV	07/18/19 13:23	II190715-2	100		99.42	mg/L	99	95	105			
WG477281ICB	ICB	07/18/19 13:29				U	mg/L		-0.3	0.3			
WG477281LFB	LFB	07/18/19 13:42	II190716-6	68.11783		71.37	mg/L	105	85	115			
L52859-01AS	AS	07/18/19 15:02	II190716-6	68.11783	7.6	78.24	mg/L	104	85	115			
L52859-01ASD	ASD	07/18/19 15:05	II190716-6	68.11783	7.6	78.01	mg/L	103	85	115	0	20	

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ACZ Project ID: ***L52553***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Calcium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		97.26	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-1500	1500			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477063													
WG477063ICV	ICV	07/17/19 11:16	II190715-2	2		1.916	mg/L	96	95	105			
WG477063ICB	ICB	07/17/19 11:23				U	mg/L		-0.09	0.09			
WG477063LFB	LFB	07/17/19 11:36	II190716-6	1.0018		1.023	mg/L	102	85	115			
L51661-10AS	AS	07/17/19 12:15	II190716-6	1.0018	U	1.006	mg/L	100	85	115			
L51661-10ASD	ASD	07/17/19 12:18	II190716-6	1.0018	U	1.028	mg/L	103	85	115	2	20	
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	2		1.933	mg/L	97	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.09	0.09			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	1.0018		1.105	mg/L	110	85	115			
L52859-01AS	AS	07/17/19 22:30	II190716-6	1.0018	.06	1.129	mg/L	107	85	115			
L52859-01ASD	ASD	07/17/19 22:33	II190716-6	1.0018	.06	1.105	mg/L	104	85	115	2	20	

Iron, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.949	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.09	0.09			
WG476930PBS	PBS	07/17/19 6:23				340	mg/Kg		-600	600			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	100		96.78	mg/L	97	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.6	0.6			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	50.31093		50.4	mg/L	100	85	115			
L52859-01AS	AS	07/17/19 22:30	II190716-6	50.31093	5.5	55.8	mg/L	100	85	115			
L52859-01ASD	ASD	07/17/19 22:33	II190716-6	50.31093	5.5	55.74	mg/L	100	85	115	0	20	
WG477288													
WG477288ICV	ICV	07/18/19 17:27	II190715-2	100		95.99	mg/L	96	95	105			
WG477288ICB	ICB	07/18/19 17:34				U	mg/L		-0.6	0.6			
WG477288LFB	LFB	07/18/19 17:47	II190716-6	50.31093		49.8	mg/L	99	85	115			
L51661-10AS	AS	07/18/19 18:26	II190716-6	50.31093	7.7	56.27	mg/L	97	85	115			
L51661-10ASD	ASD	07/18/19 18:30	II190716-6	50.31093	7.7	55.83	mg/L	96	85	115	1	20	

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ACZ Project ID: ***L52553***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Magnesium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		96.12	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	2		1.89	mg/L	95	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.03	0.03			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	.4995		.515	mg/L	103	85	115			
L52859-01AS	AS	07/17/19 22:30	II190716-6	.4995	U	.519	mg/L	104	85	115			
L52859-01ASD	ASD	07/17/19 22:33	II190716-6	.4995	U	.509	mg/L	102	85	115	2	20	
WG477288													
WG477288ICV	ICV	07/18/19 17:27	II190715-2	2		1.926	mg/L	96	95	105			
WG477288ICB	ICB	07/18/19 17:34				U	mg/L		-0.03	0.03			
WG477288LFB	LFB	07/18/19 17:47	II190716-6	.4995		.521	mg/L	104	85	115			
L51661-10AS	AS	07/18/19 18:26	II190716-6	.4995	.02	.543	mg/L	105	85	115			
L51661-10ASD	ASD	07/18/19 18:30	II190716-6	.4995	.02	.543	mg/L	105	85	115	0	20	

Manganese, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.92	mg/L	96	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.03	0.03			
WG476930PBS	PBS	07/17/19 6:23				65	mg/Kg		-150	150			

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.0199		.02043	mg/L	103	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00044	0.00044			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.0501		.04605	mg/L	92	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.2505	.024	.271	mg/L	99	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.2505	.024	.273	mg/L	99	70	130	1	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.0199		.02053	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00044	0.00044			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.0501		.0464	mg/L	93	85	115			
L52552-05AS	AS	07/16/19 18:13	MS190606-3	.2505	.003	.268	mg/L	106	70	130			
L52552-05ASD	ASD	07/16/19 18:14	MS190606-3	.2505	.003	.2748	mg/L	109	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.0199		.02033	mg/L	102	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00044	0.00044			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.0501		.05052	mg/L	101	85	115			
L52970-07AS	AS	07/17/19 15:30	MS190606-3	.0501	.0082	.05805	mg/L	100	70	130			
L52970-07ASD	ASD	07/17/19 15:32	MS190606-3	.0501	.0082	.05934	mg/L	102	70	130	2	20	

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ACZ Project ID: ***L52553***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477135													
WG477135ICV	ICV	07/17/19 12:28	MS190630-2	.0199		.01852	mg/L	93	90	110			
WG477135ICB	ICB	07/17/19 12:30				U	mg/L		-0.0006	0.0006			
WG476930PBS	PBS	07/17/19 12:40				U	mg/Kg		-9	9			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477082													
WG477082ICV	ICV	07/16/19 21:14	WI190405-12	.65228		.669	mg/L	103	90	110			
WG477082ICB	ICB	07/16/19 21:15				U	mg/L		-0.01	0.01			
WG477082LFB1	LFB	07/16/19 21:18	WI190704-2	.5		.518	mg/L	104	90	110			
WG477082LFB2	LFB	07/16/19 21:50	WI190704-2	.5		.521	mg/L	104	90	110			
L52549-02AS	AS	07/16/19 21:53	WI190704-2	.5	.04	.571	mg/L	106	90	110			
L52549-03DUP	DUP	07/16/19 21:55			.08	.085	mg/L				6	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	20		19.45	mg/L	97	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.6	0.6			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	99.96426		99.85	mg/L	100	85	115			
L52859-01AS	AS	07/17/19 22:30	II190716-6	99.96426	.7	100	mg/L	99	85	115			
L52859-01ASD	ASD	07/17/19 22:33	II190716-6	99.96426	.7	99.62	mg/L	99	85	115	0	20	
WG477360													
WG477360ICV	ICV	07/19/19 10:12	II190715-2	20		19.56	mg/L	98	95	105			
WG477360ICB	ICB	07/19/19 10:19				U	mg/L		-0.6	0.6			
WG477360LFB	LFB	07/19/19 10:32	II190716-6	99.96426		102.6	mg/L	103	85	115			
L51661-10AS	AS	07/19/19 10:45	II190716-6	99.96426	4.7	107.5	mg/L	103	85	115			
L51661-10ASD	ASD	07/19/19 10:48	II190716-6	99.96426	4.7	107.3	mg/L	103	85	115	0	20	

