REPORT

Assessment of Corrective Measures – Semi-Annual Report

Great River Energy, Stanton Station, Closed Bottom Ash Landfill

Submitted to:

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1.0 INTRODUCTION

WSP USA Inc. (WSP) has prepared this semi-annual report for the ongoing evaluation of corrective measures for the Bottom Ash Landfill at Great River Energy's (GRE) Stanton Station in accordance with the United States Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) Rule 40 Code of Federal Regulations (CFR) Part 257 and the North Dakota Department of Environmental Quality (NDDEQ) CCR Rule found in North Dakota Administrative Code (NDAC) Title 33.1 Article 20 Chapter 08. This semi-annual report has been prepared to document progress towards selection and design of a remedy as part of the groundwater corrective measures addressing the statistically significant level (SSL) of arsenic above the site groundwater protection standard (GWPS) in groundwater at monitoring well MW-103 downgradient of the Bottom Ash Landfill. The GWPS for arsenic at the Bottom Ash Landfill is set at the USEPA maximum contaminant level (MCL) of 0.01 mg/L.

The SSL for arsenic at MW-103 was identified on March 28, 2022, when assessment monitoring statistics were completed following the fourth quarter (Q4) 2021 sampling and testing event. A notification identifying the SSL for arsenic was posted online and submitted to the NDDEQ on April 27, 2022 (within 30 days of identifying the SSL). The ACM was initiated on June 24, 2022, within 90 days of identifying the SSL for arsenic. A 60-day extension approved by the NDDEQ on September 16, 2022 (NDDEQ 2022) altered the deadline for completion of the ACM to November 21, 2022, on which date the ACM was finalized and consequently submitted to the NDDEQ (GAUSA 2022). The NDDEQ approved the ACM on February 21, 2023 (NDDEQ 2023). This semi-annual report covers activities conducted since January 2023, following between finalization of the 2022 Annual Groundwater Monitoring and Corrective Action Report (WSP 2023a).

1.1 Purpose

The purpose of the ACM was to identify potential corrective measures to prevent further releases and to remediate any identified releases to groundwater at the Bottom Ash Landfill. Both the Federal and State rules indicate that corrective measure assessments should include an analysis of the effectiveness of potential corrective measures addressing the following as stated in 40 CFR 257.96(c) and NDAC 33.1-20-08-06(6)(c):

- performance of potential remedies
- reliability of potential remedies
- ease of implementation of potential remedies
- potential impacts of potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination
- time required to begin and complete the remedy
- any institutional requirements that may substantially affect implementation of the selected remedy, such as state or local permit requirements
- other environmental or public health requirements that may substantially affect implementation of the selected remedy

In particular, the ACM evaluated corrective measure alternatives for groundwater corrective action at the site given the specific site conditions and constituent(s) of concern. Based on the results of the ACM, further evaluation is being performed, site-specific studies completed, and a final long-term corrective action plan

developed pursuant to 40 CFR 257.97 and -98 and NDAC 33.1-20-08-06(6) and (7). This process is typically iterative and may be composed of multiple steps to analyze the effectiveness of corrective measures to address the potential migration of CCR constituents in groundwater at the Bottom Ash Landfill.

1.2 Evaluation of Corrective Measures

Pursuant to 40 CFR 257.97 and NDAC 33.1-20-08-06(6), GRE is further evaluating the potential corrective measures identified in the ACM report (GAUSA 2022) to identify a remedy or combination of remedies as soon as feasible.

1.2.1 Source Control Corrective Measures

Prior to the initiation of assessment monitoring and the ACM, the Bottom Ash Landfill was closed with an engineered final cover placed over CCR left in place. Closure in place was completed in accordance with the closure plan (GAI 2019) and was documented in the CQA report provided to the NDDEQ (GAUSA 2021). The cover system was designed to minimize infiltration and erosion and to meet or exceed the requirements of 40 CFR 257.102(d)(3) and NDAC 33.1-20-08-07(3)(d)(3). The previously completed closure in place of the Bottom Ash Landfill provides a source control measure that reduces the potential for migration of CCR constituents to groundwater. Due to the engineering properties of the final cover, and information indicating that groundwater is not anticipated to have continued significant interaction with placed CCR, the closure of the Bottom Ash Landfill is anticipated to perform well as a source control.

While the previously completed closure in place serves as the primary source control measure to reduce the potential for migration of CCR constituents to groundwater, two additional source control measures were presented in the ACM report (GAUSA 2022):

- closure by removal of CCR from the Bottom Ash Landfill
- in situ stabilization of all or portions of the CCR within the Bottom Ash Landfill

An evaluation of these source control corrective measures is presented in Table 1. At present, the final cover placement over CCR at the Bottom Ash Landfill is considered an appropriate source control corrective measure and the other two source control corrective measures are not being pursued. These other two source control corrective measures can be reconsidered in the future, if required in conjunction with the chosen groundwater remediation corrective measure.

1.2.2 Groundwater Remediation Corrective Measures

In addition to the source control corrective measures, the following groundwater remediation corrective measures were identified in the ACM as potentially feasible for use at the Bottom Ash Landfill:

- Monitored Natural Attenuation and Enhanced Monitored Natural Attenuation (MNA)
- Hydraulic Containment (Groundwater Pump and Treat)
- Geochemical Approaches (In Situ Injection)
- Permeable Reactive Barriers
- Phytoremediation

An evaluation of these groundwater remediation corrective measures is presented in Table 2. At present, the following groundwater remediation corrective measures are still being evaluated for implementation at the Bottom Ash Landfill:

- Monitored Natural Attenuation and Enhanced Monitored Natural Attenuation (MNA)
- Geochemical Approaches (In Situ Injection)
- Permeable Reactive Barriers
- Hydraulic Containment (Groundwater Pump and Treat)

Phytoremediation is not currently being pursued due to the limitations with respect to groundwater depth, but can be reconsidered in the future.

2.0 SUMMARY OF WORK COMPLETED

The following sections summarize field investigation activities, desktop analyses, and supplemental data collected between January and July 2023 since completion of the 2022 annual report (WSP 2023a) to support site characterization and further delineation of the SSL (nature and extent), as well as evaluation of the groundwater remediation corrective measures presented in the ACM report (GAUSA 2022).

The collected data will be used to evaluate the feasibility, mechanisms, rates, and stability of identified corrective measure alternatives to address the SSL for arsenic in groundwater downgradient of the Bottom Ash Landfill. Evaluations of the data as they relate to remedy selection alternatives is ongoing and will be presented in future report(s).

2.1 Groundwater Monitoring Activities

CCR compliance groundwater monitoring related activities have been conducted at the Bottom Ash Landfill since June 2016. An assessment monitoring program was initiated for the Bottom Ash Landfill in Q1 2021 following identification of a statistically significant increase (SSI) for boron at MW-103. As part of the transition to assessment monitoring, samples have been collected and analyzed for the assessment monitoring parameter list, in addition to continued monitoring for the detection monitoring parameter list.

Following the transition to assessment monitoring, an SSL above the GWPS was identified for arsenic at MW-103 in March 2022. Details are provided in the 2022 annual report (WSP 2023a). Since completion of the 2022 annual report, additional samples as required by the assessment monitoring program have been collected in March 2023 and June 2023. A notification indicating the continued SSL for arsenic based on the results of the March 2023 sampling event has been posted to GRE's publicly accessible website and provided to the NDDEQ. Evaluation and statistical analysis of the June 2023 data is ongoing and will be addressed within the required timeframes stipulated by the Federal and State rules.

2.2 Continued Nature and Extent Delineation

The locations of the site monitoring wells (network wells and nature and extent wells) and a potentiometric surface contour map showing the June 2023 groundwater contours are shown in Figure 1. Table 3 provides a summary of the construction details for the site monitoring wells.

2.2.1 Horizontal and Vertical Delineation Well Installation

To further characterize the groundwater flow direction, hydraulic gradient, and the nature and extent of arsenic downgradient of the Bottom Ash Landfill, 11 additional wells were installed and developed in February 2023. Information pertaining to installation of the new wells is included in Appendix A. These wells are in addition to the nature and extent wells installed in May 2022, which were presented in the ACM report (GAUSA 2022).

A summary of the intent for the wells installed in February 2023 is provided below:

- MW-PB3 was installed as an additional property boundary well in conjunction with the previously installed MW-PB1.
- MW-300 and MW-301 were installed primarily as piezometers to assist in understanding groundwater flow direction and gradient.
- Two sets of vertical delineation wells (MW-216/MW-220 and MW-211/MW-221) were installed to allow for downgradient vertical delineation. Existing upgradient wells MW-7A and MW-7B provide upgradient vertical delineation.
- The remaining new wells were installed to assist in defining the extents of arsenic concentrations above the MCL downgradient of the Bottom Ash Landfill.

2.2.2 Groundwater Flow Direction and Gradient

Depth to groundwater measured in June 2023 at the existing and new nature and extent wells was used to estimate groundwater contours around the Bottom Ash Landfill (Figure 1). As discussed in the ACM report (GAUSA 2022), the previous nature and extent wells were installed based on the available information suggesting downgradient flow was primarily to the northeast. However, based on information collected from the wells installed in May 2022, the area north and northwest of MW-103 was considered a potential downgradient flow path. The June 2023 estimated groundwater contours utilizing information from the newly installed wells indicate that groundwater is flowing more to the north than to the northeast downgradient of the Bottom Ash Landfill.

Horizontal gradients using the newly installed wells downgradient of the Bottom Ash Landfill are currently being evaluated. Results will be incorporated into future reports.

Vertical gradients downgradient of the Bottom Ash Landfill are evaluated by comparing the measured groundwater elevation in the two sets of vertical delineation wells. Based on the March 2023 and June 2023 measured groundwater elevations, vertical gradient between the paired wells is minimal.

2.2.3 Groundwater Sampling

Groundwater was sampled in March 2023 and June 2023 from the wells installed in May 2022 and February 2023. Collected samples have been analyzed for both the detection monitoring and assessment monitoring parameter lists. This data is still being evaluated and has not yet been used to define the extent of arsenic concentrations above the MCL downgradient of the Bottom Ash Landfill. Data collected from the newly installed wells along with an updated estimate of the extent of arsenic above the MCL will be provided in the 2023 Annual Groundwater Monitoring and Corrective Action Report, due January 2024.

2.3 Supplemental Data Collection and Analysis

Additional field investigation activities and data analyses have been performed to evaluate potential corrective measure alternatives.

2.3.1 Sample Collection for Geotechnical Analyses

As part of the effort associated with drilling of the additional nature and extent wells in February 2023, samples were collected for further geotechnical analyses to supplement previous testing. The following testing was conducted on these samples:

- grain size distribution
- Atterberg limits

Samples collected for analysis are within the screened intervals of the installed wells, below measured water levels. Results of the analyses are presented in Appendix B.

2.3.2 Sample Collection for Chemical and Mineralogical Analyses

Samples were collected for further chemical and mineralogical analyses during drilling of the additional nature and extent wells in February 2023 to supplement testing completed on samples collected from the locations installed in 2022. The following testing is either in the process of being finalized or will be conducted in the next six months:

- Chemical Analyses
  - Cation Exchange Capacity
  - Sequential Extraction
- Mineralogical Analyses
  - Mineralogical composition via X-Ray Diffraction with Rietveld refinement

Samples collected for analysis are within the screened intervals of the installed wells, below measured water levels. Results of the analyses will be presented as part of the 2023 Annual Groundwater Monitoring and Corrective Action Report, due January 2024.

2.3.3 Hydraulic Conductivity Testing Activities

In July 2023, in situ hydraulic conductivity testing (slug testing) was performed by WSP for a subset of the site wells. The purpose of the testing was to further investigate the horizontal hydraulic conductivity of the materials encountered in the monitoring well screened intervals at the site in support of the evaluation of corrective measure alternatives.

In-situ rising-head and falling-head hydraulic conductivity tests provide a quantitative estimate of horizontal hydraulic conductivity and a qualitative estimate of aquifer anisotropy in water-bearing units. Following completion of the testing, the data collected will be analyzed using the mathematical solution by Bouwer and Rice (Bouwer and Rice 1976; Bouwer 1989), which is applicable to fully or partially penetrating piezometers in unconfined or confined aquifers.

The computer software program AQTESOLV©, produced by HydroSOLVE, Inc., will be used to assist in the analysis and plotting of the data. The best fit lines will initially be calculated by the computer software and then be adjusted manually, where necessary. Results of the analyses will be presented as part of the 2023 Annual Groundwater Monitoring and Corrective Action Report, due January 2024.

The newly collected data will be used to supplement existing site hydraulic conductivity data. An updated understanding of aquifer properties, including hydraulic conductivity, will help to further refine the conceptual site model and support assessment of certain groundwater corrective measures.

2.3.4 Tier I MNA Analysis

To evaluate the potential for MNA to be an effective corrective measure at the Bottom Ash Landfill, a desktop study was conducted for the first tier of the USEPA's recommended phased approach for MNA and completed in April 2023 (WSP 2023b). The first tier aims to demonstrate the capacity for active constituent removal for the constituent of interest from groundwater, and associated stability of the plume. The report summarizing the Tier I MNA Evaluation is included as Appendix C.

Based on the findings of the Tier I MNA evaluation, MNA remains a potential remedy for arsenic at the Bottom Ash Landfill, either alone or in combination with other corrective measures. However, in order for MNA to be considered as the chosen remedy, the next phases in the phased approach must be considered, as discussed in Section 2.3.5.

2.3.5 Tier II and Tier III MNA Analysis

A Tier II and Tier III MNA evaluation was initiated following completion of the Tier I MNA evaluation, and is ongoing. Tier II aims to determine the mechanisms and rates of the operative attenuation processes within the aquifer. Tier III evaluates the long-term capacity for attenuation within the aquifer as well as the stability of the immobilized constituents. Results of the Tier II and Tier III evaluation will be included in 2023 Annual Groundwater Monitoring and Corrective Action Report, due January 2024.

3.0 PLANNED ACTIVITIES

GRE has initiated activities as outlined in the ACM Report (GAUSA 2022) to support the groundwater remedy selection process and address potential changes in site conditions as appropriate. Selection and implementation of corrective measures can be iterative, and GRE will continue data collection efforts as necessary to further refine the site conceptual model and evaluate the feasibility of remedies identified in the ACM Report (GAUSA 2022).

Supplementary data collection and evaluation activities proposed to be completed in the next 6 months are summarized below:

- Finalize results for geotechnical, chemical, and mineralogical testing, for use in supplementing geochemical modeling and selection of remedies.
- Finalize geochemical modeling to determine the attenuation capacity of the site soils as well as adsorption/desorption capacity of the aquifer materials, for use in confirming whether MNA is a feasible stand-alone corrective measure or in conjunction with other geochemical approaches including enhanced MNA or in-situ injection.
- Analyze collected hydraulic conductivity testing data.
- Complete validation and evaluation of March 2023 and June 2023 groundwater samples from the nature and extent wells to support delineation of the extents of arsenic above the MCL downgradient of the Bottom Ash Landfill.
- Collect samples in Q4 2023 for the detection monitoring and assessment monitoring parameter lists.

GRE will continue to prepare semi-annual progress reports to document the progress in selecting and designing a groundwater remedy in accordance with 40 CFR 257.97 and -98 and NDAC 33.1-20-08-06(6) and (7). The next semi-annual report will be included in the 2023 annual groundwater monitoring report, due January 31, 2024. GRE will include future semi-annual progress reports with the routine groundwater monitoring and corrective action reports to meet the requirements of 40 CFR 257.105(h)(12), 40 CFR 257.106(h)(9), and 40 CFR 257.107(h)(9) and NDAC 33.1-20-08-08(1)(h)(12), 33.1-20-08-08(2), and 33.1-20-08-08(3).

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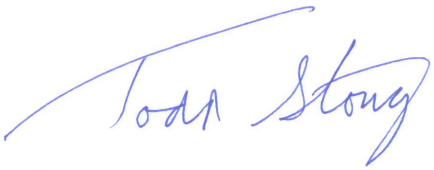
WSP USA Inc.



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https://golderassociates.sharepoint.com/sites/170737/project files/6 deliverables/gl21509219.000/reports/005-rpt-2023_acm_semi_annual/rev0/gl21509219.000-005-0-rpt-acm_2023_semi_annual_31jul23.docx

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Tables

Table 1: Source Control Corrective Measures Comparison

	Regulatory Criteria						
Corrective Measure	**Performance**	**Reliability**	**Ease of Implementation**	**Potential Impacts**	**Time to Begin and Complete**	**Permitting / Institutional Requirements**	**Other Environmental or Public Health Requirements**
Closure In-Place with Cover	Performance is reliant on the not having significant sustained interaction with groundwater and placed CCR, and the final cover being an engineered cover designed to minimize the potential for precipitation to infiltrate through the cover and into the CCR.	Reliability of closure in-place with a cover is dependent on the continued performance of the cover system during the post-closure period, and groundwater not rising to the point of significant interaciton with the CCR.	Implementation was completed in 2020. However, detailed design was required, along with permit updates with the NDDEQ. Implementation required extensive earthworks construction for reducing the footprint and installing the final cover.	Failure of the cover system could allow more infiltration through the CCR than desired..	Begun in 2019 and completed in 2020 prior to initiating assessment monitoring or the assessment of corrective measures.	Previously permitted and approved by the NDDEQ. Deed restrictions have previously been placed based on the current site closure configuration.	Prior to completion, construction disruptions occurred. Little to no additional disruptions are anticipated unless changes are made to the existing closed landfill.
Closure by Removal	Closure by removal removes the source and eliminates the potential for future contamination to occur due to failure of the cover system or an groundwater interaction.	Reliability for closure by removal is dependent on complete removal of source material and impacted material.	In order to implement closure by removal of the current landfill, a new landfill would need to be designed, permitted with the NDDEQ, and constructed prior to removal of material from the existing landfill.	Increase in overall risk to workers, surrounding community and the environment due to factors such as fugitive dust, heavy construction equipment operation and emissions, and potential spills and safety hazards associated with transport to the new site.	Time to begin is constrained by the need to investigate a site, design, permit, and construct a new CCR landfill, which can take upwards of 2 years. Construction of a new landfill is required prior to removal of material from the existing landfill, which may take an additional 6 to 12 months based on the current volume of CCR.	A new landfill permit will be required.	Significant disruptions will be made to the current site configuration, along with significant construction activity for developing a new landfill, remvoing CCR, and hauling CCR to the new landfill.
In-Situ Stabilization	In-situ stabilization would isolate/secure the source in a bound matrix and reduce the potential for constiuents of concern to leach from the stabilized source material. The performance will depend upon the ability to mix and the properties of the stabilized source material.	Reliability of in-situ stabilization is dependent on the ability for the injected material to solidify the matrix and change the permeability of the subsurface. For arsenic, in-situ stabilization can be a reliable corrective measure for groundwater.	Implementation requires a detailed design effort with bench scale testing to determine appropriate amendments based on the source material and aquifer properties.	In-situ stabilization may result in the stabilization of arsenic the constituent of concern, but can increase the solubility of non-target metals within the aquifer. Treatment can also result in undesirably high pH levels if the buffering capacity of the system is not maintained.	Time to begin and complete in-situ stabilization would be dependent on the availability of specialized contractors and equipment, and may take several years.	Deed restrictions have previously been placed based on site closure. No other institutional requirements are anticipated.	Pilot testing would be required to determine impacts to groundwater chemistry based on addition of the ISS components. Following installation, the remedy is passive.

Table 2: Groundwater Remediation Corrective Measures Comparison

	Regulatory Criteria						
Corrective Measure	**Performance**	**Reliability**	**Ease of Implementation**	**Potential Impacts**	**Time to Begin and Complete**	**Permitting / Institutional Requirements**	**Other Environmental or Public Health Requirements**
Monitored Natural Attenuation and Enhanced Monitored Natural Attenuation	Assuming available capacity, MNA can provide continued effective performance in reducing constituent concentrations.	Reliability is dependent on aquifer conditions that favor arsenic attenuation or can be enhanced, and that sufficient attenuation capacity exists within the aquifer. MNA is reliable and can either be used as a stand-alone corrective measure for groundwater impacted by arsenic, or in combination with other technologies.	Little to no effort required for physical implementation of standard MNA, but moderate to complex effort required to fully and accurately implement and document as a corrective measure. Enhanced MNA may require additional installation requirements, including well installation. Additional data is needed to demonstrate that the aquifer has sufficient attenuation capacity to meet the stated site objectives within a reasonable time frame.	No known impacts. MNA relies on the natural processes and existing geologic materials within the aquifer to reduce constituent concentrations, toxicity, and mobility without disturbing the installed cover or subsurface materials.	Evaluation for MNA can begin immediately, but substantial completion of evaluation and demonstration of attenuation mechanisms may require up to 2 years. Long-term monitoring and reporting are likely required.	No additional requirements, as deed restrictions have previously been placed due to site closure.	Little to no physical disruption to remediation areas and no adverse construction impacts are expected.
Hydraulic Containment (Groundwater Pump and Treat)	Pump and treat can effectively provide hydraulic control throughout the operational life of the system. Performance is contingent on routine groundwater assessment throughout the pumping process, and may not be quickly effective. Performance is additionally predicated on disposal of treated water and/or waste treatment sludge. Pump and treat can be less effective for inorganic compounds, like arsenic.	Generally reliable for hydraulic control of the groundwater plume and migration of contaminants of interest.	Implementation is easy to moderate, as a proven approach. Additional extraction wells and trenches would need to be installed.	Potential impacts are related to the operation of an on-site, above-ground water treatment facility and associated infrastructure for treatment and conveyance of impacted groundwater. Pumping may unintentionally alter geochemistry of the aquifer, in addition to the intended alteration of hydraulic flow pathways.	Extraction wells and trenches can be installed relatively quickly (generally within 6 to 12 months), but additional aquifer testing, overall system design, installation, and optimization, and permit approvals may be required, with lead times up to 2 years. Time for construction of any water treatment components may be variable depending on the scale of the chosen treatment process. Treatment timeline may extend for multiple years.	Depending on the effluent management strategy, a groundwater extraction permit and/or a NPDES discharge permit may be required, or an underground injection control (UIC) permit may be required if groundwater reinjection is chosen. Deed restrictions have previously been enacted based on site closure.	Above ground treatment components may be required for extended periods of time, resulting in waste residuals requiring management and disposal.
Geochemical Approaches (In-Situ Injection)	In-situ injection can rapidly alter aquifer conditions, resulting in geochemical immobilization of constituents of concern. Continued monitoring is required to ensure that aquifer conditions remain favorable for containing constituents of interest while not resulting in mobilization of other metals.	Approach is reliable if injected materials can be evenly distributed throughout the aquifer, permeability of the aquifer materials is adequate to allow for distribution, and available volume of appropriate receptors exists within the aquifer.	Moderate. May require installation of additional infrastructure for injection (additional wells for injection or other means of injection). Bench and pilot testing may be required to optimize implementation.	Minimal negative impacts are anticipated if the remedy works as designed. Additional constituents may be mobilized as an unintended consequence if appropriate steps are not taken prior to remedy implementation.	Optimization via bench-scale and pilot testing is required prior to implementation, and may require up to 2 years. Additional wells can be installed relatively quickly following pilot testing. Completion time would be variable based on attenuation mechanisms within the aquifer and distribution of injected materials within the treatment area.	An underground injection control (UIC) permit may be required for in-situ injections in order to implement this corrective measure. Deed restrictions have previously been enacted based on site closure.	None anticipated. Potential for mobilization of additional redox-sensitive components. Additional infestation of downgradient receptors is necessary. Remedy is passive following installation.