Potassium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.8	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

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ACZ Project ID: ***L52553***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.04886	mg/L	98	90	110			
WG476973ICB	ICB	07/16/19 12:41				.00015	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05005		.04643	mg/L	93	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.25025	.0018	.25275	mg/L	100	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.25025	.0018	.25289	mg/L	100	70	130	0	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05164	mg/L	103	90	110			
WG477002ICB	ICB	07/16/19 17:31				.00015	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05005		.04786	mg/L	96	85	115			
L52552-05AS	AS	07/16/19 18:13	MS190606-3	.25025	.0018	.77364	mg/L	308	70	130			M1
L52552-05ASD	ASD	07/16/19 18:14	MS190606-3	.25025	.0018	.79814	mg/L	318	70	130	3	20	M1
WG477251													
WG477251ICV	ICV	07/18/19 10:43	MS190630-2	.05		.04781	mg/L	96	90	110			
WG477251ICB	ICB	07/18/19 10:45				U	mg/L		-0.00022	0.00022			
WG477251LFB	LFB	07/18/19 10:47	MS190606-3	.05005		.04778	mg/L	95	85	115			
L52553-06AS	AS	07/18/19 11:19	MS190606-3	1.001	.006	1.2629	mg/L	126	70	130			
L52553-06ASD	ASD	07/18/19 11:21	MS190606-3	1.001	.006	1.2466	mg/L	124	70	130	1	20	

Selenium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04648	mg/L	93	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Silicon, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477063													
WG477063ICV	ICV	07/17/19 11:16	II190715-2	20		19.28	mg/L	96	95	105			
WG477063ICB	ICB	07/17/19 11:23				U	mg/L		-0.3	0.3			
WG477063LFB	LFB	07/17/19 11:36	II190716-6	10.008		10.11	mg/L	101	85	115			
L51661-10AS	AS	07/17/19 12:15	II190716-6	10.008	2.5	12.79	mg/L	103	85	115			
L51661-10ASD	ASD	07/17/19 12:18	II190716-6	10.008	2.5	12.9	mg/L	104	85	115	1	20	
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	20		19.5	mg/L	98	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.3	0.3			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	10.008		10.66	mg/L	107	85	115			
L52859-01AS	AS	07/17/19 22:30	II190716-6	10.008	5.6	16.17	mg/L	106	85	115			
L52859-01ASD	ASD	07/17/19 22:33	II190716-6	10.008	5.6	15.85	mg/L	102	85	115	2	20	

Silicon, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	20		19.38	mg/L	97	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.3	0.3			
WG476930PBS	PBS	07/17/19 6:23				15660	mg/Kg		-1500	1500			B1

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ACZ Project ID: ***L52553***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477063													
WG477063ICV	ICV	07/17/19 11:16	II190715-2	100		100.16	mg/L	100	95	105			
WG477063ICB	ICB	07/17/19 11:23				U	mg/L		-0.6	0.6			
WG477063LFB	LFB	07/17/19 11:36	II190716-6	100.0471		101	mg/L	101	85	115			
L51661-10AS	AS	07/17/19 12:15	II190716-6	100.0471	19.2	120.9	mg/L	102	85	115			
L51661-10ASD	ASD	07/17/19 12:18	II190716-6	100.0471	19.2	121.2	mg/L	102	85	115	0	20	
WG477281													
WG477281ICV	ICV	07/18/19 13:23	II190715-2	100		100.9	mg/L	101	95	105			
WG477281ICB	ICB	07/18/19 13:29				U	mg/L		-0.6	0.6			
WG477281LFB	LFB	07/18/19 13:42	II190716-6	100.0471		104.7	mg/L	105	85	115			
L52859-01AS	AS	07/18/19 15:02	II190716-6	100.0471	200	292.9	mg/L	93	85	115			
L52859-01ASD	ASD	07/18/19 15:05	II190716-6	100.0471	200	293.2	mg/L	93	85	115	0	20	

Sodium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	100		98.75	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.6	0.6			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-3000	3000			

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475102													
L52539-01DUP	DUP	06/21/19 15:27			98.8	98.62	%				0	20	
WG475102PBS	PBS	06/24/19 10:14				U	%		-0.1	0.1			

Sulfate D516-02/-07 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477100													
WG477100ICB	ICB	07/17/19 9:34				U	mg/L		-3	3			
WG477100ICV	ICV	07/17/19 9:34	WI190710-1	20		19.6	mg/L	98	90	110			
WG477100LFB	LFB	07/17/19 11:04	WI181024-4	10.03		9.3	mg/L	93	90	110			
L52553-02DUP	DUP	07/17/19 11:07			11.4	11.4	mg/L				0	20	
L52553-03AS	AS	07/17/19 11:07	WI181024-4	100.3	U	97.1	mg/L	97	90	110			

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ACZ Project ID: ***L52553***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476973													
WG476973ICV	ICV	07/16/19 12:40	MS190630-2	.05		.05033	mg/L	101	90	110			
WG476973ICB	ICB	07/16/19 12:41				U	mg/L		-0.00022	0.00022			
WG476973LFB	LFB	07/16/19 12:43	MS190606-3	.05		.04624	mg/L	92	85	115			
L52550-02AS	AS	07/16/19 12:52	MS190606-3	.25	.0006	.24604	mg/L	98	70	130			
L52550-02ASD	ASD	07/16/19 12:54	MS190606-3	.25	.0006	.24985	mg/L	100	70	130	2	20	
WG477002													
WG477002ICV	ICV	07/16/19 17:29	MS190630-2	.05		.05064	mg/L	101	90	110			
WG477002ICB	ICB	07/16/19 17:31				U	mg/L		-0.00022	0.00022			
WG477002LFB	LFB	07/16/19 17:32	MS190606-3	.05		.0471	mg/L	94	85	115			
L52552-05AS	AS	07/16/19 18:13	MS190606-3	.25	.0063	.25382	mg/L	99	70	130			
L52552-05ASD	ASD	07/16/19 18:14	MS190606-3	.25	.0063	.2616	mg/L	102	70	130	3	20	
WG477152													
WG477152ICV	ICV	07/17/19 15:21	MS190630-2	.05		.05015	mg/L	100	90	110			
WG477152ICB	ICB	07/17/19 15:23				U	mg/L		-0.00022	0.00022			
WG477152LFB	LFB	07/17/19 15:24	MS190606-3	.05		.05021	mg/L	100	85	115			
L52970-07AS	AS	07/17/19 15:30	MS190606-3	.05	.0012	.05231	mg/L	102	70	130			
L52970-07ASD	ASD	07/17/19 15:32	MS190606-3	.05	.0012	.05402	mg/L	106	70	130	3	20	