Table 2: Groundwater Remediation Corrective Measures Comparison

	Regulatory Criteria						
Corrective Measure	**Performance**	**Reliability**	**Ease of Implementation**	**Potential Impacts**	**Time to Begin and Complete**	**Permitting / Institutional Requirements**	**Other Environmental or Public Health Requirements**
Permeable Reactive Barriers (PRBs)	PRBs may have a limited reactive lifespan, dependent in part on the characteristics of the aquifer and the chosen reactive material. Without replacement of the reactive material within the PRB, extended performance of the corrective measure may not be possible. Additional testing may be required to select an appropriate sorptive media. PRBs also require vertical installation to key into low permeability zones and horizontal extents wide enough to prevent impacted groundwater from going around and/or under the PRB.	PRBs are a reliable corrective measure, but loss of reactivity over time may require re-installation depending on the length of time to reach the required GWPS. Reliability may be improved based on the ease of access to intercept the flow of groundwater. Additional data collection may be needed to characterize the attenuation mechanisms present within the aquifer and select an appropriate reactive media.	Implementation is moderate to difficult. Based on differentiation of the stratigraphic units, may require additional drilling for confirmation of an appropriate confining unit for constraining hydraulic movement. Trenching is necessary for installation.	Dependent on the materials used for PRB, mobilization of additional constituents may occur based on changing conditions within the aquifer. Short-term impacts may occur during construction of the PRB, but can be mitigated through appropriate planning. Positive impacts include reduction in the volume, mobility, or toxicity of the constituent of interest through precipitation within the reactive media.	Installation of a PRB can be accomplished in roughly 1 year, depending on the final location and configuration. Bench- and/or pilot-scale testing would be necessary prior to design and construction of the remedy, which may take up to 2 years.	Deed restrictions have previously been placed based on site closure. No other institutional requirements are anticipated.	Following installation, PRBs are a passive remedy. Certain treatment media have the potential to mobilize additional naturally-occurring constituents downgradient of the PRB.
Phytoremediation	Once established, phytoremediation can effectively provide hydraulic containment, and provide potential reduction of constituents of interest through immobilization, uptake, and/or sequestration within the biomass. It may take between 3 and 5 years following planting for the system to begin performing. Phytoremediation may be limited by site climate conditions and depth to groundwater.	When implemented as an engineered system, phytoremediation must account for the characteristics of the aquifer, including the hydraulic conductivity, flow velocity, depth to impacted groundwater, and other factors. Reliability is dependent on careful design of the system.	Implementation is easy to moderate. Trees must be installed to appropriate depths to intercept impacted groundwater. Once established, trees are self-maintaining with no required external energy requirements and little maintenance.	Minimal anticipated negative impacts. Positive impacts include enhanced aesthetics, additional wildlife habitat, and minimal energy usage.	Optimization via groundwater modeling is required, which may take between 6 and 9 months. Installation is relatively short and can be substantially completed within a few months. Hydraulic control may take between 3 and 5 years following planting, but system performance is anticipated to improve over time.	Deed restrictions have previously been placed based on site closure. No other institutional requirements are anticipated.	None anticipated. Following installation, remedy is passive and does not require external energy.

Table 3: Stanton Station Monitoring Well Summary

Location	Well ID	Date Constructed	TOC Elevation	Ground Surface Elevation	Screen Interval	Top of Screen Elevation	Bottom of Screen Elevation	Sand Pack Interval	Geologic Unit(s) Completed In
			ft AMSL	ft AMSL	ft bgs	ft AMSL	ft AMSL	ft bgs	
Upgradient/Side-gradient	MW-6B	09/08/1992	1711.5	1709.4	28.4-38.4	1681	1671	19.0-38.5	Outwash
	MW-7A	08/27/1992	1713.7	1711.3	7.0-17.0	1704	1694	5.0-18.0	Silty Sand/Clay
	MW-7B	09/09/1992	1712.9	1711.2	28.1-38.1	1683	1673	23.0-38.5	Silty Sand/Outwash
	MW-8B	09/03/1992	1749.8	1747.6	54.0-64.0	1694	1684	49.0-64.5	Outwash
	MW-105	11/18/2015	1717.0	1714.0	9.0-19.0	1705	1695	7.0-19.0	Clay/Outwash
Bottom Ash Landfill Downgradient	MW-9N	07/19/2010	*1703.5*	*1701.0*	*11.5-21.5*	1690	1680	*9.5-21.5*	Sand, Clayey Sand, Gravel
	MW-102	11/17/2015	1712.1	1708.8	14.0-24.0	1695	1685	12.0-24.0	Silty Sand/Clay
	MW-103	11/17/2015	1709.5	1706.2	14.0-24.0	1692	1682	12.0-24.0	Outwash
Bottom Ash Impoundment Downgradient	MW-201	08/10/2020	1704.9	1701.9	9.5-19.5	1692	1682	7.0-19.5	Fat Clay, Sand w/Silt
	MW-202	08/10/2020	1703.7	1701.6	8.0 - 18.0	1694	1684	6.0-18.0	Fat Clay, Lean Clay w/Sand
	MW-203	08/10/2020	1705.8	1702.7	6.0 -16.0	1697	1687	5.0-16.0	Sand w/Silt, Fat Clay
Bottom Ash Landfill Nature and Extent	MW-1R	11/08/1995	*1706.7*	*1703.5*	*23.7-32.7*	1680	1671	*21.7-34.7*	Gravel, Fat Clay
	MW-104	11/17/2015	1712.0	1709.0	14.0-24.0	1695	1685	12.0-24.0	Outwash
	MW-210	05/09/2022	1703.1	1699.9	12.0 - 22.0	1688	1678	12.0 - 22.0	Sand w/Silt
	MW-211	05/10/2022	1708.7	1705.4	12.0 - 22.0	1693	1683	10.0 - 22.0	Lean Clay, Sand w/Silt
	MW-212	05/10/2022	1709.6	1706.4	13.5 - 23.5	1693	1683	10.0 - 23.5	Fat Clay, Lean Clay Silty Sand
	MW-213	05/12/2022	1706.0	1702.7	19.5 - 29.5	1683	1673	19.5 - 29.5	Fat Clay, Lean Clay Silty Sand
	MW-214	05/12/2022	1709.2	1705.8	5.0 - 15.0	1701	1691	4.0 - 15.0	Fat Clay, Silty Sand
	MW-215	02/07/2023	1702.0	1699.0	9.0 - 19.0	1690	1680	6.0 - 19.0	Silty Sand with Gravel, Poorly Graded Sand with Gravel
	MW-216	02/08/2023	1702.9	1699.7	10.0 - 20.0	1690	1680	7.0 - 20.0	Silty Sand, Poorly Graded Sand with Gravel
	MW-217	02/09/2023	1700.0	1697.0	9.5 - 19.5	1688	1678	7.0-19.5	Poorly Graded Sand with Silt and Gravel
	MW-218	02/09/2023	1701.1	1698.1	9.5 - 19.5	1689	1679	7.0 - 19.5	Silty Sand, Poorly Graded Gravel with Sand
	MW-219	02/06/2023	1705.1	1702.2	10.0 - 20.0	1692	1682	8.0 - 20.0	Silty Sand, Clayey Sand
	MW-220	02/08/2023	1702.4	1699.7	25.0 - 35.0	1675	1665	22.0 - 35.0	Poorly Graded Sand, Clayey Sand
	MW-221	02/10/2023	1705.0	1701.8	22.0 - 32.0	1680	1670	18.0 - 32.0	Poorly Graded Sand with Silt and Gravel
	MW-222	02/06/2023	1721.9	1719.0	26.0 - 36.0	1693	1683	23.0 - 36.0	Lean Clay with Sand, Poorly Graded Sand with Silt and Gravel
	MW-300	02/09/2023	1700.1	1696.9	9.0 - 19.0	1688	1678	7.0 - 19.0	Silty Sand, Poorly Graded Sand with Silt and Gravel
	MW-301	02/10/2023	1698.6	1695.5	20.0 - 35.0	1676	1661	18.0 - 35.0	Lean Clay, Lean Clay with Sand, Clayey Sand
Property Boundary	MW-PB1	08/11/2020	1698.8	1695.9	15.0 - 25.0	1681	1671	13.0 - 25.0	Silt w/Sand, Silty Sand
	MW-PB3	02/09/2023	1701.6	1698.5	24.0 - 39.0	1675	1660	18.0 - 39.0	Sandy Lean Clay

Notes:

ft AMSL: feet above mean sea level

ft bgs: feet below ground surface

GW: groundwater

Top of casing (TOC) and ground surface elevations surveyed by Interstate Engineering, Inc. in September 2020, October 2022, and April 2023.

Well construction measurements are from the original bore log, well data sheet, or well construction form.

Well construction information for MW-9N and MW-1R shown in italics are estimates based on the original well logs, accounting for the casing reductions completed in June 2020.

Figures

LEGEND

- UPGRADIENT OR SIDEGRADIENT MONITORING WELL
- LANDFILL DOWNGRADIENT MONITORING WELL
- IMPOUNDMENT DOWNGRADIENT MONITORING WELL
- NATURE AND EXTENT WELLS (NOTE 7)
- CLOSED BOTTOM ASH LANDFILL/IMPOUNDMENT FOOTPRINT
- GENERAL DIRECTION OF GROUNDWATER FLOW
- GROUNDWATER CONTOURS AND ELEVATIONS

NOTE(S)

1. AERIAL IMAGERY OBTAINED FROM UNITED STATES DEPARTMENT OF AGRICULTURE, NATIONAL AGRICULTURE IMAGERY PROGRAM, 2020.
2. GROUNDWATER CONTOURS ARE BASED ON JUNE 2023 ELEVATION INFORMATION FROM THE SHOWN MONITORING WELLS, AS WELL AS MONITORING WELLS AND PIEZOMETERS NOT SHOWN.
3. THE NORTH AND CENTER CELLS OF THE BOTTOM ASH IMPOUNDMENT WERE CLOSED BY REMOVAL OF WASTE AND LINER.
4. THE SOUTH CELL OF THE BOTTOM ASH IMPOUNDMENT WAS CLOSED WITH A FINAL COVER OVER PLACED WASTE.
5. THE BOTTOM ASH LANDFILL WAS CLOSED BY CONSOLIDATION OF PLACED WASTE INTO A SMALLER FOOTPRINT AND CONSTRUCTION OF A FINAL COVER.

N

0 200 400
1" = 200' FEET

wsp

MONITORING WELL LOCATIONS AND Q2 2023 GROUNDWATER ELEVATIONS GREAT RIVER ENERGY - STANTON STATION

FIGURE 1

Path: \\golder.gds\complex\data\office\Denver\acad\GREAT RIVER ENERGY\STANTON\99_PROJECTS\21509219\Annual Monitoring Reports\ | File Name: 21509219_2023_WO-StantonNDDEQ_Q2.dwg

APPENDIX A

Borehole Logs for Wells Installed February 2023

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
Bismarck, ND

Well Log No. MW-215

Location: See Exploration Plan

Northing: 591298 Easting: 793510

Depth (Ft.) Elevation.: 1698.979 (Ft.)

Depth (Ft.)	Elevation	Description	Installation Details	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
0.5	1698.5	**TOPSOIL AND ROOTZONE**, dark brown, frozen	PVC Cap; Protecting Casing; Concrete							
		LEAN CLAY WITH SAND (CL), trace gravel, brown, frost to 3'								
4.0	1695	**SILTY SAND WITH GRAVEL (SM)**, fine to medium grained, grayish brown, medium dense	Bentonite							
5						18	11-9-10 N=19			
10						16	3-13-15 N=28		NP	19
12.0	1687	**POORLY GRADED SAND WITH GRAVEL (SP)**, trace silt, fine to coarse grained, grayish brown to gray, medium dense to very dense, varying amounts of gravel waterbearing at 14.5'	Silica Sand; PVC Screen	▽						
15						18	2-6-6 N=12			
20			End cap			10	4-13-42 N=55		NP	4
21.0	1678	**CLAYEY SAND (SC)**, fine to medium grained, gray, dense to very dense								
25			Silica sand backfill			18	14-14-23 N=37		30-11-19	49
30						12	12-31-49 N=80			
31.0	1668	***Boring Terminated at 31 Feet***								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
▽ While sampling

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-07-2023

Well Completed
02-07-2023

Notes
Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-29½'

Abandonment Method
Boring converted to a monitoring well

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
Bismarck, ND

Well Log No. MW-216

Location: See Exploration Plan

Northing: 591283 Easting: 793712

Depth (Ft.) Elevation.: 1699.699 (Ft.)

Depth (Ft.)	Description	Elevation
0.5	**TOPSOIL AND ROOTZONE**, dark brown, frozen	1699.2
	LEAN CLAY WITH SAND (CL), brown, frost to 3'	
4.5		1695.2
	SILTY SAND (SM), trace gravel, fine to medium grained, light brown, very dense	
9.5		1690.2
11.0	**SILTY SAND (SM)**, fine grained, brownish gray, medium dense	1688.7
	POORLY GRADED SAND WITH GRAVEL (SP), trace sand, fine to medium grained, brown, loose to medium dense, varying amounts of gravel	
	waterbearing at 15.5'	
25.5		1674.2
	SILT (ML), gray, hard	
29.5		1670.2
31.0	**CLAYEY SAND (SC)**, fine to medium grained, gray, dense	1668.7
	Boring Terminated at 31 Feet	

Installation Details: PVC Cap; Protecting Casing; Concrete; Bentonite; Silica Sand; PVC Screen; End cap; Silica sand backfill

Depth (Ft.)	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
5		18	12-30-29 N=59			
10		16	3-3-9 N=12			
15		18	2-2-4 N=6		NP	3
20		11	3-5-7 N=12			
25		16	18-17-16 N=33			
30		18	6-12-18 N=30		30-13-17	36

Water Level Observations: ▽ While sampling

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes
Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-29½'

Abandonment Method
Boring converted to a monitoring well

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-07-2023

Well Completed
02-08-2023

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
Bismarck, ND

Well Log No. MW-217

Location: See Exploration Plan

Northing: 591424 Easting: 793434

Depth (Ft.) Elevation.: 1697.045 (Ft.)

Graphic Log	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
	0.5 **TOPSOIL AND ROOTZONE**, dark brown, frozen 1696.5							
	SILTY SAND (SM), fine to medium grained, brown, frost to 3'							
	4.5 1692.5							
	POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), fine to coarse grained, brown, medium dense, varying amounts of gravel							
	5		X	10	5-9-13 N=22			
	waterbearing at 9.5'	▽						
	10		X	15	6-9-6 N=15			
	large coal inclusions at 14.5'							
	15		X	16	4-8-9 N=17		NP	8
	20		X	7	11-13-13 N=26			
	21.0 1676							
	Boring Terminated at 21 Feet							

Installation Details: PVC Cap Protecting Casing; Concrete; Bentonite; PVC Screen; Silica Sand; End cap

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
▽ While sampling

Notes
Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-19½'

Abandonment Method
Boring converted to a monitoring well

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-09-2023

Well Completed
02-09-2023

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
Bismarck, ND

Well Log No. MW-218

Location: See Exploration Plan

Northing: 591399 Easting: 793733

Depth (Ft.) Elevation.: 1698.094 (Ft.)

Graphic Log	Depth (Ft.)	Elevation (Ft.)	Description	Installation Details	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
	0.5	1697.6	**TOPSOIL AND ROOTZONE**, dark brown, frozen	PVC Cap Protecting Casing; Concrete							
			CLAYEY SAND (SC), fine to medium grained, brown, medium dense, frost to 3'								
	5.5	1692.6	**SILTY SAND (SM)**, trace gravel, fine to coarse grained, brown, medium dense, varying amounts of gravel	Bentonite			18	13-17-43 N=60			
	5										
	10						18	6-10-13 N=23			
	14.5	1683.6	**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, brown, loose, waterbearing coal inclusions at 15.5'	Pre-packed PVC screen	▽		18	2-2-2 N=4			
	15			Silica Sand; End cap							
	20						12	1-2-2 N=4		NP	4
	21.0	1677.1	***Boring Terminated at 21 Feet***								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations

▽ While sampling

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-08-2023

Well Completed
02-09-2023

Notes

Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-19½'

Abandonment Method
Boring converted to a monitoring well

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
Bismarck, ND

Well Log No. MW-219

Location: See Exploration Plan

Northing: 590847 Easting: 793600

Depth (Ft.) Elevation.: 1702.172 (Ft.)

Depth (Ft.)	Elevation	Description
0.5	1701.7	**TOPSOIL AND ROOTZONE**, dark brown, frozen
		LEAN CLAY WITH SAND (CL), brown, medium stiff, frost to 3'
6.0	1696.2	**SILTY SAND (SM)**, trace gravel, fine to coarse grained, brown, loose to medium dense
15.5	1686.7	**CLAYEY SAND (SC)**, fine to medium grained, brown, medium dense
20.5	1681.7	**WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM)**, fine to coarse grained, brown to gray, medium dense to dense, varying amounts of sand and gravel
		waterbearing at 24.5'
31.0	1671.2	***Boring Terminated at 31 Feet***

Installation Details: PVC Cap Protecting Casing; Concrete; Bentonite; PVC Screen; Silica Sand; End cap; Silica sand backfill

Depth (Ft.)	Recovery (In.)	Field Test Results	Atterberg Limits LL-PL-PI	Percent Fines
5	10	2-3-3 N=6	46-15-31	76
10	13	3-3-5 N=8		
15	16	3-5-10 N=15		
20	18	5-8-14 N=22		
25	16	6-12-20 N=32	NP	6
30	10	6-10-12 N=22		

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
▽ While sampling

Notes
Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-29½'

Abandonment Method
Boring converted to a monitoring well

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-06-2023

Well Completed
02-06-2023

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
Bismarck, ND

Well Log No. MW-220

Location: See Exploration Plan

Northing: 591282 Easting: 793719

Depth (Ft.) Elevation.: 1699.663 (Ft.)

Depth (Ft.)	Elevation	Description
0.5	1699.2	**TOPSOIL AND ROOTZONE**, dark brown, frozen
		CLAYEY SAND (SC), fine to medium grained, brown, dense, frost to 3'
5.5	1694.2	**SILTY SAND (SM)**, trace gravel, fine to medium grained, brown, dense
9.5	1690.2	
10.5	1689.2	**CLAYEY SAND (SC)**, fine to medium grained, grayish brown, medium dense
		POORLY GRADED SAND WITH GRAVEL (SP), fine to medium grained, brown, medium dense, varying amounts of gravel
		waterbearing at 14.5'
24.0	1675.7	**POORLY GRADED SAND (SP)**, trace gravel, hard drilling
26.0	1673.7	**CLAYEY SAND (SC)**, fine to medium grained, gray, medium dense to dense

Installation Details: PVC cap; Protecting casing; Concrete; Bentonite; Silica Sand; Pre-packed PVC screen; End cap; Silica sand backfill

Depth (Ft.)	Recovery (In.)	Field Test Results	Atterberg Limits LL-PL-PI	Percent Fines
5	174	10-24-32 N=56		
10	16	3-6-11 N=17		
15	10	3-4-11 N=15	NP	5
20	11	3-6-8 N=14		
25	17	8-34-50/4"	NP	5
30	18	6-9-13 N=22		
35	18	5-12-13 N=25		
40	18	9-15-20 N=35		

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
▽ While sampling

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-08-2023

Well Completed
02-08-2023

Notes
Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-44½'

Abandonment Method
Boring converted to a monitoring well

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
Bismarck, ND

Well Log No. MW-220

Location: See Exploration Plan

Northing: 591282 Easting: 793719

Depth (Ft.) Elevation.: 1699.663 (Ft.)

Graphic Log	Installation Details	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
CLAYEY SAND (SC), fine to medium grained, gray, medium dense to dense *(continued)*		45		X	18	8-15-21 N=36			
46.0 1653.7									
Boring Terminated at 46 Feet									

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations

▽ While sampling

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-08-2023

Well Completed
02-08-2023

Notes

Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-44½'

Abandonment Method
Boring converted to a monitoring well

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
Bismarck, ND

Well Log No. MW-221

Location: See Exploration Plan

Northing: 591129 Easting: 793539

Depth (Ft.) Elevation.: 1701.76 (Ft.)

Graphic Log	Depth (Ft.)	Elevation	Installation Details	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
	0.5	1701.3	PVC Cap Protecting Casing; Concrete							
			TOPSOIL AND ROOTZONE, dark brown, frozen							
			SILTY SAND (SM), fine to medium grained, brown, loose, frost to 3'							
			Bentonite							
	5				X	18	5-5-4 N=9			
	10				X	18	2-4-5 N=9		NP	31
	14.5	1687.3		▽						
			POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), fine to coarse grained, brown, medium dense, varying amounts of gravel, waterbearing							
	15				X	14	5-7-8 N=15		NP	8
	20				X	15	5-11-14 N=25			
			Silica Sand							
	25				X	12	6-7-10 N=17			
			Pre-packed PVC screen							
	30				X	18	5-8-15 N=23			
	34.0	1667.8								
			Auger Refusal at 34 Feet							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations

▽ While sampling

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-10-2023

Well Completed
02-10-2023

Notes

Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-34'

Abandonment Method
Boring converted to a monitoring well

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
Bismarck, ND

Well Log No. MW-222

Location: See Exploration Plan

Northing: 591059 Easting: 793481

Depth (Ft.) Elevation.: 1719.036 (Ft.)

Depth (Ft.)	Elevation	Description	Installation Details	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
0.5	1718.5	**TOPSOIL AND ROOTZONE**, dark brown, frozen	PVC cap; Protecting casing; Concrete							
		SANDY LEAN CLAY (CL), trace gravel, brown, stiff, frost to 3'	Bentonite							
5						13	4-5-8 N=13			
9.5	1709.5									
		CLAYEY SAND (SC), fine to medium grained, brown, loose, seams of silty sand								
10						15	2-3-4 N=7			
15.0	1704									
		SILTY SAND (SM), fine grained, brown, medium dense								
15						18	2-5-5 N=10			
19.5	1699.5									
		LEAN CLAY WITH SAND (CL), trace gravel, brown to dark brown, medium stiff to stiff								
20						18	7-9-10 N=19		30-20-10	81
25			Silica sand			18	1-3-6 N=9			
30.5	1688.5			▽						
30		**POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM)**, fine to coarse grained, grayish brown, medium dense to dense, waterbearing	PVC screen			18	3-7-11 N=18			
35						16	4-11-17 N=28			
40			Silica sand backfill			18	7-17-33 N=50		NP	9
41.0	1678									
		Boring Terminated at 41 Feet								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations

▽ While sampling

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-06-2023

Well Completed
02-06-2023

Notes

Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-39½'

Abandonment Method
Boring converted to a monitoring well

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
Bismarck, ND

Well Log No. MW-300

Location: See Exploration Plan

Northing: 591648 Easting: 793853

Depth (Ft.) Elevation.: 1696.906 (Ft.)

Depth (Ft.)	Graphic Log	Material Description	Elevation	Installation Details	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
0.5		**TOPSOIL AND ROOTZONE**, dark brown, frozen	1696.4								
		SILTY SAND (SM), fine to medium grained, brown to dark gray, loose to medium dense, frost to 3'		Concrete; Bentonite							
5							18	2-2-2 N=4			
10		seams of clay at 10'			▽		18	3-6-11 N=17		18-15-3	42
11.0			1685.9								
		POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), fine to coarse grained, brown, medium dense, waterbearing		PVC screen							
15							14	2-5-13 N=18		NP	8
20.0			1676.9	Silica Sand; End cap							
		CLAYEY SAND (SC), fine to medium grained, gray, medium dense to dense									
20							18	9-10-15 N=25			
25				Silica Sand backfill			18	5-10-13 N=23		33-13-20	28
30							18	9-13-18 N=31			
31.0			1665.9								
		Boring Terminated at 31 Feet									

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations

▽ While sampling

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-09-2023

Well Completed
02-09-2023

Notes

Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-29½'

Abandonment Method
Boring converted to a monitoring well

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
Bismarck, ND

Well Log No. MW-301

Location: See Exploration Plan

Northing: 591552 Easting: 793570

Depth (Ft.) Elevation.: 1695.506 (Ft.)

Depth (Ft.)	Elevation	Description	Installation Details	Recovery (In.)	Field Test Results	Atterberg Limits LL-PL-PI	Percent Fines
0.5	1695	**TOPSOIL AND ROOTZONE**, dark brown, frozen	PVC Cap Protecting Casing; Concrete				
3.0	1692.5	**LEAN CLAY WITH SAND (CL)**, brown, frost to 3'					
		SILTY SAND (SM), trace gravel, fine to coarse grained, brown, medium dense to dense, varying amounts of gravel	Bentonite	13	6-7-8 N=15		
		waterbearing at 8'		9	7-15-16 N=31		
15.5	1680			18	10-10-15 N=25		
16.5	1679	**SILT (ML)**, gray					
		LEAN CLAY (CL), grayish brown, very stiff, laminations of silt		18	6-9-16 N=25	38-17-21	99
27.0	1668.5		Silica Sand	18	8-10-17 N=27		
		LEAN CLAY WITH SAND (CL), gray, very stiff	Pre-packed PVC screen	18	6-9-14 N=23	47-12-35	71
32.0	1663.5						
		CLAYEY SAND (SC), fine to medium grained, gray, dense	End cap	18	7-11-20 N=31	63-11-52	42
			Silica Sand backfill	18	10-13-18 N=31		

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
▽ While sampling

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-10-2023

Well Completed
02-10-2023

Notes
Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-44½'

Abandonment Method
Boring converted to a monitoring well

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
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Well Log No. MW-301

Location: See Exploration Plan

Northing: 591552 Easting: 793570

Depth (Ft.) Elevation.: 1695.506 (Ft.)

Graphic Log		Installation Details	Depth (Ft.)	Water Level Observations	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
	CLAYEY SAND (SC), fine to medium grained, gray, dense *(continued)*									
	45.0 1650.5		45		X	18	8-10-19 N=29			
	46.0 **COAL**, black 1649.5									
	Boring Terminated at 46 Feet									

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations

▽ While sampling

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-10-2023

Well Completed
02-10-2023

Notes

Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-44½'

Abandonment Method
Boring converted to a monitoring well

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
I PO Box 2084
Bismarck, ND

Well Log No. MW-PB3

Location: See Exploration Plan

Northing: 592021 Easting: 794584

Depth (Ft.) Elevation.: 1698.506 (Ft.)

Depth (Ft.)	Elevation	Description
0.5	1698	**TOPSOIL AND ROOTZONE**, dark brown, frozen
		SANDY LEAN CLAY (CL), brown, frost to 3'
4.0	1694.5	**POORLY GRADED GRAVEL WITH SAND (GP)**, fine to coarse grained, brown, loose to medium dense
12.0	1686.5	**WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM)**, fine to coarse grained, brown, loose to medium dense
		waterbearing at 20'
20.5	1678	**SANDY LEAN CLAY (CL)**, gray to dark gray, stiff
		seam of coal and gravel at 35'
40.0	1658.5	***Boring Terminated at 40 Feet***

Installation Details: PVC Cap Protecting Casing; Concrete; Bentonite; Silica Sand; Pre-packed PVC screen; End cap

Depth (Ft.)	Sample Type	Recovery (In.)	Field Test Results	Water Content (%)	Atterberg Limits LL-PL-PI	Percent Fines
5		9	5-6-6 N=12			
10		10	3-4-5 N=9		NP	3
15		12	3-4-3 N=7			
20		16	8-8-8 N=16		NP	11
25		18	4-6-9 N=15			
30		13	3-5-7 N=12		35-12-23	61
35		15	2-4-5 N=9			
40						

Water Level Observations: ▽ While sampling

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes
Elevation Reference: Elevations were provided by others.

Advancement Method
3¼" HSA, 0-39½'

Abandonment Method
Boring converted to a monitoring well

Drill Rig
Mobile B-57

Hammer Type
Automatic

Driller
M. Roberts

Logged by
J. Hoeven

Well Started
02-09-2023

Well Completed
02-09-2023

APPENDIX B

Geotechnical Testing Results

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
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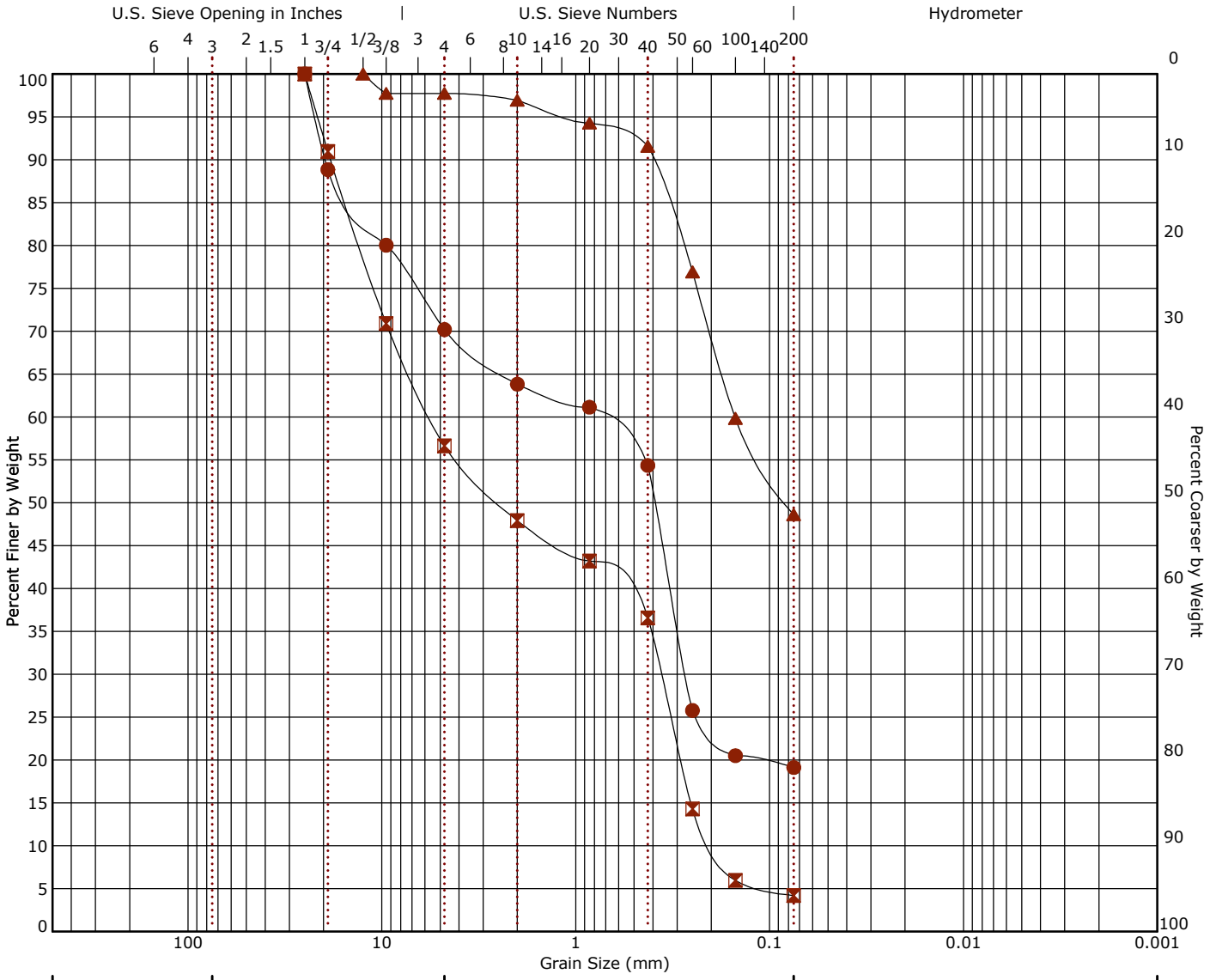
Bismarck, ND

Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS
●	MW-215	9.5 - 11	0.0	29.8	51.1	19.1			SM
⊠	MW-215	19.5 - 21	0.0	43.4	52.4	4.2			SP
▲	MW-215	24.5 - 26	0.0	2.3	49.1	48.6			SC

Description	
●	SILTY SAND with GRAVEL
⊠	POORLY GRADED SAND with GRAVEL
▲	CLAYEY SAND

Remarks	
●	
⊠	
▲	

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
1"	100.0	1"	100.0	1/2"	100.0
3/4"	88.85	3/4"	90.97	3/8"	97.74
3/8"	80.03	3/8"	70.89	#4	97.74
#4	70.19	#4	56.62	#10	96.95
#10	63.82	#10	47.92	#20	94.28
#20	61.14	#20	43.19	#40	91.57
#40	54.34	#40	36.57	#60	76.93
#60	25.77	#60	14.28	#100	59.83
#100	20.51	#100	5.96	#200	48.62
#200	19.12	#200	4.21		

Grain Size	●	⊠	▲
D_{60}	0.757	5.597	0.151
D_{30}	0.27	0.363	
D_{10}		0.192	

Coefficients	●	⊠	▲
C_C		0.12	
C_U		29.12	

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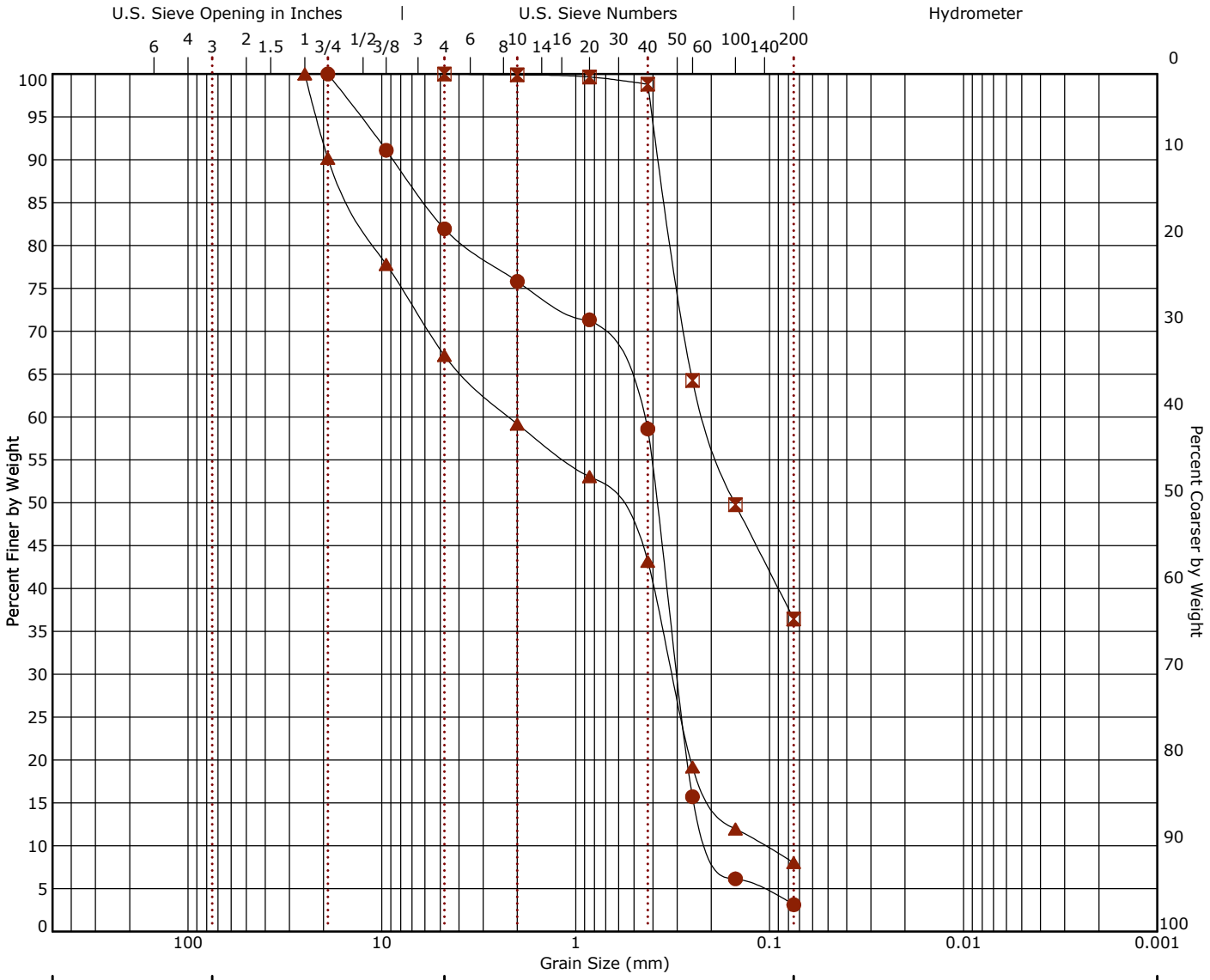
Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS
●	MW-216	14.5 - 16	0.0	18.1	78.8	3.1			SP
⊠	MW-216	29.5 - 31	0.0	0.0	63.6	36.4			SC
▲	MW-217	14.5 - 16	0.0	32.8	59.1	8.0			SP-SM

	Description
●	POORLY GRADED SAND with GRAVEL
⊠	CLAYEY SAND
▲	POORLY GRADED SAND with SILT and GRAVEL

Remarks
●
⊠
▲

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
3/4"	100.0	#4	100.0	1"	100.0
3/8"	91.1	#10	99.89	3/4"	90.17
#4	81.94	#20	99.65	3/8"	77.79
#10	75.8	#40	98.8	#4	67.17
#20	71.33	#60	64.26	#10	59.17
#40	58.6	#100	49.79	#20	53.05
#60	15.71	#200	36.45	#40	43.16
#100	6.14			#60	19.19
#200	3.11			#100	11.95
				#200	8.03

Grain Size	●	⊠	▲
D_{60}	0.459	0.215	2.187
D_{30}	0.298		0.318
D_{10}	0.184		0.106

Coefficients	●	⊠	▲
C_C	1.05		0.43
C_U	2.49		20.60

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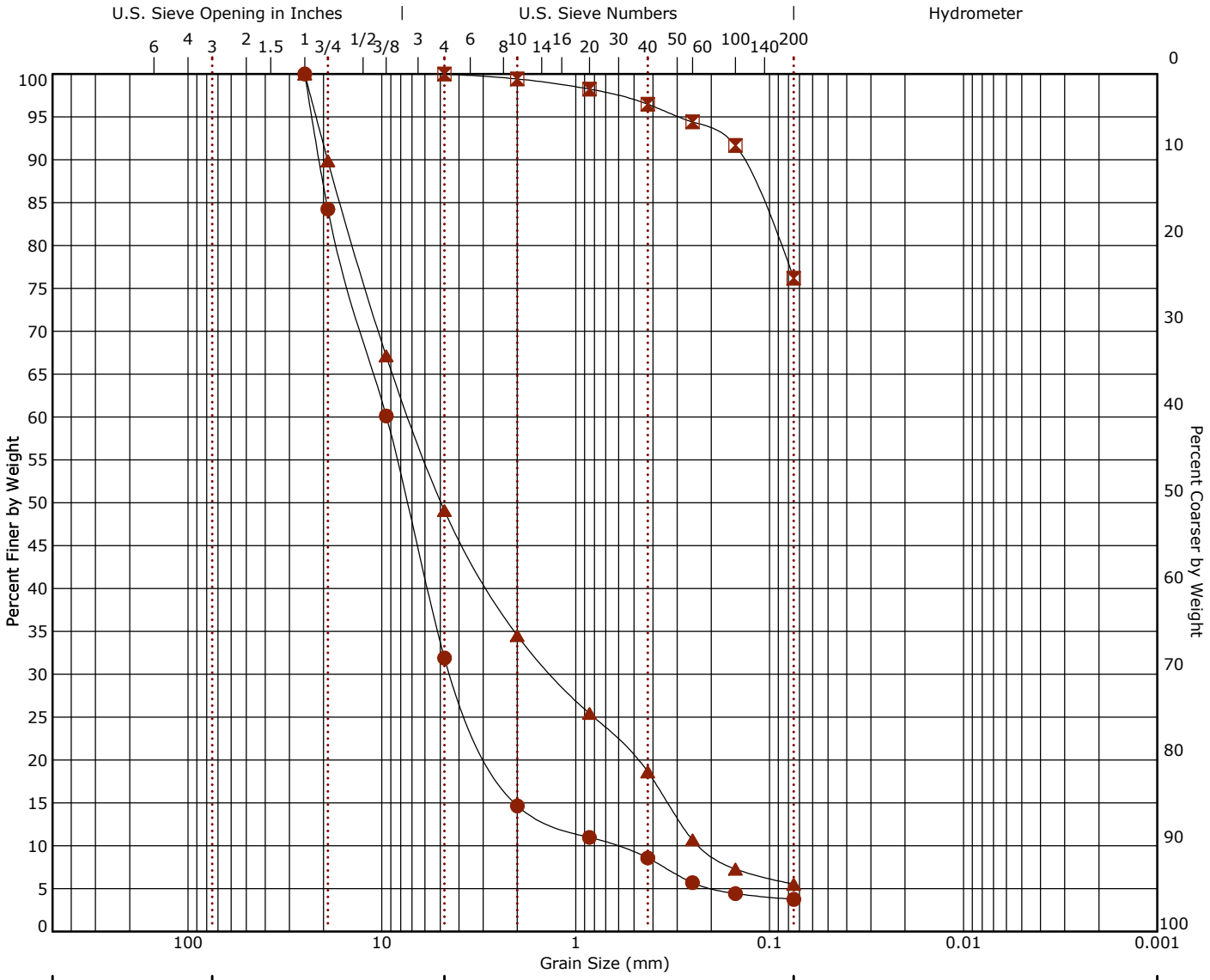
Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS
● MW-218	19.5 - 21	0.0	68.1	28.1	3.8			GP
⊠ MW-219	4.5 - 6	0.0	0.0	23.8	76.2			CL
▲ MW-219	24.5 - 26	0.0	50.9	43.6	5.5			GW-GM

Description
● POORLY GRADED GRAVEL with SAND
⊠ LEAN CLAY with SAND
▲ WELL-GRADED GRAVEL with SILT and SAND

Remarks
●
⊠
▲

● Sieve	● % Finer	⊠ Sieve	⊠ % Finer	▲ Sieve	▲ % Finer
1"	100.0	#4	100.0	1"	100.0
3/4"	84.24	#10	99.42	3/4"	89.88
3/8"	60.12	#20	98.24	3/8"	67.12
#4	31.89	#40	96.48	#4	49.08
#10	14.64	#60	94.42	#10	34.5
#20	10.97	#100	91.66	#20	25.43
#40	8.57	#200	76.2	#40	18.63
#60	5.7			#60	10.69
#100	4.42			#100	7.28
#200	3.75			#200	5.52

Grain Size	●	⊠	▲
D_{60}	9.472		7.225
D_{30}	4.32		1.308
D_{10}	0.642		0.225

Coefficients	●	⊠	▲
C_C	3.07		1.05
C_U	14.75		32.07

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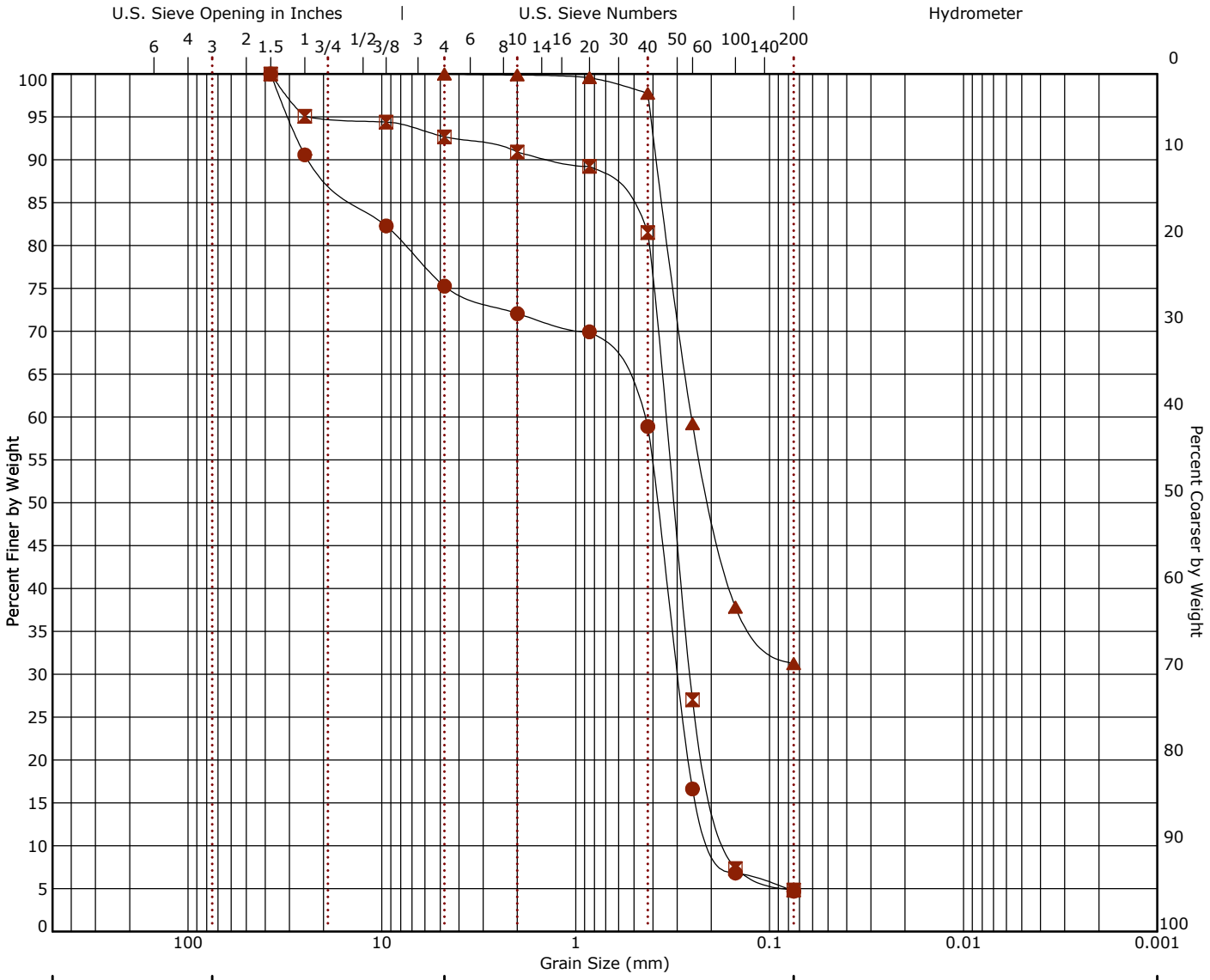
Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS
●	MW-220	14.5 - 16	0.0	24.7	70.6	4.7			SP
⊠	MW-220	24.5 - 25.8	0.0	7.3	87.8	4.9			SP
▲	MW-221	9.5 - 11	0.0	0.0	68.7	31.3			SM

	Description
●	POORLY GRADED SAND with GRAVEL
⊠	POORLY GRADED SAND
▲	SILTY SAND

Remarks

●	
⊠	
▲	

● Sieve	● % Finer	⊠ Sieve	⊠ % Finer	▲ Sieve	▲ % Finer
1 1/2"	100.0	1 1/2"	100.0	#4	100.0
1"	90.57	1"	95.08	#10	99.88
3/8"	82.28	3/8"	94.38	#20	99.56
#4	75.26	#4	92.67	#40	97.74
#10	72.05	#10	90.89	#60	59.21
#20	69.93	#20	89.23	#100	37.82
#40	58.88	#40	81.49	#200	31.25
#60	16.63	#60	27.02		
#100	6.81	#100	7.35		
#200	4.69	#200	4.85		