Uranium, total (3052) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476983													
WG476983ICV	ICV	07/16/19 12:11	MS190630-2	.05		.04715	mg/L	94	90	110			
WG476983ICB	ICB	07/16/19 12:13				U	mg/L		-0.0003	0.0003			
WG476930PBS	PBS	07/16/19 12:23				U	mg/Kg		-3	3			

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477063													
WG477063ICV	ICV	07/17/19 11:16	II190715-2	2		1.9215	mg/L	96	95	105			
WG477063ICB	ICB	07/17/19 11:23				U	mg/L		-0.015	0.015			
WG477063LFB	LFB	07/17/19 11:36	II190716-6	.5005		.4825	mg/L	96	85	115			
L51661-10AS	AS	07/17/19 12:15	II190716-6	.5005	U	.4888	mg/L	98	85	115			
L51661-10ASD	ASD	07/17/19 12:18	II190716-6	.5005	U	.4864	mg/L	97	85	115	0	20	
WG477124													
WG477124ICV	ICV	07/17/19 20:51	II190715-2	2		1.9385	mg/L	97	95	105			
WG477124ICB	ICB	07/17/19 20:58				U	mg/L		-0.015	0.015			
WG477124LFB	LFB	07/17/19 21:11	II190716-6	.5005		.5032	mg/L	101	85	115			
L52859-01AS	AS	07/17/19 22:30	II190716-6	.5005	U	.4995	mg/L	100	85	115			
L52859-01ASD	ASD	07/17/19 22:33	II190716-6	.5005	U	.4962	mg/L	99	85	115	1	20	

Vanadium, total (3052) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG477044													
WG477044ICV	ICV	07/17/19 5:55	II190702-3	2		1.977	mg/L	99	90	110			
WG477044ICB	ICB	07/17/19 5:59				U	mg/L		-0.015	0.015			
WG476930PBS	PBS	07/17/19 6:23				U	mg/Kg		-90	90			

ARCADIS ACZ Project ID: ***L52553***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52553-02	WG476933	Bicarbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Carbonate as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
		Hydroxide as CaCO3	SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476973	Selenium, dissolved	M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG476933	Total Alkalinity	SM2320B - Titration	H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time.
			SM2320B - Titration	Q6	Sample was received above recommended temperature.
	WG476973	Uranium, dissolved	M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52553-03	WG477082	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	H3	Sample was received and analyzed past holding time.
			M365.1 - Automated Ascorbic Acid	Q6	Sample was received above recommended temperature.
			M365.1 - Automated Ascorbic Acid	QP	The sample was filtered at the laboratory more than 15 minutes after sample collection. For Orthophosphate, 40 CFR Part 136.3 requires filtration within 15 minutes of collection.
			M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M365.1 - Automated Ascorbic Acid	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG476973	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477100	Sulfate	D516-02/-07 - Turbidimetric	DJ	Sample dilution required due to insufficient sample.
			D516-02/-07 - Turbidimetric	HD	Analysis is outside the intended scope of the method, which does not provide hold time information for soil extracts. No hold time is observed for collection to extraction. The referenced method hold time is observed for extraction-to-analysis.
			D516-02/-07 - Turbidimetric	Q6	Sample was received above recommended temperature.
	WG476973	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.

ARCADIS ACZ Project ID: ***L52553***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52553-04	WG477002	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
		Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
			M200.8 ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L52553-05	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
	WG477251	Selenium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
	WG477152	Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52553-06	WG477152	Molybdenum, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
		Uranium, dissolved	M200.8 ICP-MS	D1	Sample required dilution due to matrix.
			M200.8 ICP-MS	D5	Sample required dilution. Sample matrix causing internal standards to recover outside method limits.
			M200.8 ICP-MS	DJ	Sample dilution required due to insufficient sample.
L52553-07	WG477044	Magnesium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG477135	Molybdenum, total (3052)	M6020B ICP-MS	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG476983	Selenium, total (3052)	M6020B ICP-MS	IA	Internal standard recovery exceeded the acceptance limits. Concentration of associated target analyte(s) in the sample is < MDL.
	WG477044	Silicon, total (3052)	M6010D ICP	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6010D ICP	E1	Concentration estimated. Analyte exceeded calibration range. See Case Narrative.
		Sodium, total (3052)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Aluminum, dissolved	M200.7 ICP
Calcium, dissolved	M200.7 ICP
Iron, dissolved	M200.7 ICP
Magnesium, dissolved	M200.7 ICP
Manganese, dissolved	M200.7 ICP
Molybdenum, dissolved	M200.8 ICP-MS
Potassium, dissolved	M200.7 ICP
Selenium, dissolved	M200.8 ICP-MS
Silicon, dissolved	M200.7 ICP
Silicon, total (3052)	M6010D ICP
Sodium, dissolved	M200.7 ICP
Uranium, dissolved	M200.8 ICP-MS
Vanadium, dissolved	M200.7 ICP

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Bicarbonate as CaCO3	SM2320B - Titration
Carbonate as CaCO3	SM2320B - Titration
Hydroxide as CaCO3	SM2320B - Titration
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid
Total Alkalinity	SM2320B - Titration

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52553
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?	X		

A change was made in the Invoice to section prior to ACZ custody.