Grain Size

	●	⊠	▲
D_{60}	0.456	0.345	0.253
D_{30}	0.296	0.257	
D_{10}	0.177	0.161	

Coefficients

	●	⊠	▲
C_C	1.08	1.20	
C_U	2.57	2.15	

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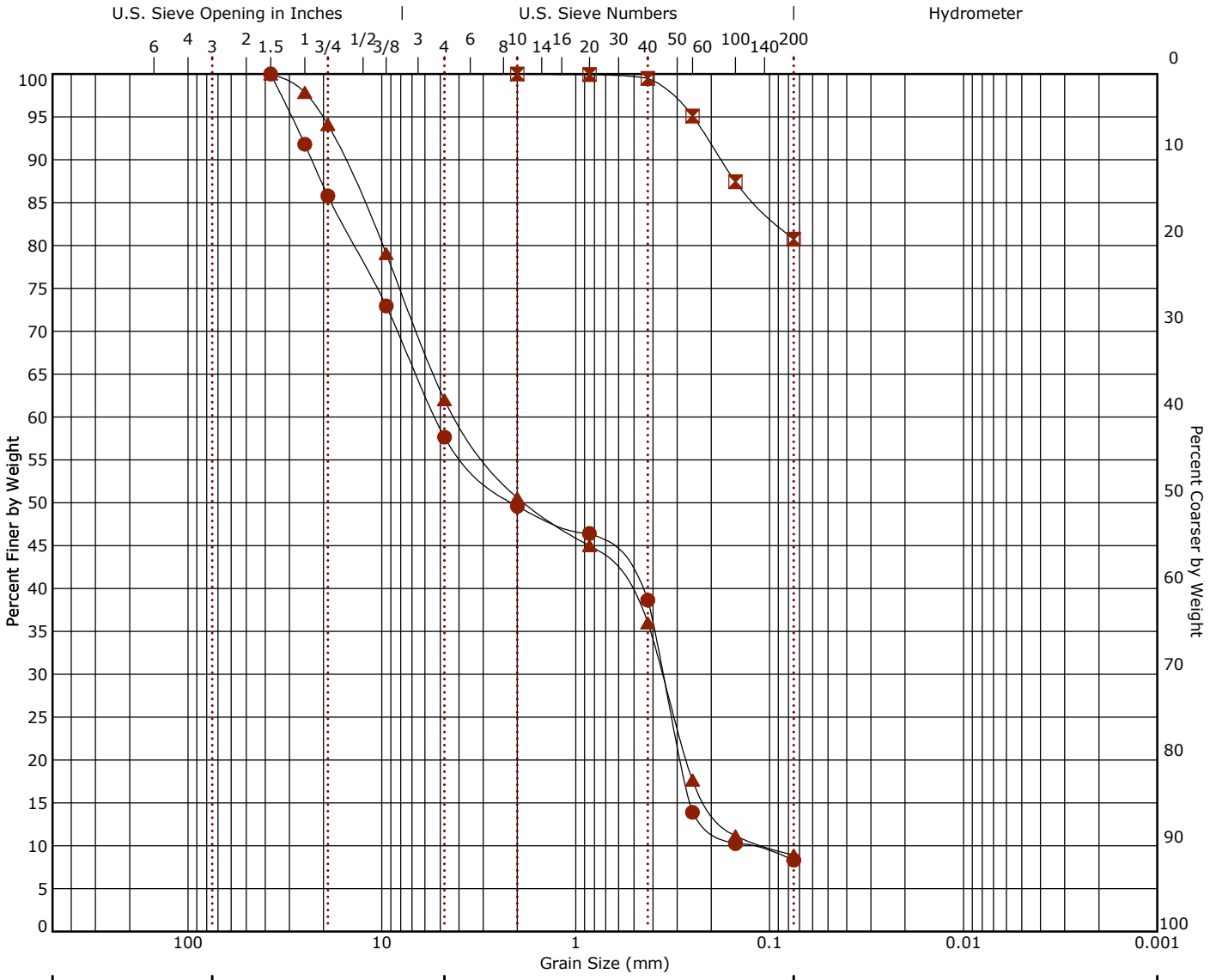
Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS
●	MW-221	14.5 - 16	0.0	42.3	49.3	8.3			SP-SM
⊠	MW-222	19.5 - 21	0.0	0.0	19.3	80.7			CL
▲	MW-222	39.5 - 41	0.0	38.0	53.1	8.9			SP-SM

	Description
●	POORLY GRADED SAND with SILT and GRAVEL
⊠	LEAN CLAY with SAND
▲	POORLY GRADED SAND with SILT and GRAVEL

	Remarks
●	
⊠	
▲	

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
1 1/2"	100.0	#10	100.0	1 1/2"	100.0
1"	91.8	#20	99.93	1"	97.85
3/4"	85.79	#40	99.48	3/4"	94.09
3/8"	72.95	#60	95.11	3/8"	79.06
#4	57.65	#100	87.42	#4	62.0
#10	49.58	#200	80.73	#10	50.57
#20	46.42			#20	44.99
#40	38.64			#40	35.99
#60	13.89			#60	17.67
#100	10.25			#100	11.16
#200	8.32			#200	8.91

Grain Size	●	⊠	▲
D_{60}	5.284		4.084
D_{30}	0.353		0.357
D_{10}	0.137		0.105

Coefficients	●	⊠	▲
C_C	0.17		0.30
C_U	38.58		38.88

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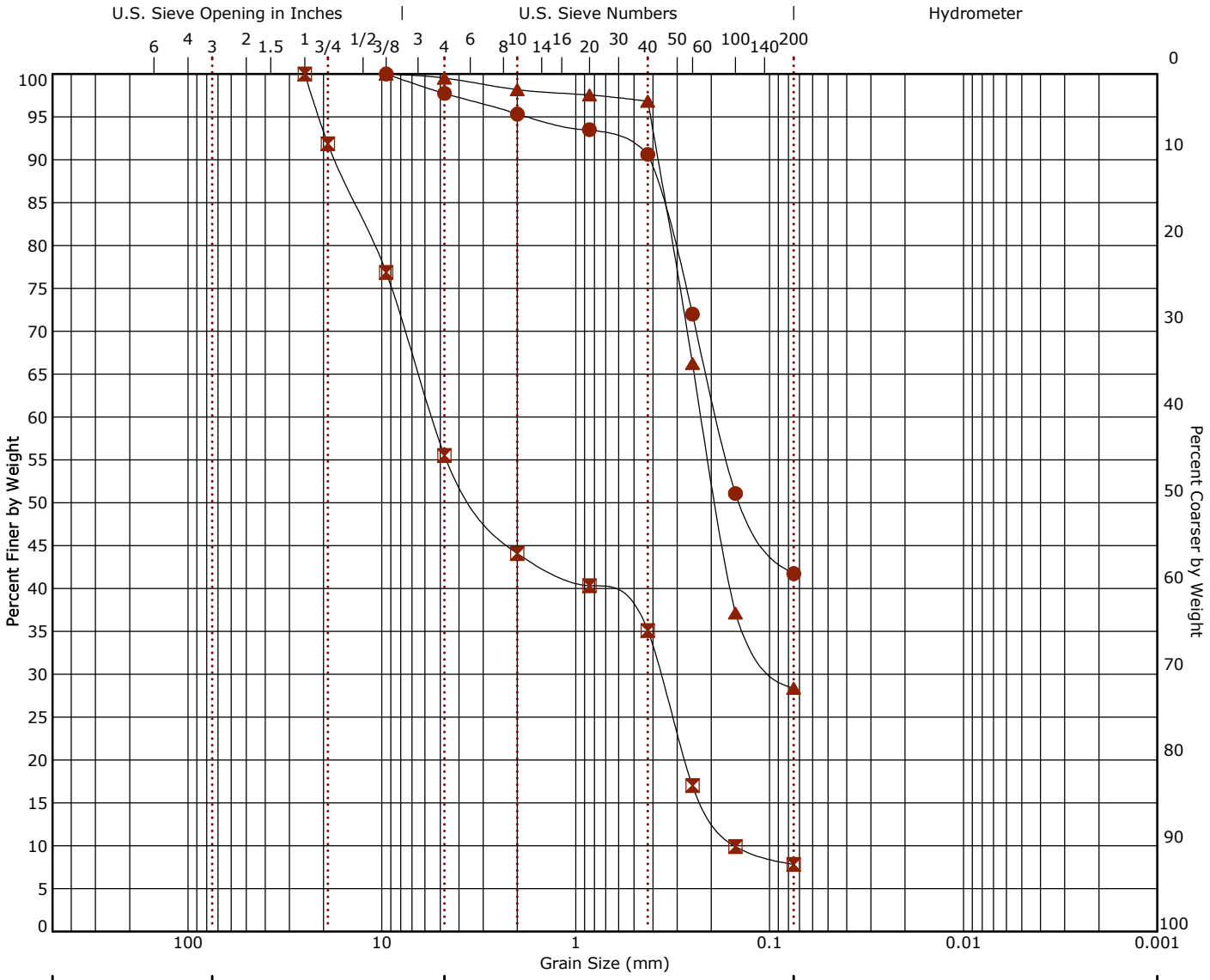
Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS
●	MW-300	9.5 - 11	0.0	2.3	56.0	41.7			SM
⊠	MW-300	14.5 - 16	0.0	44.5	47.7	7.8			SP-SM
▲	MW-300	24.5 - 26	0.0	0.5	71.2	28.4			SC

	Description
●	SILTY SAND
⊠	POORLY GRADED SAND with SILT and GRAVEL
▲	CLAYEY SAND

	Remarks
●	
⊠	
▲	

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
3/8"	100.0	1"	100.0	3/8"	100.0
#4	97.73	3/4"	91.86	#4	99.52
#10	95.32	3/8"	76.84	#10	98.17
#20	93.5	#4	55.53	#20	97.55
#40	90.62	#10	44.07	#40	96.82
#60	71.99	#20	40.32	#60	66.23
#100	51.08	#40	35.09	#100	37.14
#200	41.73	#60	17.01	#200	28.36
		#100	9.89		
		#200	7.81		

Grain Size	●	⊠	▲
D_{60}	0.187	5.494	0.224
D_{30}		0.366	0.085
D_{10}		0.151	

Coefficients	●	⊠	▲
C_C		0.16	
C_U		36.34	

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Grain Size Distribution

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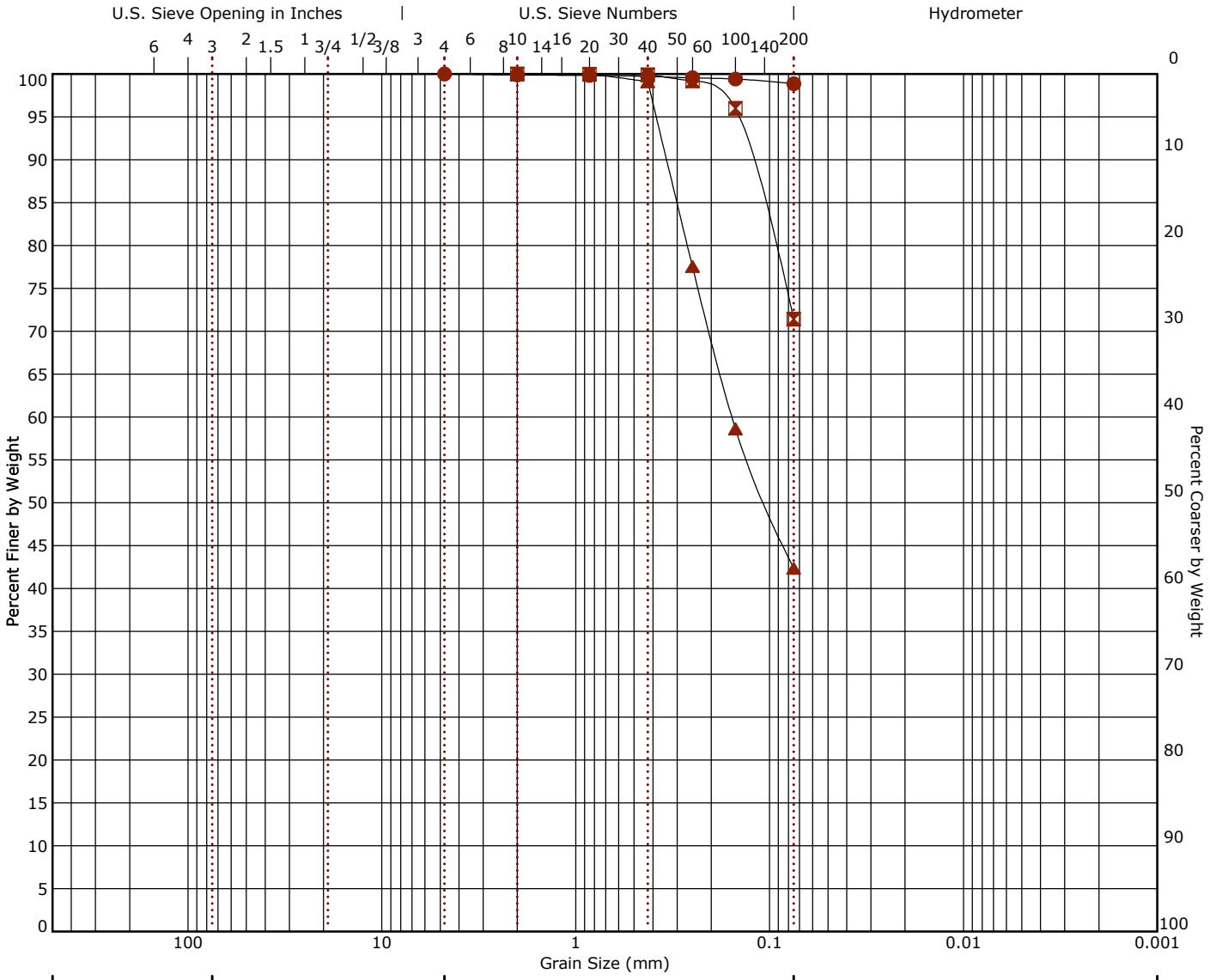

Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS
●	MW-301	19.5 - 21	0.0	0.0	1.1	98.9			CL
⊠	MW-301	29.5 - 31	0.0	0.0	28.6	71.4			CL
▲	MW-301	34.5 - 36	0.0	0.0	57.6	42.4			SC

	Description
●	LEAN CLAY
⊠	LEAN CLAY with SAND
▲	CLAYEY SAND

	Remarks
●	
⊠	
▲	

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
#4	100.0	#10	100.0	#10	100.0
#10	99.89	#20	99.98	#20	99.93
#20	99.83	#40	99.92	#40	99.09
#40	99.72	#60	99.2	#60	77.55
#60	99.55	#100	95.98	#100	58.62
#100	99.41	#200	71.42	#200	42.35
#200	98.86				

Grain Size			
	●	⊠	▲
D_{60}			0.156
D_{30}			
D_{10}			

Coefficients			
	●	⊠	▲
C_c			
C_u			

Laboratory tests are not valid if separated from original report.

Drilling and Monitoring Well Installation - Stanton
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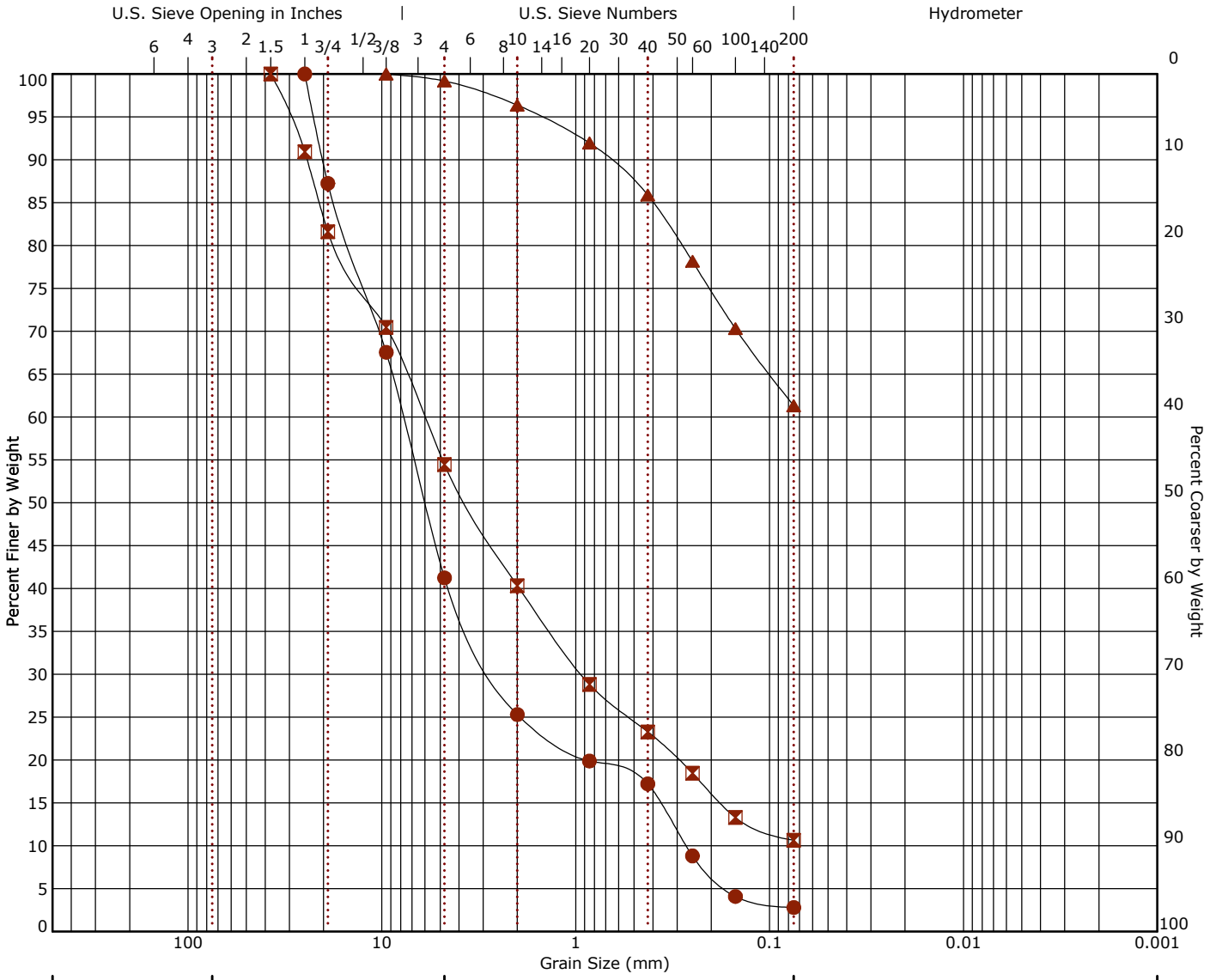
Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

	Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS
●	MW-PB3	9.5 - 11	0.0	58.8	38.4	2.8			GP
⊠	MW-PB3	19.5 - 21	0.0	45.5	43.8	10.6			GW-GM
▲	MW-PB3	29.5 - 31	0.0	0.8	37.9	61.3			CL

	Description
●	POORLY GRADED GRAVEL with SAND
⊠	WELL-GRADED GRAVEL with SILT and SAND
▲	SANDY LEAN CLAY

Remarks

●	
⊠	
▲	

● Sieve	● % Finer	⊠ Sieve	⊠ % Finer	▲ Sieve	▲ % Finer
1"	100.0	1 1/2"	100.0	3/8"	100.0
3/4"	87.24	1"	90.93	#4	99.18
3/8"	67.54	3/4"	81.61	#10	96.36
#4	41.24	3/8"	70.44	#20	91.96
#10	25.29	#4	54.47	#40	85.89
#20	19.88	#10	40.33	#60	78.15
#40	17.22	#20	28.82	#100	70.3
#60	8.82	#40	23.28	#200	61.32
#100	4.08	#60	18.47		
#200	2.8	#100	13.29		
		#200	10.63		

Grain Size

	●	⊠	▲
D_{60}	7.787	6.039	
D_{30}	2.582	0.928	
D_{10}	0.269		

Coefficients

	●	⊠	▲
C_C	3.18	2.24	
C_U	28.90	94.80	

Drilling and Monitoring Well Installation - Stanton
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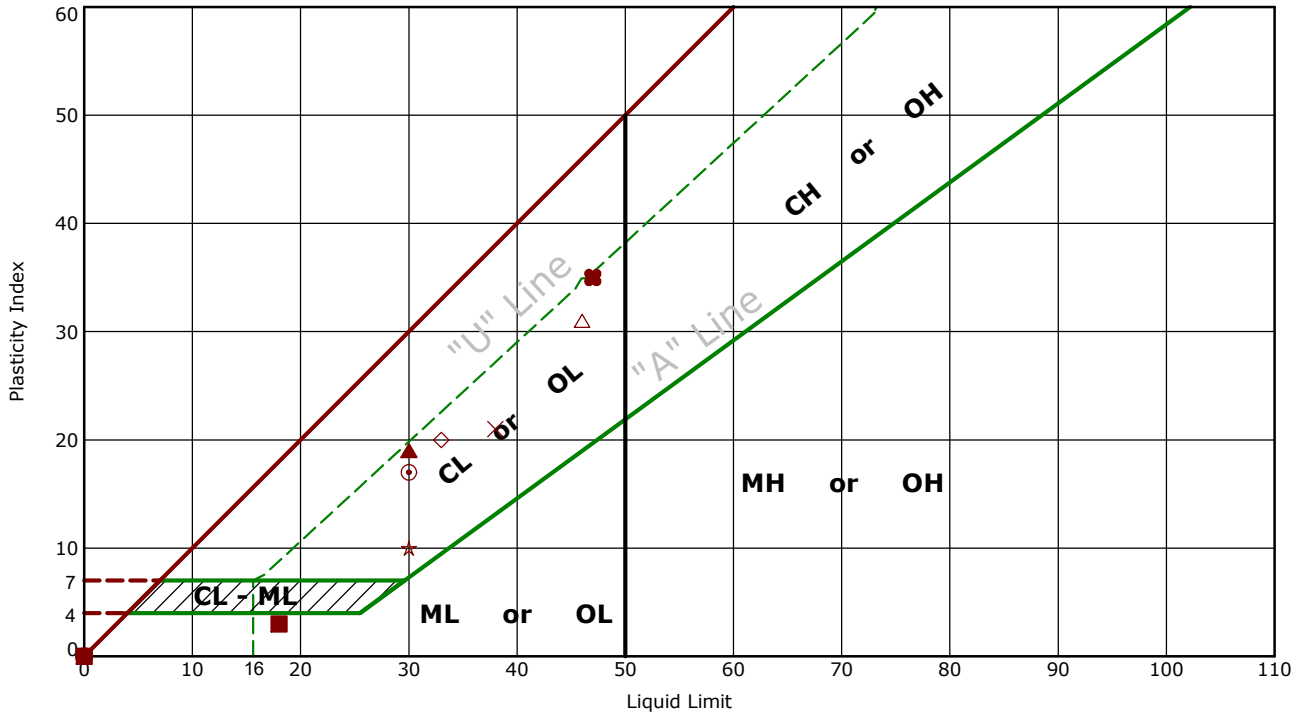
Atterberg Limit Results

ASTM D4318



	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	MW-215	9.5 - 11	NP	NP	NP	19.1	SM	SILTY SAND with GRAVEL
⊠	MW-215	19.5 - 21	NP	NP	NP	4.2	SP	POORLY GRADED SAND with GRAVEL
▲	MW-215	24.5 - 26	30	11	19	48.6	SC	CLAYEY SAND
★	MW-216	14.5 - 16	NP	NP	NP	3.1	SP	POORLY GRADED SAND with GRAVEL
⊙	MW-216	29.5 - 31	30	13	17	36.4	SC	CLAYEY SAND
✿	MW-217	14.5 - 16	NP	NP	NP	8.0	SP-SM	POORLY GRADED SAND with SILT and GRAVEL
○	MW-218	19.5 - 21	NP	NP	NP	3.8	GP	POORLY GRADED GRAVEL with SAND
△	MW-219	4.5 - 6	46	15	31	76.2	CL	LEAN CLAY with SAND
⊗	MW-219	24.5 - 26	NP	NP	NP	5.5	GW-GM	WELL-GRADED GRAVEL with SILT and SAND
⊕	MW-220	14.5 - 16	NP	NP	NP	4.7	SP	POORLY GRADED SAND with GRAVEL
□	MW-220	24.5 - 25.8	NP	NP	NP	4.9	SP	POORLY GRADED SAND
⊛	MW-221	9.5 - 11	NP	NP	NP	31.3	SM	SILTY SAND
◒	MW-221	14.5 - 16	NP	NP	NP	8.3	SP-SM	POORLY GRADED SAND with SILT and GRAVEL
☆	MW-222	19.5 - 21	30	20	10	80.7	CL	LEAN CLAY with SAND
⊠	MW-222	39.5 - 41	NP	NP	NP	8.9	SP-SM	POORLY GRADED SAND with SILT and GRAVEL
■	MW-300	9.5 - 11	18	15	3	41.7	SM	SILTY SAND
◆	MW-300	14.5 - 16	NP	NP	NP	7.8	SP-SM	POORLY GRADED SAND with SILT and GRAVEL
◇	MW-300	24.5 - 26	33	13	20	28.4	SC	CLAYEY SAND
×	MW-301	19.5 - 21	38	17	21	98.9	CL	LEAN CLAY
✿	MW-301	29.5 - 31	47	12	35	71.4	CL	LEAN CLAY with SAND

Drilling and Monitoring Well Installation - Stanton
Hwy 200 Alt | Stanton, ND
Terracon Project No. M2225111

Terracon
1502 Grumman Lane, Suite 4
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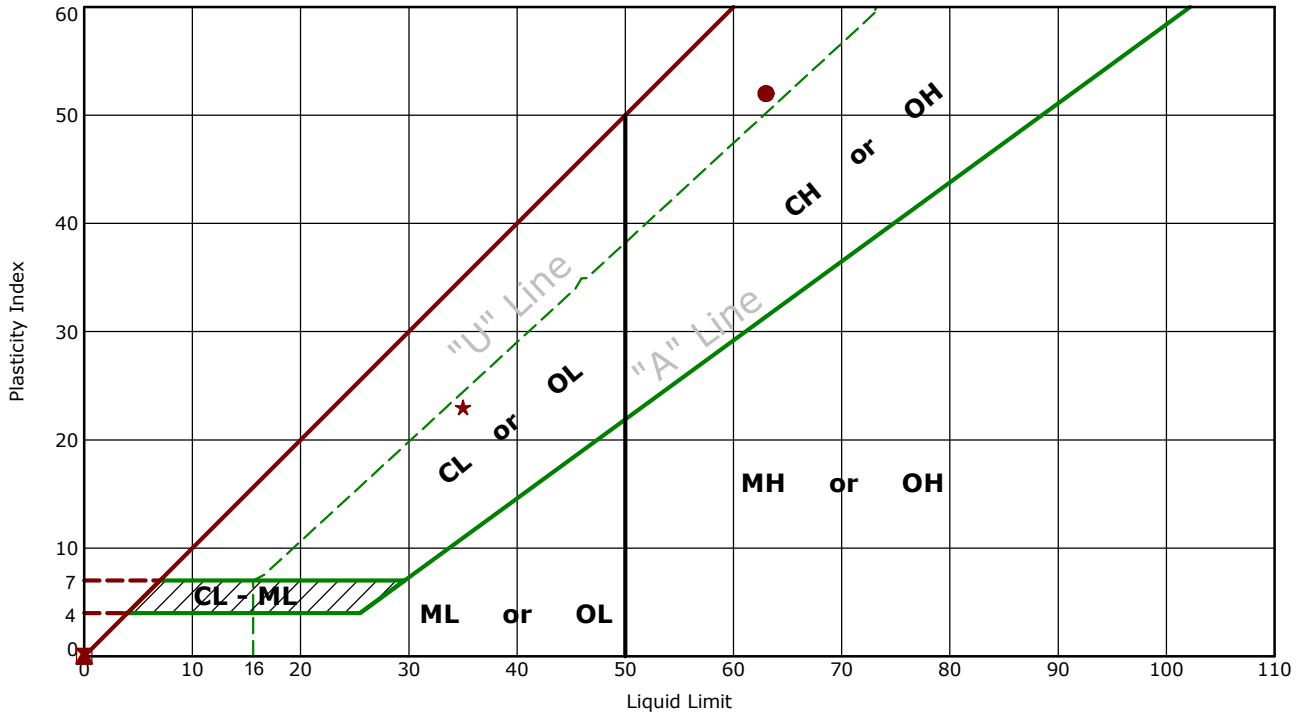
Atterberg Limit Results

ASTM D4318



	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	MW-301	34.5 - 36	63	11	52	42.4	SC	CLAYEY SAND
⊠	MW-PB3	9.5 - 11	NP	NP	NP	2.8	GP	POORLY GRADED GRAVEL with SAND
▲	MW-PB3	19.5 - 21	NP	NP	NP	10.6	GW-GM	WELL-GRADED GRAVEL with SILT and SAND
★	MW-PB3	29.5 - 31	35	12	23	61.3	CL	SANDY LEAN CLAY

APPENDIX C

Tier I MNA Evaluation for Arsenic

REPORT

Tier I MNA Evaluation for Arsenic

Bottom Ash Landfill - Stanton Station

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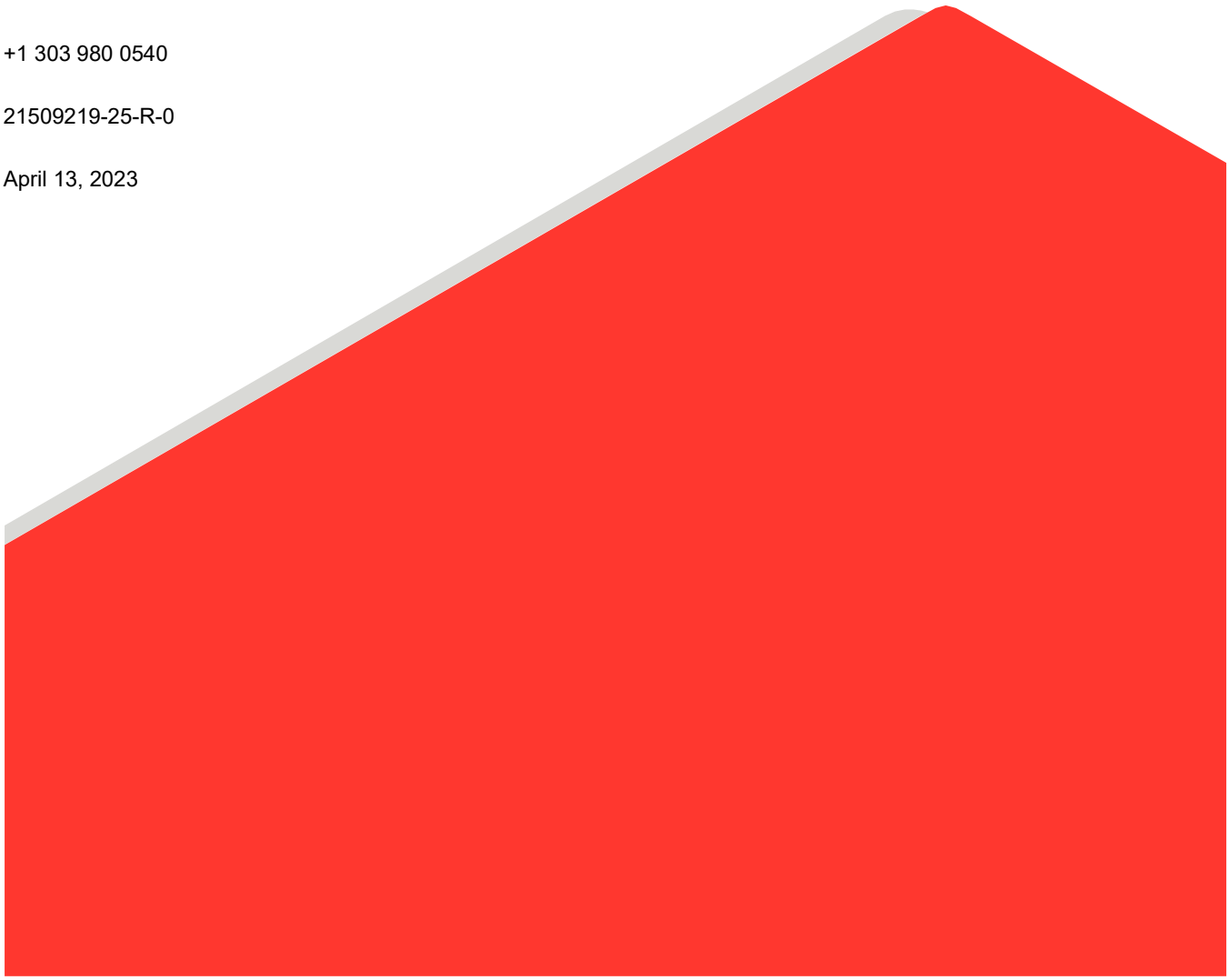
April 13, 2023



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1.0 OVERVIEW

On behalf of Great River Energy (GRE), WSP USA Inc. (WSP) performed an evaluation of groundwater and solid materials to determine the feasibility of Monitored Natural Attenuation (MNA) as part of the assessment of corrective measures process for Stanton Station's coal combustion residual (CCR) Bottom Ash Landfill. The structure of this feasibility evaluation closely follows the United States Environmental Protection Agency (USEPA) guidance on using MNA as a remedial strategy (USEPA 2007a and 2007b) and considers best practices from the Interstate Technology Regulatory Council (ITRC) document: "A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater" (ITRC 2010).

Under the CCR Rule, concentrations of Appendix IV assessment monitoring constituents present in groundwater downgradient of a CCR Unit at statistically significant levels (SSLs) above Groundwater Protection Standards (GWPS) must be addressed in accordance with the groundwater assessment and corrective measures provisions of 40 CFR 257.96 to 257.98. When an Appendix IV constituent is confirmed to be present at an SSL above the GWPS downgradient of a CCR Unit, an Assessment of Corrective Measures (ACM) is completed in accordance with 40 CFR 257.96 to identify applicable corrective measures to prevent further releases from the CCR Unit and restore groundwater downgradient of the CCR Unit to the applicable GWPS. Corrective measures alternatives are further evaluated in accordance with 40 CFR 257.97 to identify the selected remedy for the CCR Unit, and remedy implementation is conducted in accordance with 40 CFR 257.98.

An SSL was identified for arsenic in groundwater in a downgradient well at the Bottom Ash Landfill on March 28, 2022 as a result of the assessment monitoring statistics the fourth quarter (Q4) 2021 sampling event. A notification identifying the SSL for arsenic was prepared and both posted online and submitted to the North Dakota Department of Environmental Quality (NDDEQ) on April 27, 2022 (within 30 days of identifying the SSL). Arsenic is the main constituent of interest for this MNA assessment.

MNA is one potential corrective measure discussed within the ACM (Golder 2022). Based on USEPA guidance, an evaluation of each constituent's potential for successful remediation by MNA is necessary, by the following phased approach:

1) Demonstrate active constituent removal from groundwater and plume stability (Tier I)

2) Determine the mechanisms and rates of the operative attenuation processes (Tier II)

3) Determine the long-term capacity for attenuation and the stability of immobilized constituents (Tier III)

Following completion of this multi-tier MNA evaluation, the fourth and final tier of an MNA program will design a performance monitoring program and the development of a contingency plan.

The objective of this report is to complete a Tier I MNA evaluation at Stanton Station for purposes of GRE's remedy selection process under 40 CFR §257.97 and related NDDEQ CCR rules and regulations.

1.1 Site Background

Stanton Station was a coal-fired electric generation facility located along the Missouri River in Mercer County, approximately three miles southeast of Stanton, North Dakota. Stanton Station began generating power in 1966 and ceased power production in February 2017. Demolition of the industrial site was finished in 2019, with site restoration completed in 2020. CCRs were managed in composite-lined surface water impoundment cells and dry

waste facilities regulated and permitted by the NDDEQ in accordance with North Dakota Administrative Code (NDAC) Article 33.1-20, Solid Waste Management and Land Protection.

Stanton Station has two CCR facilities that are within the purview of the USEPA and NDDEQ CCR rules:

- Bottom Ash CCR Landfill (Bottom Ash Landfill)
- Bottom Ash CCR Surface Impoundment (Bottom Ash Impoundment)

The monitoring network for these facilities is currently separated into two units. This report specifically addresses the Bottom Ash Landfill.

1.2 Site Geology and Hydrogeologic Conditions

The principal hydrostratigraphic unit and uppermost water-bearing unit near the CCR facilities consists of alluvial deposits, which includes two subunits: an upper silty sand and clay, and an underlying outwash sand and gravel. Individually, these subunits are laterally heterogeneous and can be further characterized by interbedded layers of gravel, sand, silt, clay, and coal.

Due to variations in subunit thickness throughout the site, groundwater in the uppermost water-bearing unit is monitored in both the outwash subunit and the silty sand and clay subunit, with flow generally moving from southwest to northeast towards the Missouri River. Depths from the ground surface to the uppermost water-bearing unit range from 5 to 20 feet in the area around Stanton Station. The range of groundwater flow velocities measured in November (Q4) 2022 is 0.0012 to 0.23 feet per day (WSP 2023).

2.0 APPROACH

The feasibility of MNA as a remedy for groundwater impacts from the CCR Unit was evaluated. In order to perform the evaluation, samples of groundwater and overburden soil were collected in 2022 for chemical analysis. The MNA assessment included the following activities:

- Groundwater characterization to identify temporal and geographical trends, where present.
- Geochemical modeling of groundwater results to identify the major chemical species and evaluate saturation indices of minerals relevant to attenuation of arsenic.
- Mineralogical analysis of a precipitate on the pump installed in MW-103 to identify and quantify the major precipitating minerals.
- Chemical analysis of overburden soils, ash, and coal to quantify the total metal content and identify the environmentally available fraction of metals.

The results generated by this assessment along with groundwater data collected during previous sampling events were used by WSP to complete the Tier I MNA evaluation (USEPA 2007a and 2007b). The results of the Tier I MNA assessment are described in the subsequent sections to establish a basis for progression to Tier II and Tier III analysis at the Stanton Station Bottom Ash Landfill.

3.0 WATER AND SOLID MATERIAL ASSESSMENT PROGRAM

3.1 Groundwater and CCR Contact Water Sampling and Analysis

3.1.1 Groundwater Samples

A groundwater sampling program has been implemented at Stanton Station to meet the requirements of 40 CFR 257.91 and Chapter 33.1-20-08 of the NDAC. The Bottom Ash Landfill is regulated by the NDDEQ under Permit Number 0043.

Wells used in this assessment include groundwater monitoring wells for the Bottom Ash Landfill and additional wells (Figure 1) for which Appendix III and IV constituents have been analyzed including:

- Background monitoring wells located south and west of the Bottom Ash Landfill where groundwater is not expected to have been influenced by CCR materials based on groundwater flow direction. There are four upgradient monitoring wells and one side-gradient monitoring well (MW-6B, MW-7A, MW-7B, MW-8B, and MW-105; Table 1).
- Three downgradient monitoring wells currently within the monitoring network for the Stanton Station Bottom Ash Landfill (MW-9N, MW-102, MW-103) as shown in Table 1.
- Five nature and extent wells, one upgradient and four downgradient, installed in 2022 (MW-210, MW-211, MW-212, MW-213, MW-214).
- One Property Boundary Monitoring Well installed in 2020 (MW-PB1).

Table 1: Monitoring Well Summary - Stanton Station Bottom Ash Landfill

Location	Well ID	Date Constructed	Ground Surface Elevation ft AMSL	Screen Interval ft bgs	Geologic Unit(s) Completed in
Wells in the Current Bottom Ash Landfill Monitoring Program					
Upgradient/ side-gradient	MW-6B	9/8/1992	1709.4	28.4-38.4	Outwash
	MW-7A	8/27/1992	1711.3	7.0-17.0	Silty Sand/Clay
	MW-7B	9/9/1992	1711.2	28.1-38.1	Silty Sand/Outwash
	MW-8B	9/3/1992	1747.6	54.0-64.0	Outwash
	MW-105	11/18/2015	1714.0	9.0-19.0	Clay/Outwash
Downgradient	MW-9N	7/19/2010	1701.0	11.5-21.5	Sand, Clayey Sand, Gravel
	MW-102	11/17/2015	1708.8	14.0-24.0	Silty Sand/Clay
	MW-103	11/17/2015	1706.2	14.0-24.0	Outwash
Additional Wells near the Bottom Ash Landfill					
Upgradient	MW-214	5/12/2022	1703	5-15	Sandy clay, silty sand,
Downgradient	MW-210	5/9/2022	1700	12-22	Sand, Silty Sand, Silt/gravel
	MW-211	5/10/2022	1703	12-22	Sandy Clay, silty sand
	MW-212	5/11/2022	1704	13.5-23.5	Sand with silt and fatty clay
	MW-213	5/12/2022	1702	19.5-29.5	Sandy clay, silty sand, fat clay
Property Boundary Monitoring Well	MW-PB1	8/11/2020	1674.9	15-25	Silty sand

Notes:
Well construction measurements are from the original bore log, well data sheet or well construction form.
ft AMSL: feet above mean sea level
ft bgs: feet below ground surface

3.1.2 CCR Contact Water Samples

3.1.2.1 Bottom Ash Landfill Test Pit Water

In addition to monitoring well data, a water sample was collected from below the Bottom Ash Landfill in October 2019 during closure construction. A test pit was excavated through bottom ash placed within the landfill and approximately four feet into the underlying native soil, which was visually identified as clay. Water accumulated in this test pit over a period of approximately 24 hours and was sampled. Due to the nature of how this sample was collected, it likely represents a mixture of seepage from the Bottom Ash Landfill and shallow groundwater.

3.1.2.2 South Cell Sump

As part of the planned closure process for the Bottom Ash Impoundment, a sump was installed to accommodate south cell dewatering. Four water samples were taken from the south cell sump. One sample was collected shortly after consolidation of the north and center pond materials into the south cell (in October 2019) and three samples were collected a few years after materials were consolidated (March to June 2022). The sump water samples represent CCR contact water from the south cell, which is considered an analog for Bottom Ash Landfill contact water.

3.1.3 Sample Analysis

The geochemical characterization of groundwater samples included the measurement of field parameters and the laboratory analysis of samples for total metals and major cations and anions. The analyses included:

Field Parameters: Parameters measured in the field include pH, dissolved oxygen (DO), oxidation reduction potential (ORP), specific conductivity, and temperature. These measurements were used to determine general geochemical conditions in the groundwater and support geochemical modeling.

Metals: Appendix III and IV parameters and iron concentrations were analysed to understand the geochemical composition of groundwater and contact water. Metals analysis allows for the delineation of a potential plume, evaluation of mineral saturation indices, development of partitioning coefficients (in conjunction with solid material analyses), and evaluation of background contributions from natural sources or anthropogenic sources.

Major Cations and Anions: Geochemical modeling of mineral solubility, metals attenuation and background contributions requires analysis of major cations and anions because they affect and participate in sorption and mineral dissolution or precipitation reactions.

Analytical methods followed EMP standard methods for all field parameters, metals, and major cations and anions.

3.2 Solids Sampling and Analysis

3.2.1 Sample Collection

During 2022, WSP subcontracted a licensed well driller to install monitoring wells at Stanton Station and complete one borehole using a hollow stem auger with a 3.25 inside diameter. During boring operations, eight samples were collected from six different boreholes (Table 2).

Samples collected include:

- One overburden sample from the depth of the screened interval of upgradient boring MW-214.
- Three overburden samples from the boreholes for downgradient wells. One sample from each of the following borings at the depth of the screen interval: MW-210, MW-212, MW-213.
- One shallow and one deep sample from the MW-211 boring, the deep sample was at the depth of the screened interval.
- One shallow coal/lignite sample from downgradient boring MW-212.
- One shallow ash sample from borehole BH-1 in the Bottom Ash Landfill.

The sample unit/lithology, depth of composited sample collection, and depth of well screened interval are provided in Table 2.

Table 2: Soil Sampling Details

Sample Name	MW-214	MW-211A	MW-211B	MW-212A	MW-210	MW-213	MW-212B	BH-1
Well Name	MW-214	MW-211	MW-211	MW-212	MW-210	MW-213	MW-212	BH-1
Sample Depth (ft)	2-15	0-5	14-25	14-25	15-25	20-30	0-5	2-5
Sample Unit/Lithology	Silty sand ± gravel	Lean Clay ± sand	Silty sand ± gravel	Sand ± silt	Silt ± gravel	Silty sand and clay	Coal/lignite	Bottom Ash
Depth of screened interval (ft)	5-15	12-22	12-22	13.5-23.5	12-22	19.5-29.5	12-22	None

Additionally, in 2020, a downhole video survey was conducted to inspect the well condition of MW-103. Material along the well casing was noted during the well survey and was particularly concentrated in the areas adjacent to the slots on the well screen. A sample of the material precipitated on pump was collected for mineralogical analysis.

3.2.2 Solids Analyses

Two geochemical methods were used to assess the composition of the overburden soil, ash, and coal/lignite samples. For the purposes of this investigation, solids analysis focusses on arsenic concentrations (the only parameter with an SSL), and aluminum and iron that can produce potential sorption surfaces for arsenic.

The selected geochemical test methods included the following:

- **Total metals:** This analysis was used to quantify the chemical composition of overburden soils. The total mass of metals, in combination with the results of sequential extraction testing, can be used to determine the provenance of metals and verify sequential extraction results. The laboratory analyzed a target analyte list of metals following the methods USEPA SW846 6010B “Inductively Coupled Plasma-Atomic Emission Spectrometry”, Revision 3 (November 2000).
- **Sequential extraction:** The sequential extraction procedure (SEP) consisted of seven steps to extract metals from solids, modified from Tessier et al. (1979), to identify the provenance of constituents of interest (i.e., the operationally defined fraction that contains the metal) and determine their potential environmental mobility. For instance, metals bound in the carbonate fraction, or that are exchangeable, are much more likely to become mobile due to changes in groundwater conditions than metals bound within a sulfide or silicate fraction. The summed concentration of a metal measured from the seven steps (SEP SUM) can be compared to the concentration determined from a total metals analysis (SEP Total) for compositional accountability. The laboratory analyzed the total metals content (SEP Total) of samples using the method USEPA SW846 6010B “Inductively Coupled Plasma-Atomic Emission Spectrometry”, Revision 2 (December 1996).

Sequential extraction of metals from overburden samples consisted of seven discrete steps for this investigation:

- Step 1 - Exchangeable Phase: This extraction includes trace elements that are reversibly adsorbed to overburden minerals, amorphous solids, and/or organic material by electrostatic forces.
- Step 2 - Carbonate Phase: This extraction targets trace elements that are adsorbed or otherwise bound to carbonate minerals.
- Step 3 – Non-Crystalline Materials Phase: This extraction targets trace elements that are complexed by amorphous minerals (e.g., iron).
- Step 4 - Metal Hydroxide Phase: Trace elements bound to hydroxides of iron, manganese, and/or aluminum.
- Step 5 - Organic Phase: This extraction targets trace elements strongly bound via chemisorption to organic material.
- Step 6 - Acid/Sulfide Fraction: The extraction is used to identify trace elements precipitated as sulfide minerals.
- Step 7 - Residual Fraction: Trace elements remaining in the overburden after the previous extractions will be distributed between silicates, phosphates, and refractory oxides.

The precipitate material collected from the pump installed in MW-103 was submitted for mineralogical testing in February 2021, to the SGS Minerals Laboratory in Lakefield, Ontario, Canada. This information is useful as an independent check on mineral saturation in Stanton Station groundwater near well MW-103. The mineralogical testing laboratory (SGS Minerals Services) performed the mineralogical analysis using quantitative (Rietveld) X-ray diffraction (XRD).

4.0 GROUNDWATER MONITORING RESULTS

Groundwater samples for Appendix III and Appendix IV parameters are collected from MW-7A, MW-7B, MW-8B, MW-105, MW-6B, MW-102, MW-9N, and MW-103, as required by 40 CFR Part 257.94 and 257.95, for use within the CCR Rule monitoring program and are discussed in the annual groundwater monitoring and corrective action reports.