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
5232	17.4	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

ARCADIS
CO000120.1901.30007

ACZ Project ID: L52553
Date Received: 05/29/2019 13:21
Received By:
Date Printed: 6/18/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L 52553

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Shannon Ulrich
Company: Arcadis
E-mail: shannon.ulrich@arcadis.com
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone: 303 471 3465

Copy of Report to:

Name: Adam Arguello
Company: Homestake Mining Company
E-mail: aarguello@barrick.com
Telephone: 505 287 4456 x31

Invoice to:

Name: ~~Shannon Ulrich~~ Accounts Payable
Company: Arcadis
E-mail: accounts payable.administration@arcadis.com ~~shannon.ulrich@arcadis.com~~
Address: 630 Plaza Drive Ste 200
Highlands Ranch, CO 80129
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Shannon Ulrich Sampler's Site Information State NM Zip code 87021 Time Zone MST

*Sampler's Signature: SW

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: Custom SSE; contact Tim VanWyngarden
PO#: CO 000120.1901.30007
Reporting state for compliance testing: NA
Check box if samples include NRC licensed material? X*

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	custom selective sequential extract
BK3-14.5-15-052219	5-22-19:1035	SO	1	HOLD
BK3-23-23.5-052219	5-22-19:1055	SO	1	HOLD
BK3-26-27-052219	5-22-19:1115	SO	1	HOLD
BK3-31.5-32.5-052219	5-22-19:1130	SO	1	HOLD
BK3-35-35.5-052219	5-22-19:1200	SO	1	HOLD
BK3-46.5-47.5-052219	5-22-19:1230	SO	1	HOLD
BK3-47.5-48.5-052219	5-22-19:1300	SO	1	HOLD
BK3-50.5-52-052219	5-22-19:1320	SO	1	HOLD
BK3-55-56-052219	5-22-19:1400	SO	1	HOLD
BK3-42.5-43.5-052219	5-22-19:1505	SO	1	HOLD

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Custom Selective Sequential extraction; contact Tim Van Wyngarden
*Samples are background soil but are inside NRC licensed boundary

Bottle order: BO42190

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Shannon Ulrich	5/20/19: 1430	FedEx	5/20/19: 1430
			5/21/19 1321

L52553 1007101454

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

COPY

L52553 Chain of Custod

APPENDIX G

Photo log

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 1

Date:

5-13-19

Description:

Burying electrical line to allow vehicle access. Buried line was covered with plywood before crossing with vehicles.

Location:

GRP near BK2

Photo: 2

Date:

5-14-19

Description:

BK2c 0-5 feet hand auger samples

Location:

BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 3

Date:
5-13-19

Description:
BK2c core

Location:
BK2c

Photo: 4

Date:
5-13-19

Description:
BK2c core

Location:
BK2c

Photo: 5

Date:
5-13-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 6

Date:
5-13-19

Description:
BK2c core

Location:
BK2c

Photo: 7

Date:
5-13-19

Description:
BK2c core

Location:
BK2c

Photo: 8

Date:
5-13-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 9

Date:
5-13-19

Description:
BK2c core

Location:
BK2c

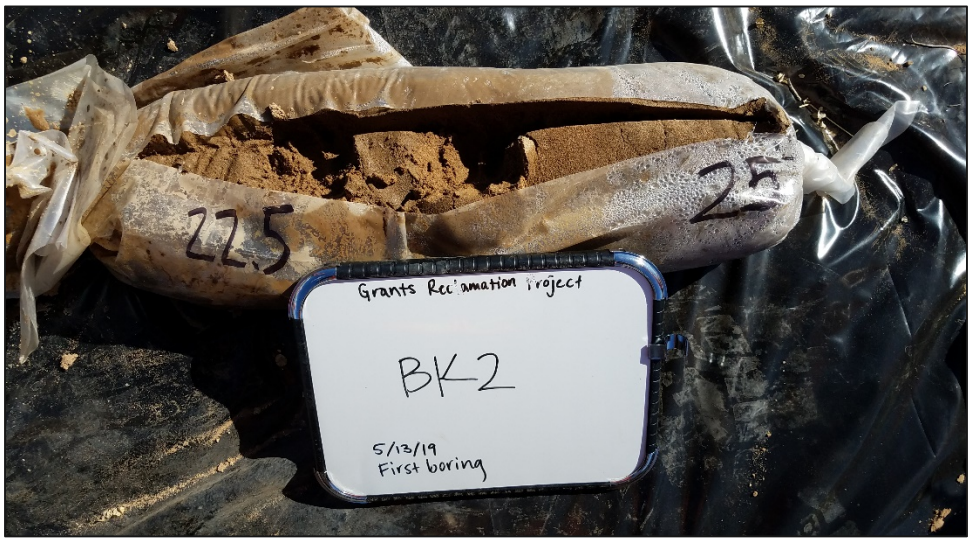

Photo: 10

Date:
5-13-19

Description:
BK2c core

Location:
BK2c

Photo: 11

Date:
5-13-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 12

Date:
5-13-19

Description:
BK2c core

Location:
BK2c

Photo: 13

Date:
5-13-19

Description:
BK2c core

Location:
BK2c

Photo: 14

Date:
5-13-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 15

Date:
5-13-19

Description:
BK2c core covered for the night

Location:
BK2c

Photo: 16

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 17

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 18

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 19

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 20

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 21

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 22

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 23

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 24

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 25

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 26

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 27

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 28

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 29

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 30

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 31

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 32

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 33

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 34

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 35

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 36

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 37

Date:
5-14-19

Description:
BK2c core

Location:
BK2c core

Photo: 38

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 39

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 40

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 41

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 42

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 43

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 44

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 45

Date:
5-14-19

Description:
BK2c core

Location:
BK2c

Photo: 46

Date:
5-14-19

Description:
BK2c core covered for the night

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

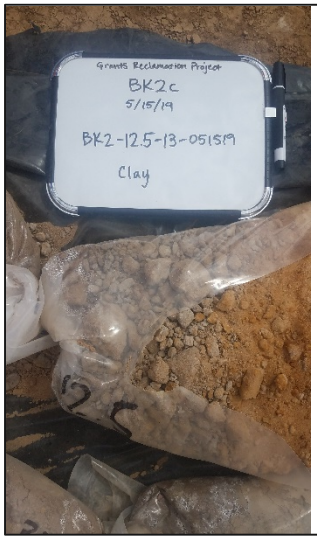

Photo: 47

Date:
5-15-19

Description:
BK2c core sample

Location:
BK2c

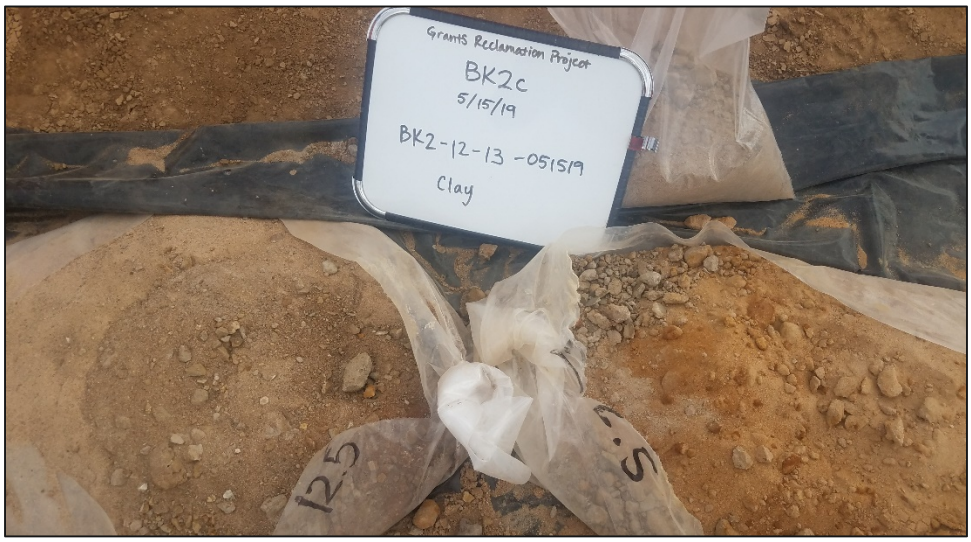

Photo: 48

Date:
5-15-19

Description:
BK2c core sample

Location:
BK2c

Photo: 49

Date:
5-15-19

Description:
BK2c core sample

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 50

Date:
5-15-19

Description:
BK2c core sample

Location:
BK2c

Photo: 51

Date:
5-15-19

Description:
BK2c core sample

Location:
BK2c

Photo: 52

Date:
5-15-19

Description:
BK2c core sample

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

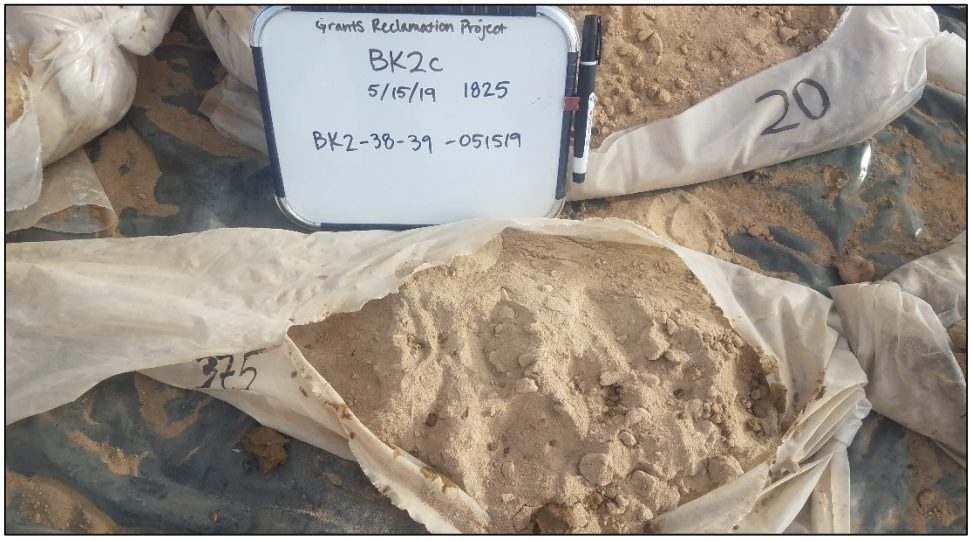

Photo: 53

Date:
5-15-19

Description:
BK2c core sample

Location:
BK2c

Photo: 54

Date:
5-15-19

Description:
BK2c core sample

Location:
BK2c

Photo: 55

Date:
5-15-19

Description:
BK2c core sample

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 56

Date:
5-15-19

Description:
BK2c core sample

Location:
BK2c

Photo: 57

Date:
5-15-19

Description:
BK2c core sample

Location:
BK2c

Photo: 58

Date:
5-15-19

Description:
BK2c core: black organic matter at 72.5-75

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 59

Date:
5-15-19

Description:
BK2c core: black organic matter at 72.5-75

Location:
BK2c

Photo: 60

Date:
5-15-19

Description:
BK2c core: black organic matter at 72.5-75

Location:
BK2c

Photo: 61

Date:
5-15-19

Description:
BK2c core: black organic matter at 72.5-75

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 62

Date:
5-15-19

Description:
BK2c core: black organic matter at 72.5-75

Location:
BK2c

Photo: 63

Date:
5-16-19

Description:
BK2c core sample

Location:
BK2c

Photo: 64

Date:
5-16-19

Description:
BK2c core sample

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 65

Date:
5-16-19

Description:
BK2c core sample

Location:
BK2c

Photo: 66

Date:
5-16-19

Description:
BK2c core sample

Location:
BK2c

Photo: 67

Date:
5-16-19

Description:
BK2c core sample

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 68

Date:
5-16-19

Description:
BK2c core sample

Location:
BK2c

Photo: 69

Date:
5-16-19

Description:
BK2c core sample

Location:
BK2c

Photo: 70

Date:
5-16-19

Description:
BK2c core sample

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 71

Date:
5-16-19

Description:
BK2c core sample

Location:
BK2c

Photo: 72