As a result of a boron SSI at MW-103 without an identified alternative source (Golder 2021b), the monitoring network around the Bottom Ash Landfill transitioned into assessment monitoring in first quarter (Q1) 2021and GRE began collecting groundwater samples for the assessment monitoring program.

Arsenic concentrations in six assessment monitoring samples collected between Q1 2021 and second quarter (Q2) 2022 at MW-103 ranged from 0.0097 and 0.0169 milligrams per liter (mg/L). Figure 2 presents a time series of arsenic concentrations in upgradient and downgradient monitoring wells around the Bottom Ash Landfill during CCR monitoring. Statistical comparisons of the arsenic concentrations were performed following the Q4 2021, Q1 2022, and Q2 2022 events, with arsenic identified at an SSL during each event. However, while remaining an SSL, the most recent arsenic measurement of 0.0097 mg/L (Q2 2022) from MW-103 is below the GWPS (0.01 mg/L).

5.0 WATER AND SOLID MATERIAL ASSESSMENT RESULTS

5.1 Geochemical Speciation Modeling Methods

WSP conducted geochemical modeling to evaluate general groundwater and CCR contact water composition, determine the potential for precipitation of sorbent media, evaluate the potential for mineral precipitation or adsorption in the aquifer, and determine the speciation of metals of interest. PHREEQC (Parkhurst and Appelo 2013), the geochemical computer code developed by the United States Geological Survey (USGS), was used for these simulations. PHREEQC Version 3.7.3 is a general-purpose geochemical modeling code used to simulate reactions in water and between water and solid mineral phases (e.g., rocks and sediments). Reactions include aqueous equilibria, mineral dissolution and precipitation, ion exchange, surface complexation, solid solutions, gas-water equilibrium, and kinetic biogeochemical reactions. The widely accepted thermodynamic database, Minteq.v4, 2017 edition, was used as a basis for the thermodynamic constants required for modeling.

The Geochemist's Workbench version 15 (Bethke, Farrell, and Sharifi 2021) was used to generate graphical representations of geochemical modeling outputs in the form of predominance, or Pourbaix diagrams (also known as Eh-pH diagrams) for arsenic (Figure 3) and trilinear plots (also known as Piper plots) displaying the relative abundance of major ions (Figure 4). The Minteq.v4 database was used as the basis for the Pourbaix diagrams.

The potential for mineral precipitation was assessed in PHREEQC using a saturation index (SI) calculated according to Equation 1.

$$SI = \log(IAP/K_{sp}) \quad \text{(Equation 1)}$$

The saturation index is the ratio of the ion activity product (IAP) of a mineral to the solubility product (K_{sp}). An SI value greater than zero indicates that the water is supersaturated with respect to a particular mineral phase and, therefore, precipitation of the mineral may occur. An evaluation of precipitation kinetics is then required to determine whether the supersaturated mineral will indeed form and the timeline for formation. An SI value less than zero indicates the water is undersaturated with respect to a particular mineral phase. An SI value close to zero indicates equilibrium conditions exist between the mineral and the solution. SI values between -0.5 and 0.5 are considered to represent 'equilibrium' in this report to account for the uncertainties inherent in the analytical methods and geochemical modeling.

The assumptions included in the geochemical modeling are as follows:

- **Groundwater chemistry:** Only samples analyzed for the full suite of parameters described in Section 3.1.3 provide a comprehensive overview of groundwater conditions and, therefore, were used in the groundwater characterization and modeling. However, temporal trend analyses for arsenic made use of sampling results for each well (17 samples from MW-103), dating back to June 2016.
- **Redox values:** ORP values measured in the field using an In-Situ Aqua TROLL® 600 Multiparameter Sonde were converted to Eh using equation 2, derived from suggested values from In-Situ and ISO (2022).

  Eh = ORP + (-0.9033 x Water Temperature [°C]) + 221.4 (Equation 2)

- **Non-detect values:** Constituents with concentrations less than their respective detection limits were assumed to have a concentration equal to the practical quantitation limit (PQL) in model simulations.
- **Total concentrations:** Total constituent results were used for geochemical modeling.

- **Charge balance:** Groundwater compositions with charge balance errors less than 10% were considered valid. Compositions with charge balance errors greater than 10% were still included in the assessment but would be considered less reliable.
- **Equilibrium:** While the equilibrium assumption is the standard computational basis for PHREEQC, kinetic considerations can be included, if necessary.

5.2 Groundwater Characterization

5.2.1 Groundwater Chemistry

The groundwater quality data used for this evaluation were collected from background and downgradient CCR monitoring wells between June 2016 and September 2022. WSP's assessment of trends in arsenic in groundwater included observations of valid data collected during that time frame. For wells installed in 2020 and 2022 (listed in Table 1), it was not possible to evaluate the results for statistically significant trends due to the limited number of sampling events. However, trends for these wells will be evaluated once enough sampling events have occurred to meet statistical testing requirements. Results for groundwater parameters not included within the CCR rule (e.g., alkalinity, potassium, sodium) are only available from March 2017 to June 2022. Four sump water samples collected from the Bottom Ash Impoundment representing CCR contact water were collected in October 2019 and March, May, and June 2022.

The major water parameters and constituents that affect mineral saturation and potential behavior of arsenic are discussed including pH, ORP, total dissolved solids (TDS), major ion chemistry, arsenic, iron, and aluminum.

- **Charge balance error:** One groundwater sample from MW-PB1 (June 2022) and one sample from MW-9N (October 2020) reported charge balance errors greater than 10%. These results were retained with the understanding that they may be less reliable.
- **pH:** The field pH of upgradient and downgradient monitoring wells ranged from 6.8 to 9.7 across the site since June 2016 (Figure 5). The median groundwater pH was 7.5. The field pH of sump water from the Bottom Ash Impoundment ranged from 7.9 to 9.5.
- **ORP (Redox):** Field-measured redox values, corrected to Eh, historically have ranged from 47.5 to 520.7 millivolt (mV) in the CCR program background and downgradient monitoring wells (Figure 5). The majority of groundwater samples (113 out of 120) had Eh values between +100 and +450 mV. The median groundwater Eh value was 195.4 mV.
- **TDS:** Groundwater TDS concentrations have historically ranged from 693 to 17,600 mg/L. The lowest TDS concentrations (693 to 911 mg/L) occurred in groundwater at upgradient well MW-8B. The highest groundwater TDS concentrations (from 14,200 to 17,600 mg/L) were measured at upgradient well MW-7A, which is higher than the range of TDS values in other upgradient wells (693 to 2,470 mg/L). The highest TDS concentration in a downgradient well is MW-9N which ranges from 2,570 to 3,210 mg/L.
- **Major ion chemistry:** A Piper plot was generated for CCR program background and downgradient monitoring wells and CCR contact water in the Bottom Ash Landfill to facilitate the identification of water types and potential source contributions (Figure 4). Groundwater samples from MW-103 generally plot on the piper diagram in a different area than the Bottom Ash Landfill test pit water and the Bottom Ash Impoundment south cell sump water. Major ion signatures from MW-103 groundwater do not show a temporal shift towards contact water, with the values creating a data cluster.

- **Arsenic**: Arsenic concentrations in groundwater samples collected from downgradient monitoring wells have ranged from non-detect (< 0.002 mg/L) to 0.0251 mg/L (Figure 2). Two wells have had arsenic concentrations above the GWPS (0.01 mg/L) including MW-103 and MW-211. Arsenic concentrations in MW-103 range from 0.0097 to 0.023 mg/L. Figure 6 shows a Sen's Slope statistical test for arsenic in MW-103, which has a statistically decreasing trend at the 98% confidence interval. Arsenic concentrations in groundwater at MW-103, therefore, appear to be decreasing. Trend analyses were not conducted for MW-211 as there are not have enough representative analyses to conduct a trend analysis. Arsenic concentrations in the Bottom Ash Impoundment Sump water range from non-detect (<0.002) to 0.2 mg/L.

  Based on the observed pH and redox conditions of groundwater proximal to the Bottom Ash Landfill, arsenic predominately occurs as the oxidized form arsenate [As^{+5}] upgradient and downgradient of the Bottom Ash Landfill (Figures 3 and 7). Arsenate has a greater affinity for sorption (attenuation) on metal (hydr)oxide surfaces than arsenite [As^{+3}] and is generally regarded to be less mobile in natural environments (Nordstrom 2014).

- **Iron:** Total (unfiltered) iron concentrations in groundwater samples were variable, ranging from non-detect (<0.1 mg/L) to 30.5 mg/L. The highest concentrations were observed in groundwater samples collected from MW-PB1 (3.1 to 30.5 mg/L).

- **Aluminum:** Aluminum was not analyzed in upgradient and downgradient wells in the Bottom Ash Landfill. One total (unfiltered) aluminum value was measured in the Bottom Ash Landfill sump water in May 2022, and had a concentration of 0.77 mg/L.

5.2.2 Groundwater Major Anions and Cations (Geochemical Types)

Upgradient groundwater samples have variable water types from magnesium to sodium cation end members and sulfate to carbonate anion end members (Table 3).

On the piper diagram presented in Figure 4, groundwater samples from MW-103 generally plot in a different area than the Bottom Ash Landfill test pit water and the Bottom Ash Impoundment south cell sump water. Groundwater major ion signatures in samples from MW-103 do not appear to be migrating toward the major ion signatures of the potential CCR sources. However, an alternative source cannot be identified at this time. Table 3 shows the different water types in upgradient and downgradient wells in the Bottom Ash Landfill.

Table 3: Bottom Ash Landfill Upgradient and Downgradient Water Types

Well Name	Location	Water Type
MW-6B	Side-gradient Well	sodium carbonate
MW-7A	Upgradient Well	sodium sulfate
MW-7B	Upgradient Well	sodium carbonate
MW-8B	Upgradient Well	magnesium/sodium carbonate
MW-105	Upgradient Well	magnesium/sodium carbonate
MW-214	Upgradient Well	sodium carbonate
MW-9N	Downgradient Well	sodium sulfate
MW-102	Downgradient Well	sodium carbonate

Well Name	Location	Water Type
MW-103	Downgradient Well	sodium sulfate
MW-210	Downgradient Well	sodium carbonate
MW-211	Downgradient Well	sodium sulfate
MW-212	Downgradient Well	sodium carbonate
MW-213	Downgradient Well	sodium carbonate
MW-PB1	Property Boundary Well	sodium carbonate/sulfate

5.2.3 Mineralogical Controls in Groundwater

The results of groundwater speciation modeling for CCR program background and downgradient wells are provided in Table 4 and Appendix B. Mineral saturation plays an important role in attenuation of metals, either directly by the metals' removal through mineral precipitation, or indirectly by providing a sorption surface. The results of the speciation modeling can be summarized as follows:

- **Iron-bearing minerals:** Ferrihydrite [$Fe(OH)_3$] was modeled to be oversaturated in groundwater indicating a strong potential for ongoing precipitation of solid phase iron oxides. Thus, the presence of iron oxides in groundwater surrounding Stanton Station Bottom Ash Landfill can be assumed. The presence of iron oxides provides a well documented mechanism of attenuation for arsenic (Dzombak and Morel 1990; Smith 1999a; Smith and Huyck 1999b).
- **Other minerals:** Samples from upgradient well MW-7A are oversaturated with respect to gypsum [$CaSO_4$] due to higher sulfate concentrations. Samples from upgradient and downgradient groundwater are at equilibrium or oversaturated with respect to carbonate minerals including Calcite [$CaCO_3$] and Dolomite [$CaMg(CO_3)_2$].

Table 4: Saturation Indices for Bottom Ash Landfill Upgradient and Downgradient Groundwater

Mineral	Mineral Formula	Average	Minimum	Maximum
Ferrihydrite	$(Fe^{3+})_2O_3 \cdot 0.5H_2O$	2.5	1.0	4.4
Siderite	$FeCO_3$	-0.7	-3.6	1.0
Gypsum	$CaSO_4 \cdot 2H_2O$	-1.2	-2.0	0.1
Jarosite	$KFe_3(SO_4)_2(OH)_6$	4.2	-0.4	9.9
Calcite	$CaCO_3$	0.4	-0.3	1.1
Dolomite	$CaMg(CO_3)_2$	0.9	-0.7	2.3
Magnesite	$MgCO_3$	0.1	-0.9	0.8
Fluorite	CaF_2	-1.9	-3.1	-1.2

Mineral abundances of the precipitate collected from the pump installed in MW-103 are shown in Table 5 and provide an indication of active mineral precipitation within the aquifer. Observations of mineral precipitation include:

- Iron oxide minerals are observed in the form of ilmenite. Ilmenite, due to its apparent high affinity for surface hydroxyl group, can be an effective absorbent for the removal of arsenic in groundwater (Halim 2008). Iron hydroxides would be included in the amorphous phase measured by XRD if present in the sample.
- Aluminosilicate minerals such as albite, microcline, muscovite, and phlogopite are present in the precipitate. Muscovite in particular has the ability to absorb both arsenate and arsenite during precipitation (Chakraborty 2007).
- Carbonate minerals such as dolomite and calcite are present in the precipitate. This observation supports speciation modeling results that indicate these minerals are oversaturated in groundwater.

Table 5: Summary of Mineralogical Analysis

Mineral Name	Formula	MW-103 Soil
Quartz	SiO_2	13.9
Dolomite	$CaMg(CO_3)_2$	2.6
Albite	$NaAlSi3O_8$	2.4
Microcline	$KAlSi3O_8$	1.4
Muscovite	$KAl_2(AlSi_3O10)(OH)_2$	1.2
Phlogopite	$KMg_3(AlSi_3O_{10})(OH)_2$	0.3
Ilmenite	$FeTiO_3$	0.1
Calcite	$CaCO_3$	44.4
Amorphous	--	33.7
Total		100

In summary, the speciation modeling and mineralogical testing indicate a potential for several mineral phases which can affect groundwater composition at some or all wells including calcite, dolomite, gypsum, and ferrihydrite. In the cases of calcite and ferrihydrite, the dissolved concentrations of arsenic can be reduced through direct formation of these minerals, co-precipitation, and/or the ability of these minerals to act as a substrate for adsorption. In addition, the carbonate minerals provide buffering capacity, thereby preventing or limiting changes in pH.

5.2.4 Chemical Composition and Sequential Extraction

Chemical analysis and sequential extraction were used to determine the composition of the overburden soil, ash, and coal/lignite and the distribution of arsenic, iron, and aluminum over various fractions in sequential extraction testing. This testing was completed on eight samples collected from six sampling locations (reported in Table 3; Appendix A).

A description of the individual fractions determined by sequential extraction are presented in Section 3.2.2. Metals extracted in steps 1 through 5 are considered environmentally available, whereas metals extracted in steps 6 and 7 are present in refractory fractions and are not expected to be released under conditions typically encountered in aquifers (Tessier et al. 1979).

The results from the chemical analysis and sequential extraction can be summarized as follows:

- **Aluminum:** Aluminum has been well studied as a sorptive medium in soils (Karamalidis and Dzombak 2011). Total aluminum in overburden soil samples ranged from 30,803 milligrams per kilogram (mg/kg) to 45,461 mg/kg, and the environmentally available fraction ranged from 603 mg/kg to 2,263 mg/kg. Although some aluminum can be present in the form of gibbsite ($Al(OH)_3$; in the metal hydroxide fraction), aluminum in the overburden soil largely (~95% to 99%) occurs in the residual fraction (Figure 8) or silicate bound fraction. This fraction is likely at least partially represented by hydrous aluminum phyllosilicate minerals or clays intermixed in the silica sand matrix. Clays represent an important sorptive reservoir for numerous trace metals and metalloids (Uddin 2017). The potential source materials (ash and coal) contain total aluminum values from 61,710 to 27,010 mg/kg, with an environmentally available fraction from 3,710 to 17,710 mg/kg. Due to the preferential abundance of aluminum in the residual fraction, any arsenic sorption occurring would not be easily mobilized in the future due to mineral dissolution.
- **Iron:** Iron-bearing minerals commonly represent one of the most abundant reservoirs for metal/metalloid attenuation in overburden (Dzombak and Morel 1990, Smith 1999a). Iron was present in each of the eight analyzed samples, varying from 14,060 to 30,880 mg/kg in overburden soil samples and from 14,600 to 31,790 mg/kg in coal and ash materials. In the tested samples, the sulfide and metal hydroxide fractions accounted for the largest proportion of total iron, with 15% to 65% of the iron present in environmentally available forms (Figure 9). The amorphous (Step 3) and metal hydroxide (Step 4) fractions can generally be considered representative of the amount of iron in the overburden that may be available as a sorbing medium and may, therefore, be used as a proxy for determining the total number of adsorption sites available for attenuation of arsenic. The sequential extraction amorphous phase iron content generally consists of both poorly crystalline ferric oxides in addition to crystalline iron minerals such as magnetite-ilmenite (Poulton and Canfield 2004). The presence of iron oxide minerals ($FeTiO_3$) and amorphous minerals (possibly including ferrihydrite) identified in the precipitate on the pump installed in MW-103 demonstrate saturation of iron in groundwater and potential precipitation of iron bearing minerals. The presence of iron in step four of the sequential extraction test indicates the presence of metal oxides and hydroxides in the overburden samples. The mineral abundances for the precipitate collected from the pump installed in MW-103, the sequential extraction results, and the geochemical speciation modeling (Section 5.2.2) all support the presence of iron oxides and/or iron hydroxides, which are a significant and well documented mechanism of attenuation for arsenic (Dzombak and Morel 1990; Smith 1999a).

- **Arsenic:** Total arsenic in overburden soil samples ranged from 4.6 to 6.7 mg/kg, and in the coal and ash ranged from 5.9 to 8.3 mg/kg. The environmentally available fraction contained up to 2.7 mg/kg arsenic in MW-214, representing up to 49% of total arsenic (Figure 10). The majority (average of 73%) of arsenic was present in the residual fraction, likely associated with silicate minerals. The amorphous metal and metal hydroxide fractions hosted all arsenic that was environmentally available, and no arsenic was identified in the exchangeable, carbonate, or organically bound fractions. The highest levels of environmentally available arsenic occurred in samples collected immediately next to the Bottom Ash Landfill and decreased with distance from the facility from 49% to 4%. Therefore, based on these results, there is evidence that arsenic attenuation on amorphous and metal hydroxide phases is occurring in these overburden samples.

6.0 TIER I MNA EVALUATION

The potential for natural attenuation of arsenic was evaluated in accordance with recommended practices and guidance promulgated by the USEPA and the ITRC (USEPA 2007a; USEPA 2007b; ITRC 2010). According to USEPA (USEPA 2007a), the purpose of the Tier I MNA evaluation is to, “Demonstrate that the groundwater plume is not expanding and that sorption of the contaminant onto aquifer solids is occurring where immobilization is the predominant attenuation process.” Based on this definition, the following observations support MNA as a viable corrective measure for the Bottom Ash Landfill:

- **Plume Stability:** Based on the water quality monitoring data presented in this assessment, groundwater concentrations of arsenic outside of the Bottom Ash Landfill is stable or decreasing. Trend analysis for wells with insufficient sampling events was not conducted as part of the Tier I MNA evaluation and will be revisited once sufficient data is available. Statistical analysis of arsenic in MW-103 shows a decreasing trend at the 98% confidence interval. These observations indicate that the distribution of arsenic in the aquifer is not increasing.
- **Magnitude of Exceedances**: Arsenic in MW-103 was above the GWPS (0.010 mg/L) until the most recent sampling event in June 2022, but remains an SSL. MW-PB1 and MW-211 have detections above the GWPS but neither of these wells have had a statistical evaluation to establish a baseline.
- **Groundwater Chemistry:** The groundwater monitoring results and the findings of the geochemical modeling support the potential for natural attenuation of arsenic. Equilibrium of groundwater with iron (hydr)oxides, aluminosilicates, and calcite was indicated in groundwater samples. Modeling results are consistent with the results from the sequential extraction analysis, which indicates the presences of amorphous and metal hydroxide fractions which sequester arsenic.
- **Confirmation of Attenuation/Immobilization:** Based on both mineralogical and chemical analysis, it is evident that attenuation of arsenic by aquifer materials is occurring. Iron is present which is capable of forming (hydr)oxide or amorphous phases that facilitate metals attenuation (Dzombak and Morel 1990). Soil sample SEP testing showed a decrease in arsenic concentrations in the available fractions (amorphous and metal hydroxide, steps three and four respectively) with increasing distance from the CCR facility. This systematic change with distance is an indication of attenuation of arsenic, confirming sequestration is likely occurring.

Based on these findings, arsenic is a candidate for an MNA remedy application and meets the criteria for Tier I MNA in accordance with USEPA guidance (USEPA 2007a and 2007b).

7.0 CONCLUSIONS

WSP performed a supplemental assessment followed by an attenuation evaluation, which serve as the Tier I MNA evaluation of MNA feasibility at the Stanton Station Bottom Ash Landfill for arsenic. This evaluation has been conducted in accordance with guidance and best practices promulgated by the USEPA (2007a and 2007b) and the ITRC (2010). Based on the results of this evaluation arsenic at Stanton Station is a viable candidate for MNA alone or in combination with other remedies as a corrective measure.

Therefore, completion of the Tier II and Tier III MNA evaluations is recommended in order to evaluate the mechanism, rate, and capacity for arsenic attenuation.

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SIGNATURE PAGE

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JT/SH/TS/rm

https://golderassociates.sharepoint.com/sites/157762/project files/6 deliverables/reports/25-r-monitored_natural_attenuation/25-r-0/21509219-25-r-0_ss_monitored_natural_attenuation_13aprr23.docx

Figures

LEGEND

- BOTTOM ASH LANDFILL DOWNGRADIENT MONITORING WELL
- NATURE AND EXTENT WELL (NOTE 4)
- OTHER SITE MONITORING WELL/BOREHOLE
- UPGRADIENT MONITORING WELL
- GROUNDWATER ELEVATION (ft) (NOTE 1)
- CLOSED BOTTOM ASH LANDFILL/IMPOUNDMENT FOOTPRINT
- GENERAL DIRECTION OF GROUNDWATER FLOW
- APPROXIMATE GROUNDWATER CONTOURS AND ELEVATIONS (NOTE 4)

NOTE(S)

1. GROUNDWATER CONTOURS ARE BASED ON MAY AND JUNE 2022 ELEVATION INFORMATION FROM THE SHOWN MONITORING WELLS, AS WELL AS MONITORING WELLS AND PIEZOMETERS NOT SHOWN.
2. BH-1 IS THE LOCATION WHERE A SAMPLE OF CCR SOLIDS FROM THE BOTTOM ASH LANDFILL WAS COLLECTED.
3. NATURE AND EXTENT WELLS MW-210 THROUGH MW-214 WERE INSTALLED MAY 2022. MW-PB1 WAS INCORPORATED INTO THE NATURE AND EXTENT EVALUATION AS A FACILITY BOUNDARY WELL.

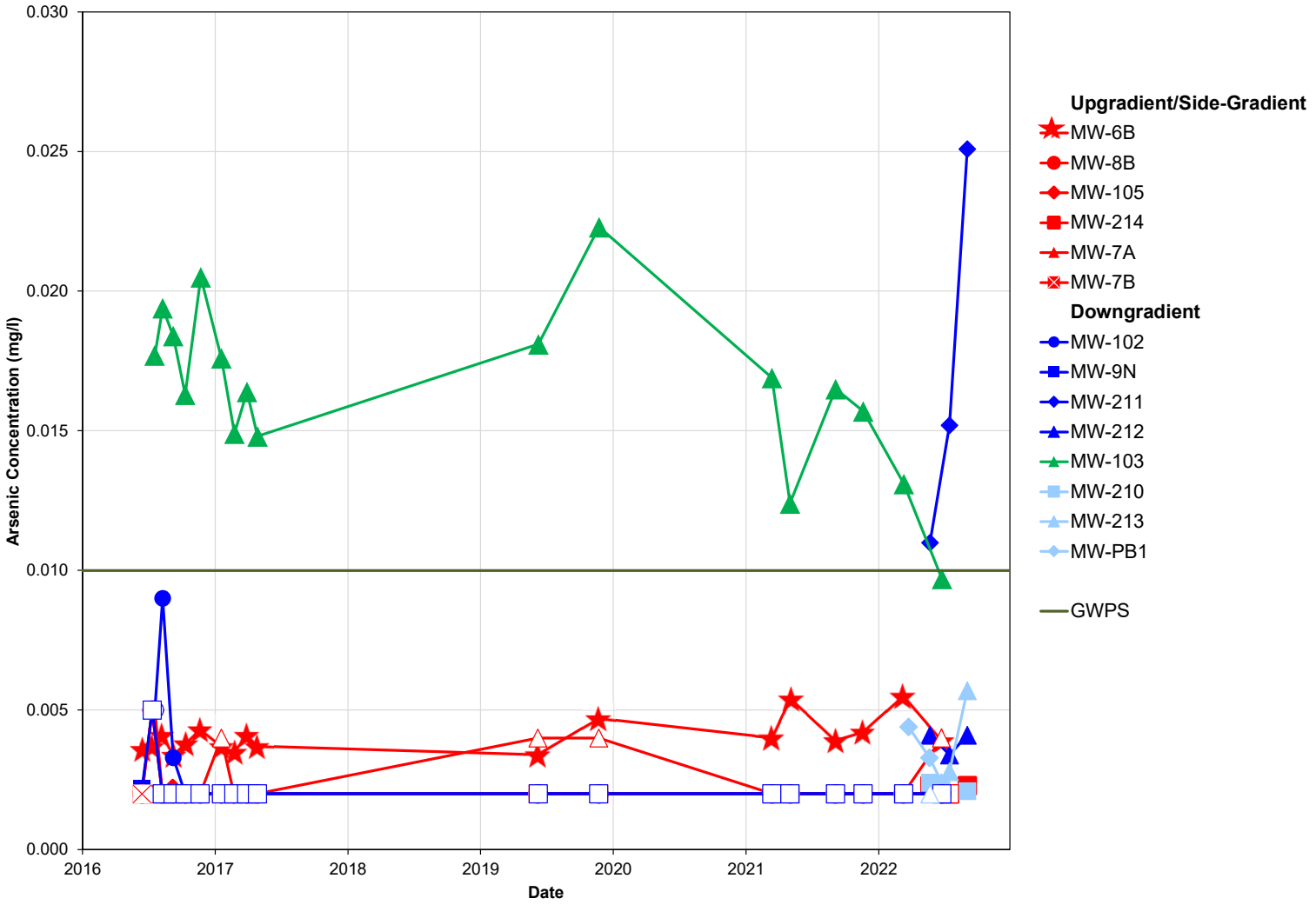
REFERENCE(S)

AERIAL IMAGERY OBTAINED FROM UNITED STATES DEPARTMENT OF AGRICULTURE, NATIONAL AGRICULTURE IMAGERY PROGRAM, 2021.

0 250 500
1" = 500' FEET

GREAT RIVER ENERGY - STANTON STATION
TIER 1 MONITORED NATURAL ATTENUATION
MAY/JUNE 2022 GROUNDWATER CONTOURS

FIGURE 1



Note: For samples with values measured below the detection limit, the value was plotted with an open symbol (white) at the detection limit.
Groundwater protection standard (GWPS) from 40 CFR § 257.95

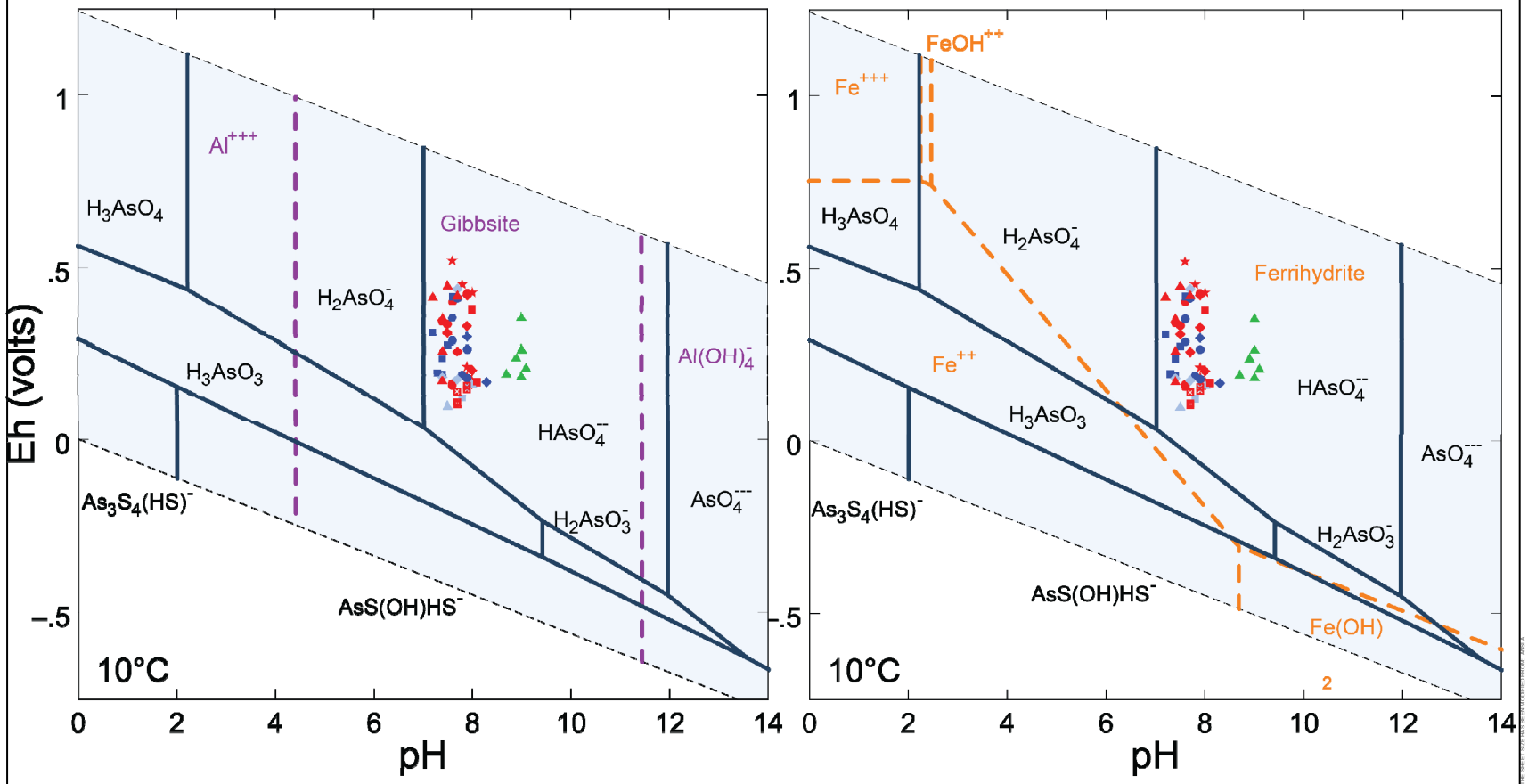
CLIENT
Great River Energy - Stanton Station

PROJECT
Tier I MNA Evaluation For Arsenic

CONSULTANT
wsp

TITLE
Arsenic Time Series for Background and CCR Unit Monitoring Wells

PROJECT NO.	PHASE	REV.	FIGURE
GL21509219	4000	A	2



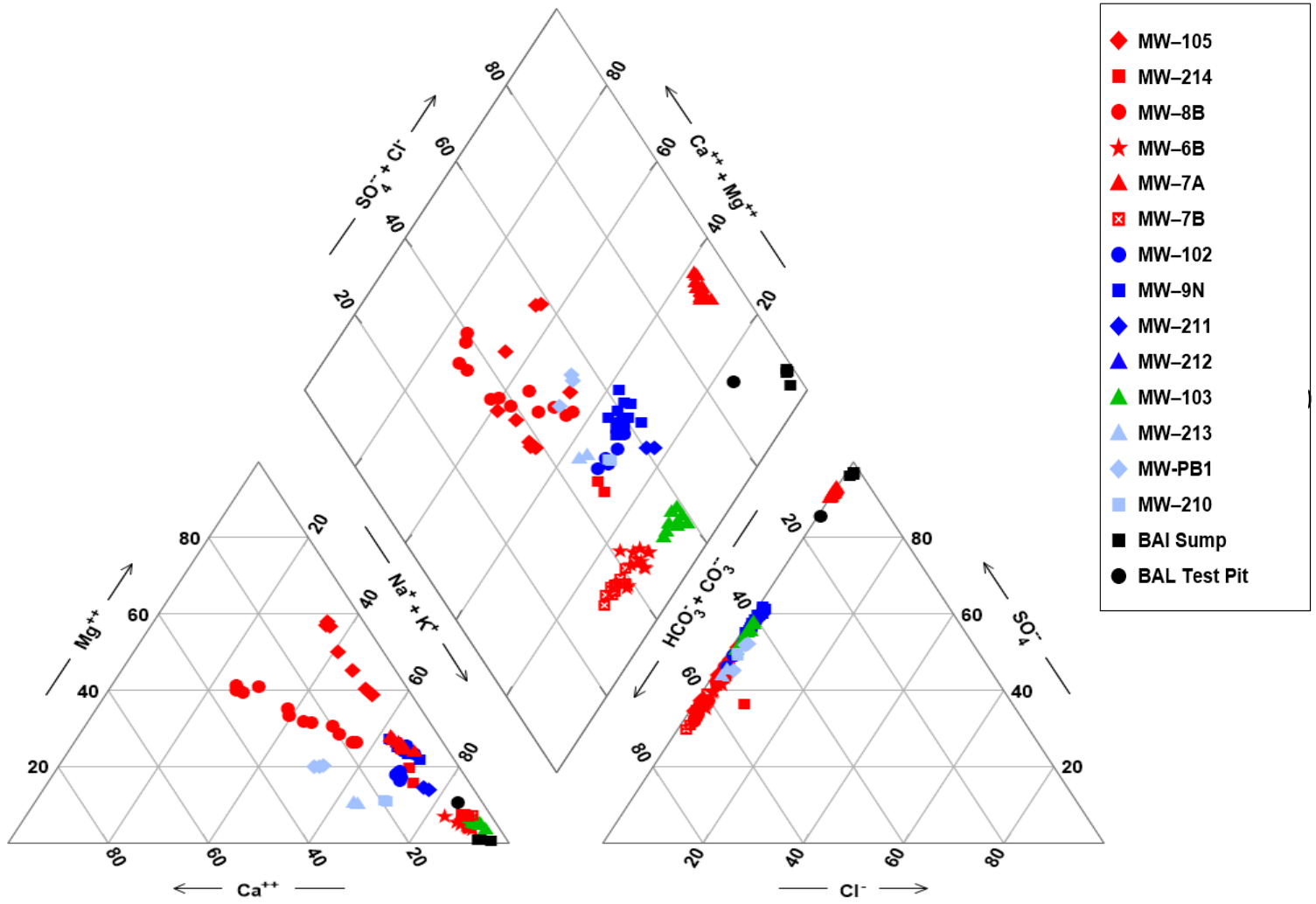
CLIENT
Great River Energy - Stanton Station

PROJECT
Tier I MNA Evaluation For Arsenic

CONSULTANT
wsp

TITLE
Speciation of Arsenic (Pourbaix Plot) in Groundwater

PROJECT NO.	PHASE	REV.	FIGURE
GL21509219	4000	A	3



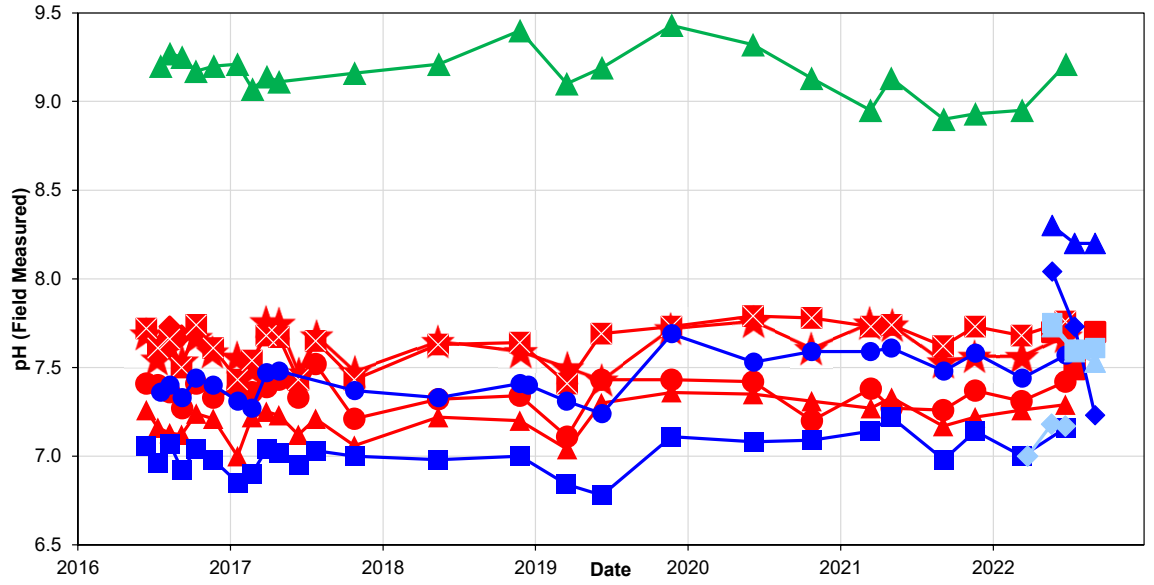
CLIENT
Great River Energy - Stanton Station

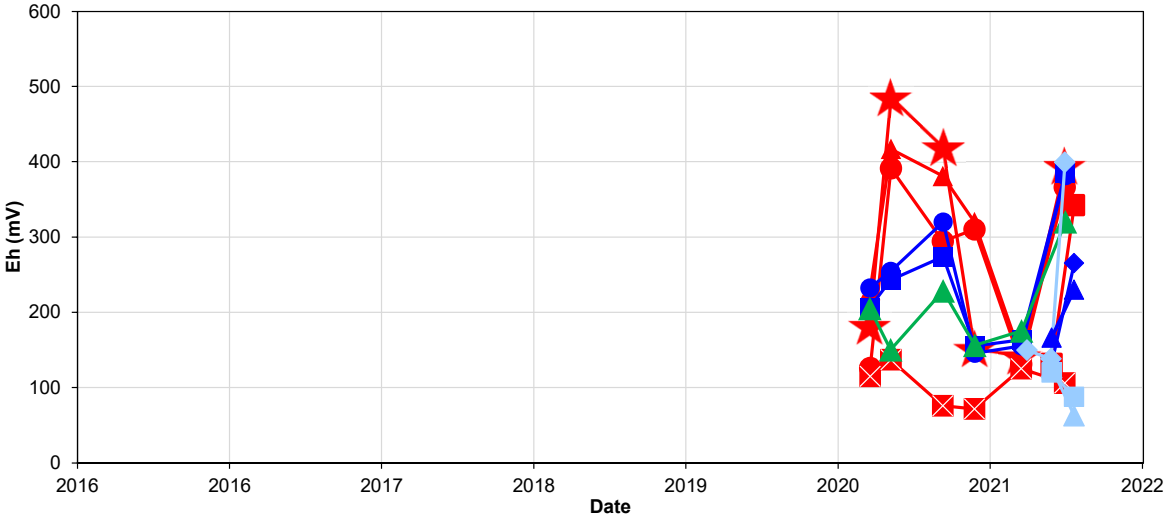
PROJECT
Tier I MNA Evaluation For Arsenic

CONSULTANT
wsp

TITLE
Trilinear (Piper) Diagram

PROJECT NO.	PHASE	REV.	FIGURE
GL21509219	4000	A	4





Upgradient/Side-Gradient
- MW-6B
- MW-8B
- MW-105
- MW-214
- MW-7A
- MW-7B

Downgradient
- MW-102
- MW-9N
- MW-212
- MW-211
- MW-103
- MW-210
- MW-213
- MW-PB1

CLIENT
Great River Energy - Stanton Station

PROJECT
Tier I MNA Evaluation For Arsenic

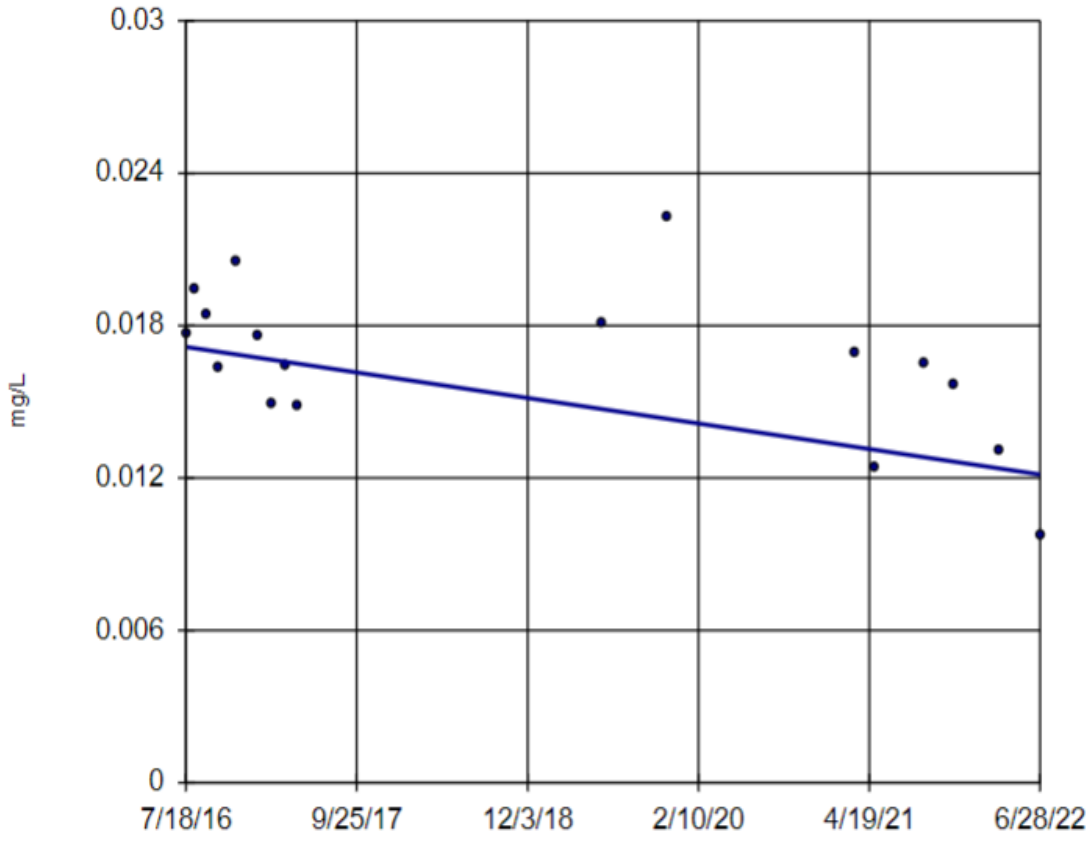
CONSULTANT
wsp

TITLE
pH and Eh Time Series for Background and CCR Unit Monitoring Wells

PROJECT NO.	PHASE	REV.	FIGURE
GL21509219	4000	A	5

Sen's Slope Estimator

MW-103



n = 17

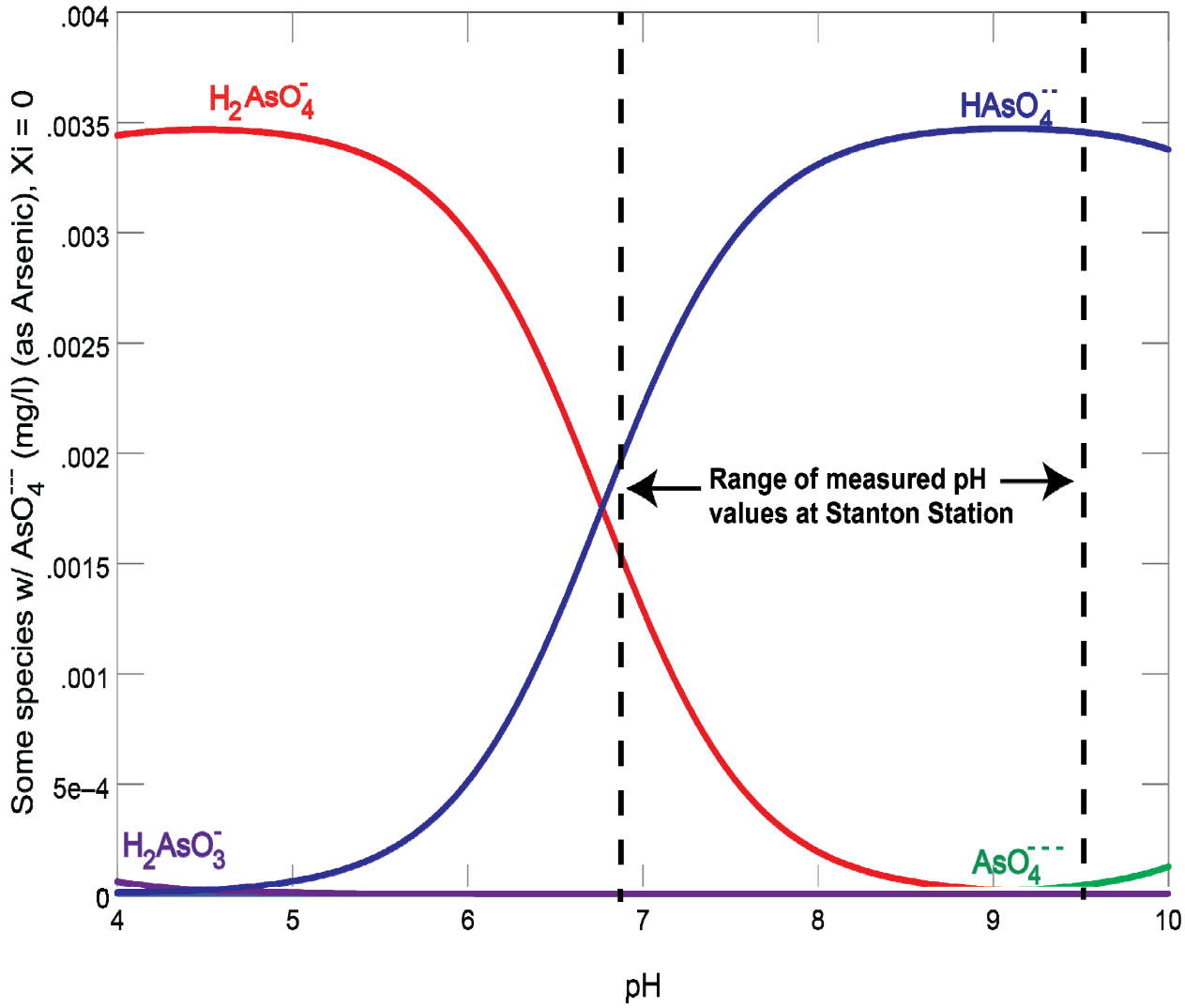
Slope = -0.0008439 units per year.