Date:
5-16-19

Description:
BK2c core sample

Location:
BK2c

Photo: 73

Date:
5-16-19

Description:
BK2c core sample for testing unrelated to this project

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 74

Date:
5-16-19

Description:
BK2c core sample for testing unrelated to this project

Location:
BK2c

Photo: 75

Date:
5-16-19

Description:
BK2c core sample for testing unrelated to this project

Location:
BK2c

Photo: 76

Date:
5-16-19

Description:
BK2c core sample for testing unrelated to this project

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 77

Date:
5-18-19

Description:
BK3 core

Location:
BK3

Photo: 78

Date:
5-18-19

Description:
BK3 core

Location:
BK3

Photo: 79

Date:
5-18-19

Description:
BK3 core

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 80

Date:
5-18-19

Description:
BK3 core

Location:
BK3

Photo: 81

Date:
5-18-19

Description:
BK3 core

Location:
BK3

Photo: 82

Date:
5-18-19

Description:
BK3 core

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

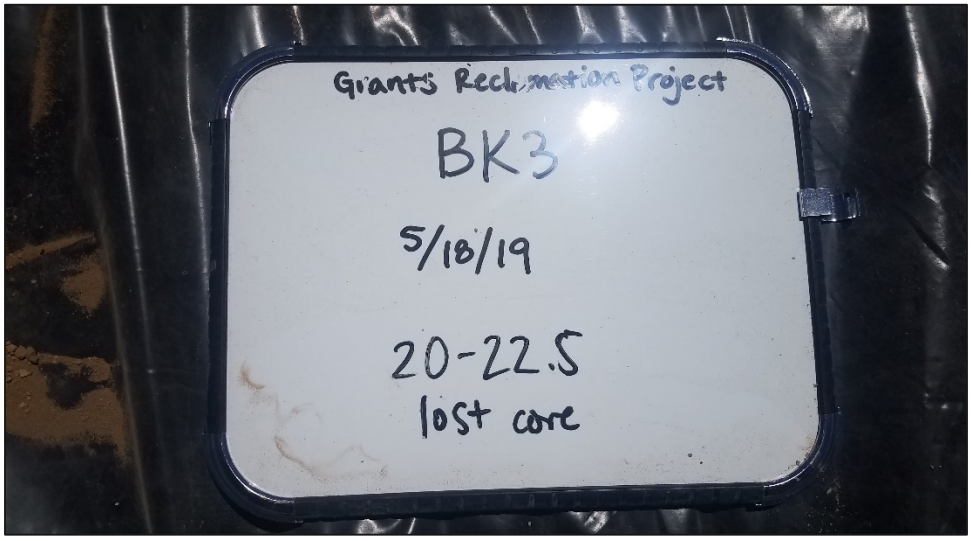

Photo: 83

Date:
5-18-19

Description:
BK3 core

Location:
BK3

Photo: 84

Date:
5-18-19

Description:
BK3 core

Location:
BK3

Photo: 85

Date:
5-18-19

Description:
BK3 core

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 86

Date:
5-18-19

Description:
BK3 core

Location:
BK3

Photo: 87

Date:
5-18-19

Description:
BK3 core

Location:
BK3

Photo: 88

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 89

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Photo: 90

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Photo: 91

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 92

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Photo: 93

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Photo: 94

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 95

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Photo: 96

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Photo: 97

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 98

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Photo: 99

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Photo: 100

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 101

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Photo: 102

Date:
5-20-19

Description:
BK3 core

Location:
BK3

Photo: 103

Date:
5-20-19

Description:
Weather in the mountains and drill team pictured at BK1

Location:
GRP background area looking east

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 104

Date:
5-22-19

Description:
BK3 core sample

Location:
BK3

Photo: 105

Date:
5-22-19

Description:
BK3 core sample

Location:
BK3

Photo: 106

Date:
5-22-19

Description:
BK3 core sample

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 107

Date:
5-22-19

Description:
BK3 core sample

Location:
BK3

Photo: 108

Date:
5-22-19

Description:
BK3 core sample

Location:
BK3

Photo: 109

Date:
5-22-19

Description:
BK3 core sample

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 110

Date:
5-22-19

Description:
BK3 core sample

Location:
BK3

Photo: 111

Date:
5-22-19

Description:
BK3 core sample

Location:
BK3

Photo: 112

Date:
5-22-19

Description:
BK3 core sample

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 113

Date:
5-22-19

Description:
BK3 core sample

Location:
BK3

Photo: 114

Date:
5-22-19

Description:
BK3 covered when not in use

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 115

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 116

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 117

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 118

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 119

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 120

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 121

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 122

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 123

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 124

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 125

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 126

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 127

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 128

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 129

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 130

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 131

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 132

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 133

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 134

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 135

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 136

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 137

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 138

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 139

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 140

Date:
5-18-19

Description:
BK2f core

Location:
BK2f

Photo: 141

Date:
5-18-19

Description:
BK2 core, covered when not in use. BK2c is on the right and BK2f is in the center of the picture. Well monument installation materials are on the left.

Location:
BK2, looking west

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 142

Date:
5-20-19

Description:
Weather

Location:
GRP background area, looking east

Photo: 143

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 144

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 145

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 146

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 147

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 148

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 149

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

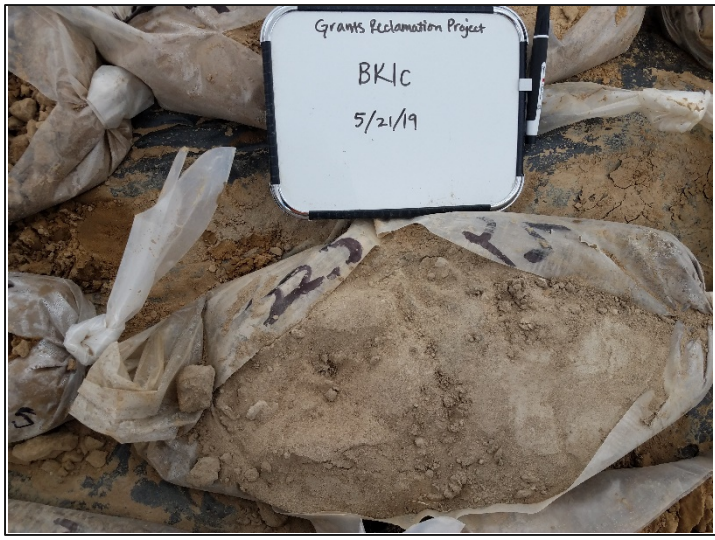

Photo: 150

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 151

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 152

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 153

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 154

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 155

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 156

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 157

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 158

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 159

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 160

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 161

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 162

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 163

Date:
5-20-19

Description:
52.5-55 feet

Location:
BK1c

Photo: 164

Date:
5-20-19

Description:
Black organic matter at 52.5-55 feet

Location:
BK1c

Photo: 165

Date:
5-20-19

Description:
52.5-55 feet

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 166

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 167

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 168

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 169

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 170

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 171

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 172

Date:
5-21-19

Description:
BK1c core

Location:
BK1c

Photo: 173

Date:
5-21-19

Description:
BK1c core sample

Location:
BK1c

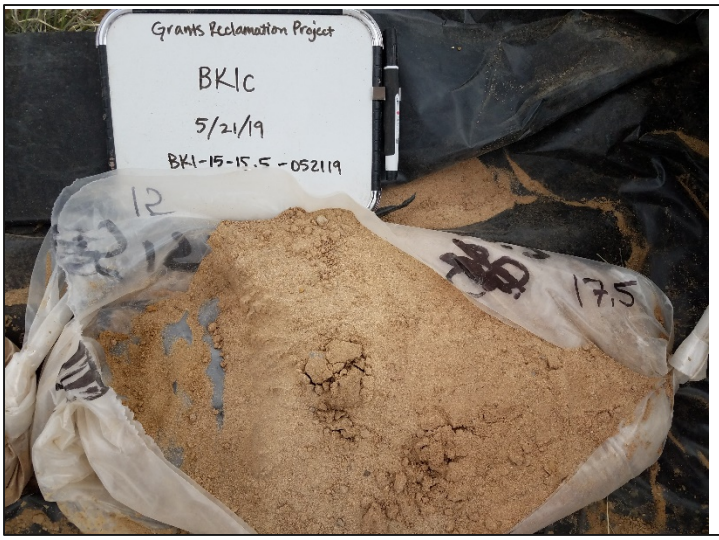

Photo: 174

Date:
5-21-19

Description:
BK1c core sample

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 175

Date:
5-21-19

Description:
BK1c core sample

Location:
BK1c

Photo: 176

Date:
5-21-19

Description:
BK1c core sample

Location:
BK1c

Photo: 177

Date:
5-21-19

Description:
BK1c core sample

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 178

Date:
5-21-19

Description:
BK1c core sample

Location:
BK1c

Photo: 179

Date:
5-21-19

Description:
BK1c core sample

Location:
BK1c

Photo: 180

Date:
5-21-19

Description:
BK1c core sample

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 181

Date:
5-21-19

Description:
BK1c core sample

Location:
BK1c

Photo: 182

Date:
5-21-19

Description:
BK1c core sample

Location:
BK1c

Photo: 183

Date:
5-21-19

Description:
Black organic matter in BK1c 50-52.5 feet

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 184

Date:
5-21-19

Description:
BK1c core sample

Location:
BK1c

Photo: 185

Date:
5-22-19

Description:
BK1c core sample

Location:
BK1c

Photo: 186

Date:
5-22-19

Description:
BK1c core sample

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 187

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 188

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Photo: 189

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Photo: 190

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 191

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Photo: 192

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Photo: 193

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 194

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Photo: 195

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Photo: 196

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 197

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Photo: 198

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Photo: 199

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 200

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Photo: 201

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Photo: 202

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 203

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Photo: 204

Date:
5-22-19

Description:
BK1f core

Location:
BK1f

Photo: 205

Date:
5-23-19

Description:
BK1f core

Location:
BK1f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 206

Date:
5-23-19

Description:
BK1f core

Location:
BK1f

Photo: 207

Date:
5-23-19

Description:
BK1f core

Location:
BK1f

Photo: 208

Date:
5-23-19

Description:
BK1f core

Location:
BK1f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 209

Date:
5-23-19

Description:
BK1f core

Location:
BK1f

Photo: 210

Date:
5-23-19

Description:
BK1f core

Location:
BK1f

Photo: 211

Date:
5-23-19

Description:
BK1c core

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

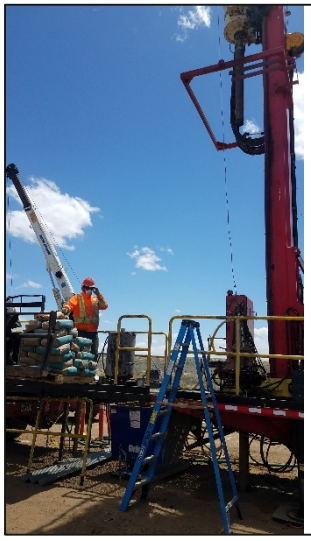

Photo: 212

Date:
5-17-19

Description:
Grouting

Location:
BK2f looking south

Photo: 213

Date:
5-17-19

Description:
Grouting

Location:
BK2f looking south

Photo: 214

Date:
5-17-19

Description:
Grouting

Location:
BK2f looking south

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 215

Date:
5-17-19

Description:
Grouting

Location:
BK2f looking south

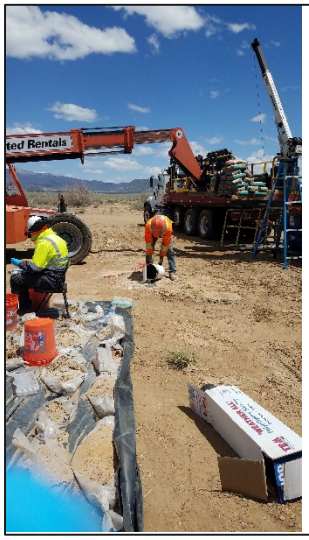

Photo: 216

Date:
5-17-19

Description:
Grouting

Location:
BK2c looking east

Photo: 217

Date:
5-17-19

Description:
Positioning rig and chase truck; Shawn Roberts, Arcadis, in center.

Location:
BK3 looking north

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 218

Date:
5-17-19

Description:
Positioning rig and chase truck with spotters; Shawn Roberts, Arcadis, at right.

Location:
BK3 looking north

Photo: 219

Date:
5-17-19

Description:
Positioning rig and chase truck with spotters; Shawn Roberts, Arcadis, at right.

Location:
BK3 looking north

Photo: 220

Date:
5-17-19

Description:
Positioning rig and chase truck with spotters; Shawn Roberts, Arcadis, at right.

Location:
BK3 looking north

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 221

Date:
5-17-19

Description:
Positioning rig and chase truck with spotter.

Location:
BK3 looking north

Photo: 222

Date:
5-18-19

Description:
Installing well casing; Shawn Roberts, Arcadis, second from left.

Location:
BK3 looking northwest

Photo: 223

Date:
5-20-19

Description:
Well monument before being trimmed down for permanent installation.

Location:
BK1f looking south-southwest

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 224

Date:
5-20-19

Description:
Well monument before being trimmed down for permanent installation.

Location:
BK1f

Photo: 225

Date:
5-20-19

Description:
Well monument before being trimmed down for permanent installation.

Location:
BK1f looking south-southwest

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 226

Date:
5-16-19

Description:
Sample

Location:
BK2c

Photo: 227

Date:
5-16-19

Description:
Sample

Location:
BK2c

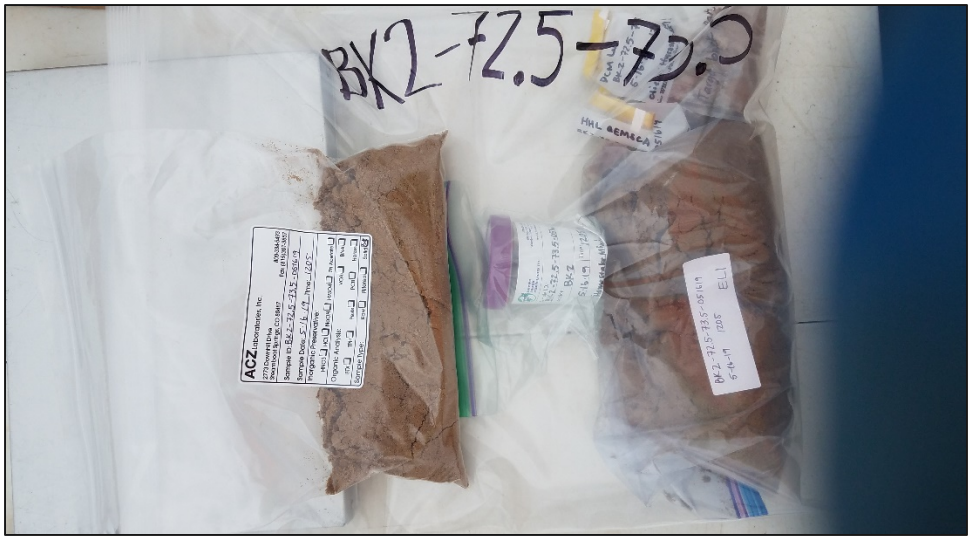

Photo: 228

Date:
5-16-19

Description:
Sample set

Location:
BK2c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 229

Date:
5-17-19

Description:
BK2c chip tray; dry.

Location:
BK2c

Photo: 230

Date:
5-17-19

Description:
BK2c chip tray; dry.

Location:
BK2c

Photo: 231

Date:
5-17-19

Description:
BK2f chip tray; dry.

Location:
BK2f

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 232

Date:
5-17-19

Description:
BK2f chip tray; dry.

Location:
BK2f

Photo: 233

Date:
5-22-19

Description:
BK3 chip tray; dry.

Location:
BK3

Photo: 234

Date:
5-22-19

Description:
BK3 chip tray; dry.

Location:
BK3

Project Photographs

Grants Reclamation Project
Grants, NM

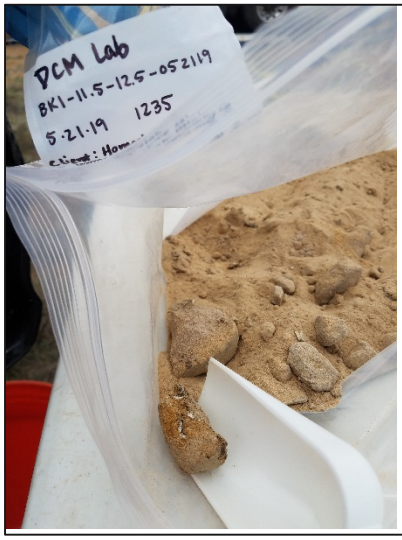

Photo: 235

Date:
5-21-19

Description:
Sample with organic matter and iron staining.

Location:
BK1c

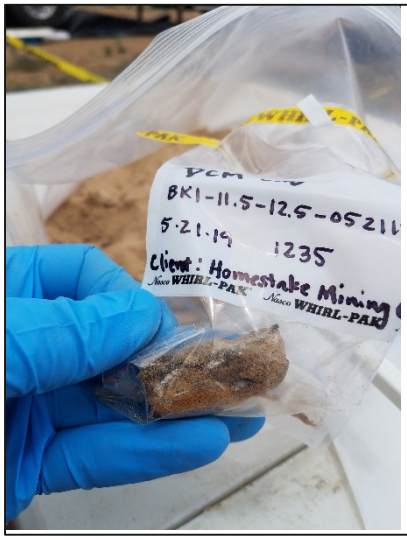

Photo: 236

Date:
5-21-19

Description:
Sample with organic matter and iron staining,

Location:
BK1c

Photo: 237

Date:
5-22-19

Description:
Clay sample

Location:
BK1c

Project Photographs

Grants Reclamation Project
Grants, NM

Photo: 238

Date:
5-22-19

Description:
Sample before breaking apart with new chisel.

Location:
BK3

Photo: 239

Date:
5-22-19

Description:
Sample after breaking apart with new chisel.

Location:
BK3

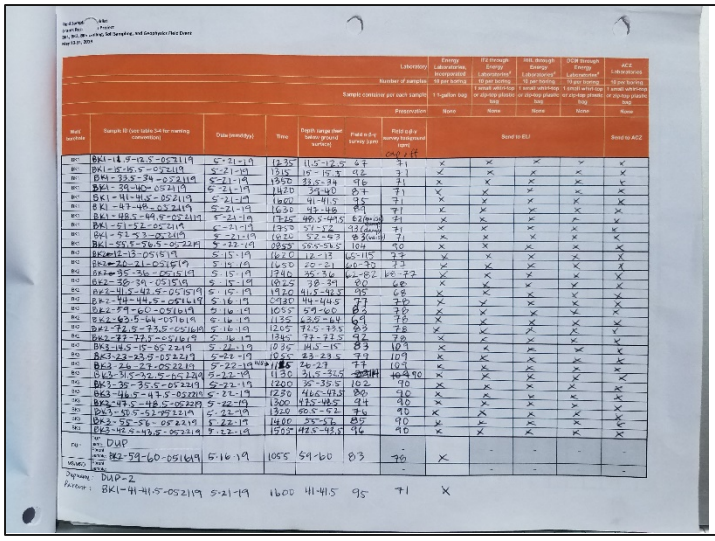

Photo: 240

Date:
5-22-19

Description:
Field sampling log

Location:
GRP

Project Photographs

Grants Reclamation Project
Grants, NM

	Photo: # **Date:** #### **Description:** ### **Location:** ###
	Photo: # **Date:** #### **Description:** ### **Location:** ###
	Photo: # **Date:** #### **Description:** ### **Location:** ###

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