Mann-Kendall statistic = -60
critical = -58

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

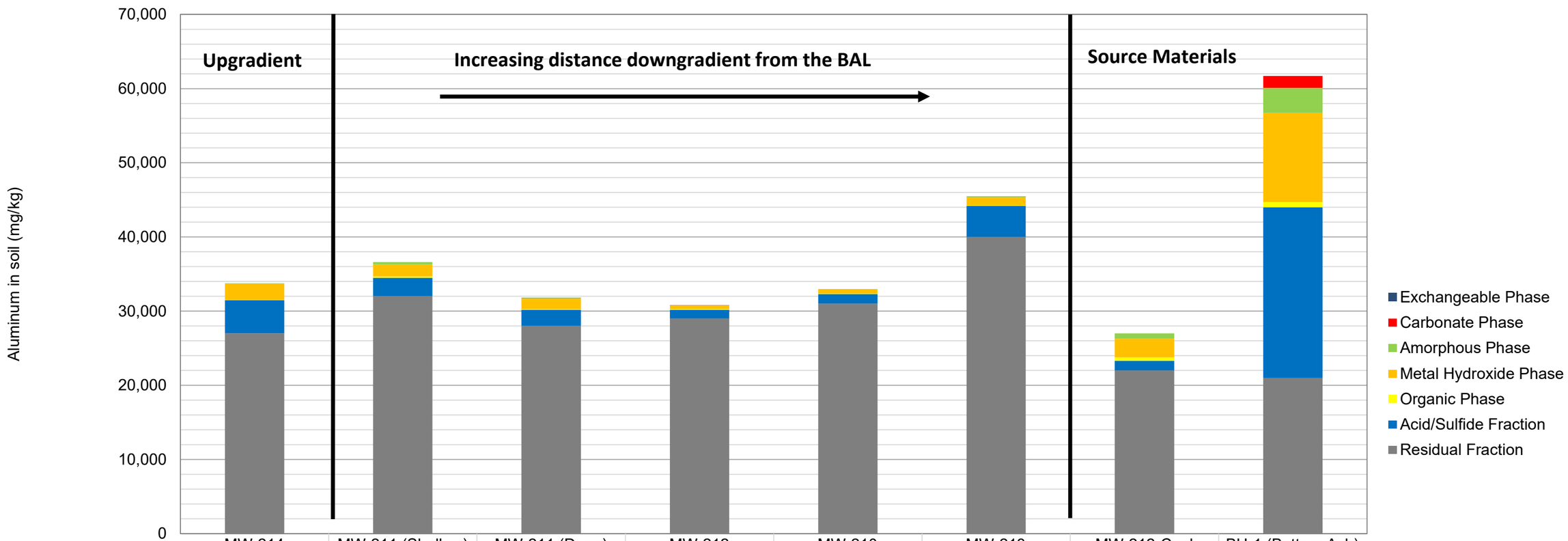
Constituent: Arsenic, Total Analysis Run 10/14/2022 4:52 PM

CLIENT: Great River Energy - Stanton Station	PROJECT: Tier I MNA Evaluation For Arsenic
CONSULTANT: wsp	TITLE: Statistical test of trending arsenic concentrations in MW-103
PROJECT NO. GL21509219	PHASE 4000
REV. A	FIGURE 6



Note: Figure was generated using a fixed Eh value of 0.3 V.

CLIENT	Great River Energy - Stanton Station
CONSULTANT	wsp
PROJECT	Tier I MNA Evaluation For Arsenic
TITLE	pH versus arsenic species concentrations
PROJECT NO.	GL21509219
PHASE	4000
REV.	A
FIGURE	7



	MW-214	MW-211 (Shallow)	MW-211 (Deep)	MW-212	MW-210	MW-213	MW-212-Coal	BH-1 (Bottom Ash)
Exchangeable Phase	0	0	0	0	0	0	0	0
Carbonate Phase	0	0	11	5.9	0	15	0	1600
Amorphous Phase	110	320	130	60	45	87	730	3400
Metal Hydroxide Phase	2100	1600	1400	450	570	1100	2500	12000
Organic Phase	53	190	69	87	60	59	480	710
Acid/Sulfide Fraction	4500	2500	2200	1200	1300	4200	1300	23000
Residual Fraction	27000	32000	28000	29000	31000	40000	22000	21000

Borehole and depth below ground surface (Aluminum in mg/kg soil)

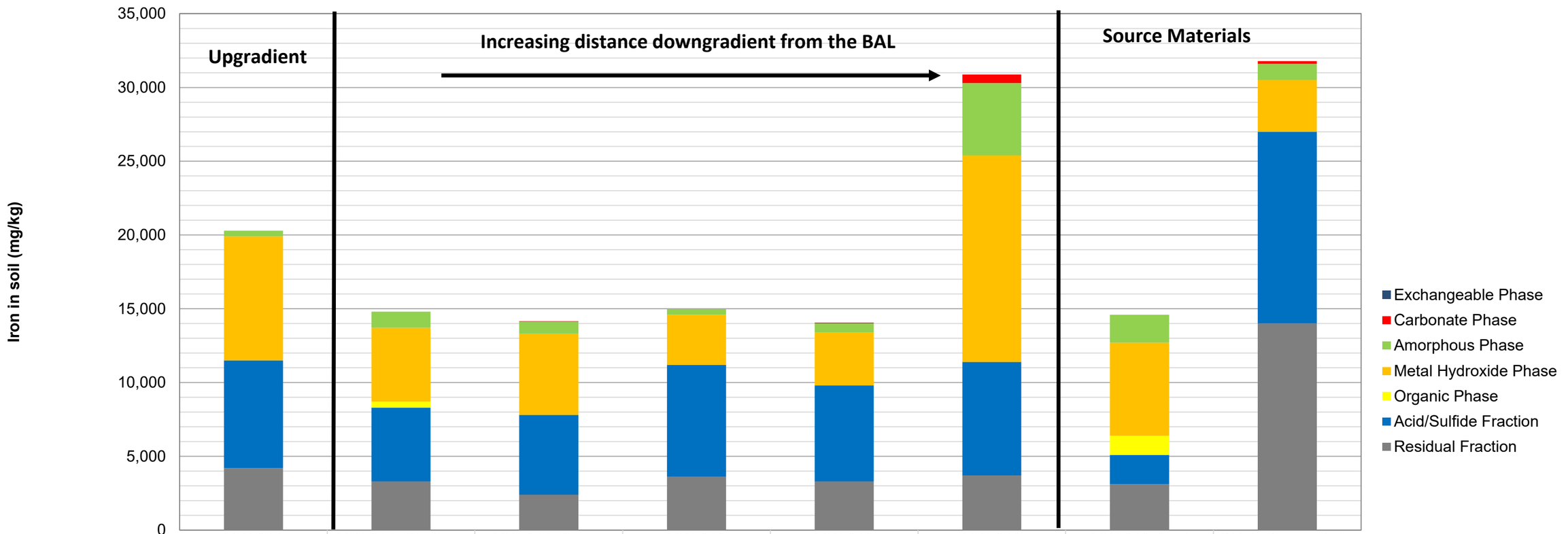
CLIENT
Great River Energy
Stantion Station

CONSULTANT
wsp

PROJECT
Tier I MNA Evaluation For Arsenic

TITLE
Sequential Extraction of Aluminum

PROJECT NO.	PHASE	REV.	FIGURE
19121567	192	A	8



	MW-214	MW-211 (Shallow)	MW-211 (Deep)	MW-212	MW-210	MW-213	MW-212-Coal	BH-1 (Bottom Ash)
Exchangeable Phase	0	0	0	0	0	0	0	0
Carbonate Phase	0	0	38	0	40	580	0	190
Amorphous Phase	390	1100	820	380	620	4900	1900	1100
Metal Hydroxide Phase	8400	5000	5500	3400	3600	14000	6300	3500
Organic Phase	0	410	0	0	0	0	1300	0
Acid/Sulfide Fraction	7300	5000	5400	7600	6500	7700	2000	13000
Residual Fraction	4200	3300	2400	3600	3300	3700	3100	14000

Borehole and depth below ground surface (Iron in mg/kg soil)

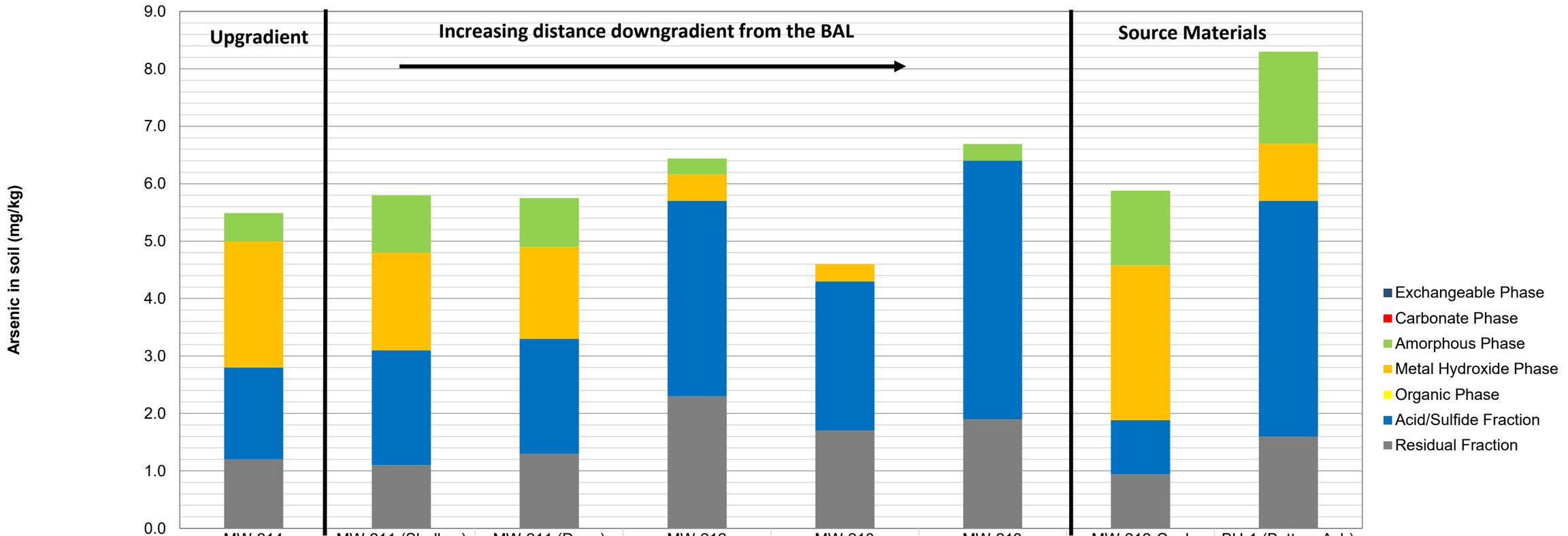
CLIENT
Great River Energy
Stantion Station

CONSULTANT
wsp

PROJECT
Tier I MNA Evaluation For Arsenic

TITLE
Sequential Extraction of Iron

PROJECT NO.	PHASE	REV.	FIGURE
19121567	192	A	9



	MW-214	MW-211 (Shallow)	MW-211 (Deep)	MW-212	MW-210	MW-213	MW-212-Coal	BH-1 (Bottom Ash)
Exchangeable Phase	0	0	0	0	0	0	0	0
Carbonate Phase	0	0	0	0	0	0	0	0
Amorphous Phase	0.49	1	0.85	0.28	0	0.29	1.3	1.6
Metal Hydroxide Phase	2.2	1.7	1.6	0.46	0.3	0	2.7	1
Organic Phase	0	0	0	0	0	0	0	0
Acid/Sulfide Fraction	1.6	2	2	3.4	2.6	4.5	0.94	4.1
Residual Fraction	1.2	1.1	1.3	2.3	1.7	1.9	0.94	1.6

Borehole and depth below ground surface (Arsenic in mg/kg soil)

CLIENT
Great River Energy
Stantion Station

CONSULTANT
wsp

PROJECT
Tier I MNA Evaluation For Arsenic

TITLE
Sequential Extraction of Arsenic

PROJECT NO.	PHASE	REV.	FIGURE
19121567	192	A	10

APPENDIX A

Sequential Extraction Laboratory Reports

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-27497-1
Client Project/Site: GL21509219, GRE Stanton 2022

For:
Golder Associates Inc.
7245 W Alaska Drive
Suite 200
Lakewood, Colorado 80226

Attn: Ms. Erin Hunter

Ryan Henry

Authorized for release by:
6/17/2022 11:28:52 AM

Ryan Henry, Project Manager I
(865)291-3000
WilliamR.Henry@et.eurofinsus.com

Table of Contents

Definitions/Glossary

Client: Golder Associates Inc.
Project/Site: GL21509219, GRE Stanton 2022

Job ID: 140-27497-1

Qualifiers

Metals

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
L	A negative instrument reading had an absolute value greater than the reporting limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 140-27497-1

Laboratory: Eurofins Knoxville

Narrative

Job Narrative
140-27497-1

Receipt
The samples were received on 5/18/2022 at 11:20am and arrived in good condition.

Receipt Exceptions
The Field Sampler was not listed on the Chain of Custody.

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. Not relinquished by client.

Metals
7 Step Sequential Extraction Procedure

These soil samples were prepared and analyzed using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0008, "7 Step Sequential Extraction Procedure". SW-846 Method 6010B as incorporated in Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

· Step 1 - Exchangeable Fraction: A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate (MgSO4), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 2 - Carbonate Fraction: The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 3 - Non-crystalline Materials Fraction: The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 4 - Metal Hydroxide Fraction: The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 5 - Organic-bound Fraction: The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 6 - Acid/Sulfide Fraction: The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO3-H2O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
· Step 7 - Residual Fraction: A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Results were calculated using the following equation:

Result, µg/g or mg/Kg, dry weight = (C × V × V1 × D) / (W × S × V2)

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL

Job ID: 140-27497-1 (Continued)

Laboratory: Eurofins Knoxville (Continued)

W = Wet weight of sample, g
S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

SEP Report Notes:

The final report lists the results for each step, the result for the total digestion of the sample, and a sum of the results of steps 1 through 7 by element.

Magnesium was not reported for step 1 because the extraction solution for this step (magnesium sulfate) contains high levels of magnesium. Sodium was not reported for steps 2 and 5 since the extraction solutions for these steps contain high levels of sodium. The sum of steps 1 through 7 is much higher than the total result for sodium and magnesium due to the magnesium and sodium introduced by the extraction solutions.

The digestates for steps 1, 2 and 5 were analyzed at a dilution due to instrument problems caused by the high solids content of the digestates. The reporting limits were adjusted accordingly.

Method 6010B: The following sample was diluted to bring the concentration of target analyte, Iron, within the calibration range: TW-TR2-C2 (140-27497-9). Elevated reporting limits (RLs) are provided.

Method 6010B: The following sample was diluted due to the presence of Iron which interferes with Arsenic and Lead: TW-TR2-C2 (140-27497-9). Elevated reporting limits (RLs) are provided.

Method 6010B: The following samples were diluted due to the presence of Silicon which interferes with Arsenic, Cobalt, and Lead: MW-212-C (140-27497-1), MW-212 (140-27497-2), MW-210 (140-27497-4), MW-211-0-5FT (140-27497-7) and TW-TR2-C2 (140-27497-9). Elevated reporting limits (RLs) are provided.

Method 6010B: Due to sample matrix effect on the internal standard (ISTD), a dilution was required for the following sample: BH-1 (140-27497-5).

Methods 6010B, 6010B SEP: The following samples were diluted due to the nature of the sample matrix: MW-212-C (140-27497-1), MW-212 (140-27497-2), TW-TR2 (140-27497-3), MW-210 (140-27497-4), BH-1 (140-27497-5), MW-214 (140-27497-6), MW-211-0-5FT (140-27497-7), MW-211-14-25FT (140-27497-8), TW-TR2-C2 (140-27497-9), TW-TR2-C1 (140-27497-10) and MW-213 (140-27497-11). Elevated reporting limits (RLs) are provided for Aluminum.

Method 6010B: The following samples were diluted due to the presence of Aluminum which interferes with Lead: TW-TR2 (140-27497-3) and MW-213 (140-27497-11). Elevated reporting limits (RLs) are provided.

Method 6010B: The following samples were diluted due to the presence of Titanium which interferes with Cobalt: TW-TR2 (140-27497-3), MW-214 (140-27497-6), TW-TR2-C1 (140-27497-10) and MW-213 (140-27497-11). Elevated reporting limits (RLs) are provided.

Titanium is not an interfering element for the Lead line used for reporting these samples.

Method 6010B SEP: LCS/LCSD %RPD was out due to the very low recoveries known for Manganese for this step.

Job ID: 140-27497-1 (Continued)

Laboratory: Eurofins Knoxville (Continued)

MW-212-C (140-27497-1)

Method 6010B SEP: The following sample was diluted due to the presence of titanium which interferes with Cobalt and Lead: BH-1 (140-27497-5). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: The following samples were diluted due to the presence of Silicon which interferes with Arsenic, Cobalt, and Lead: MW-212-C (140-27497-1), MW-210 (140-27497-4), MW-211-0-5FT (140-27497-7), MW-211-14-25FT (140-27497-8), TW-TR2-C2 (140-27497-9), TW-TR2-C1 (140-27497-10) and MW-213 (140-27497-11). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: The following samples were diluted due to the presence of Titanium which interferes with Cobalt: TW-TR2 (140-27497-3), BH-1 (140-27497-5) and MW-213 (140-27497-11). Elevated reporting limits (RLs) are provided.

Titanium is not an interfering element for the Lead line used for reporting these samples.

Method 6010B SEP: The following sample was diluted due to the nature of the sample matrix: MW-212-C (140-27497-1). Elevated reporting limits (RLs) are provided for Aluminum.

Method Organic-Bound: The following samples are not amenable for this step as each addition of the extraction reagent caused significant foaming which resulted in sample loss.

MW-212-C (140-27497-1), MW-211-0-5FT (140-27497-7), TW-TR2-C2 (140-27497-9) and TW-TR2-C1 (140-27497-10)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Golder Associates Inc.
Project/Site: GL21509219, GRE Stanton 2022

Job ID: 140-27497-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-27497-1	MW-212-C	Solid	05/10/22 10:48	05/18/22 11:20
140-27497-2	MW-212	Solid	05/10/22 11:20	05/18/22 11:20
140-27497-3	TW-TR2	Solid	05/11/22 15:00	05/18/22 11:20
140-27497-4	MW-210	Solid	05/09/22 10:37	05/18/22 11:20
140-27497-5	BH-1	Solid	05/10/22 13:15	05/18/22 11:20
140-27497-6	MW-214	Solid	05/12/22 15:15	05/18/22 11:20
140-27497-7	MW-211-0-5FT	Solid	05/10/22 08:24	05/18/22 11:20
140-27497-8	MW-211-14-25FT	Solid	05/10/22 09:30	05/18/22 11:20
140-27497-9	TW-TR2-C2	Solid	05/11/22 14:00	05/18/22 11:20
140-27497-10	TW-TR2-C1	Solid	05/11/22 13:00	05/18/22 11:20
140-27497-11	MW-213	Solid	05/12/22 12:40	05/18/22 11:20

Client Sample ID: MW-212-C

Date Collected: 05/10/22 10:48
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-1

Matrix: Solid
Percent Solids: 72.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		55	8.9	mg/Kg	☼	06/01/22 08:00	06/08/22 11:27	4
Arsenic	ND		2.8	0.72	mg/Kg	☼	06/01/22 08:00	06/08/22 11:27	4
Cobalt	ND		14	0.25	mg/Kg	☼	06/01/22 08:00	06/08/22 11:27	4
Iron	ND		28	16	mg/Kg	☼	06/01/22 08:00	06/08/22 11:27	4
Lead	ND		2.8	0.61	mg/Kg	☼	06/01/22 08:00	06/08/22 11:27	4
Lithium	ND		14	0.83	mg/Kg	☼	06/01/22 08:00	06/08/22 11:27	4
Manganese	**7.3**		4.2	0.17	mg/Kg	☼	06/01/22 08:00	06/08/22 11:27	4
Molybdenum	ND		11	0.45	mg/Kg	☼	06/01/22 08:00	06/08/22 11:27	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		42	6.6	mg/Kg	☼	06/02/22 08:00	06/08/22 13:26	3
Arsenic	ND		2.1	0.54	mg/Kg	☼	06/02/22 08:00	06/08/22 13:26	3
Cobalt	ND		10	0.26	mg/Kg	☼	06/02/22 08:00	06/08/22 13:26	3
Iron	ND		21	12	mg/Kg	☼	06/02/22 08:00	06/08/22 13:26	3
Lead	**0.47**	**J**	2.1	0.46	mg/Kg	☼	06/02/22 08:00	06/08/22 13:26	3
Lithium	**0.71**	**J**	10	0.62	mg/Kg	☼	06/02/22 08:00	06/08/22 13:26	3
Manganese	**16**		3.1	1.2	mg/Kg	☼	06/02/22 08:00	06/08/22 13:26	3
Molybdenum	ND		8.3	0.34	mg/Kg	☼	06/02/22 08:00	06/08/22 13:26	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**730**		14	2.9	mg/Kg	☼	06/03/22 08:00	06/09/22 11:02	1
Arsenic	**1.3**		0.69	0.18	mg/Kg	☼	06/03/22 08:00	06/09/22 11:02	1
Cobalt	**1.2**	**J**	3.5	0.062	mg/Kg	☼	06/03/22 08:00	06/09/22 11:02	1
Iron	**1900**		6.9	4.0	mg/Kg	☼	06/03/22 08:00	06/09/22 11:02	1
Lead	ND		0.69	0.15	mg/Kg	☼	06/03/22 08:00	06/09/22 11:02	1
Lithium	**0.27**	**J**	3.5	0.21	mg/Kg	☼	06/03/22 08:00	06/09/22 11:02	1
Manganese	**71**	**B**	1.0	0.037	mg/Kg	☼	06/03/22 08:00	06/09/22 11:02	1
Molybdenum	ND		2.8	0.11	mg/Kg	☼	06/03/22 08:00	06/09/22 11:02	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2500**		14	2.2	mg/Kg	☼	06/06/22 08:00	06/09/22 12:59	1
Arsenic	**2.7**		0.69	0.30	mg/Kg	☼	06/06/22 08:00	06/09/22 12:59	1
Cobalt	**1.5**	**J**	3.5	0.073	mg/Kg	☼	06/06/22 08:00	06/09/22 12:59	1
Iron	**6300**		6.9	4.0	mg/Kg	☼	06/06/22 08:00	06/09/22 12:59	1
Lead	**3.9**		0.69	0.15	mg/Kg	☼	06/06/22 08:00	06/09/22 12:59	1
Lithium	**3.5**	**B**	3.5	0.21	mg/Kg	☼	06/06/22 08:00	06/09/22 12:59	1
Manganese	**78**		1.0	0.18	mg/Kg	☼	06/06/22 08:00	06/09/22 12:59	1
Molybdenum	**0.14**	**J**	2.8	0.11	mg/Kg	☼	06/06/22 08:00	06/09/22 12:59	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**480**		210	33	mg/Kg	☼	06/08/22 08:00	06/10/22 11:22	5
Arsenic	ND		10	2.6	mg/Kg	☼	06/08/22 08:00	06/10/22 11:22	5
Cobalt	ND		52	0.83	mg/Kg	☼	06/08/22 08:00	06/10/22 11:22	5
Iron	**1300**		100	61	mg/Kg	☼	06/08/22 08:00	06/10/22 11:22	5
Lead	**2.4**	**J**	10	2.3	mg/Kg	☼	06/08/22 08:00	06/10/22 11:22	5
Lithium	**10**	**J B**	52	3.0	mg/Kg	☼	06/08/22 08:00	06/10/22 11:22	5

Client Sample ID: MW-212-C

Date Collected: 05/10/22 10:48
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-1

Matrix: Solid
Percent Solids: 72.2

Method: 6010B SEP - SEP Metals (ICP) - Step 5 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	14	J *1	16	2.6	mg/Kg	☼	06/08/22 08:00	06/10/22 11:22	5
Molybdenum	ND		42	1.7	mg/Kg	☼	06/08/22 08:00	06/10/22 11:22	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1300		14	2.2	mg/Kg	☼	06/08/22 08:00	06/10/22 13:22	1
Arsenic	0.94		0.69	0.21	mg/Kg	☼	06/08/22 08:00	06/10/22 13:22	1
Cobalt	0.41	J	3.5	0.064	mg/Kg	☼	06/08/22 08:00	06/10/22 13:22	1
Iron	2000		6.9	4.0	mg/Kg	☼	06/08/22 08:00	06/10/22 13:22	1
Lead	0.51	J	0.69	0.15	mg/Kg	☼	06/08/22 08:00	06/10/22 13:22	1
Lithium	1.0	J	3.5	0.21	mg/Kg	☼	06/08/22 08:00	06/10/22 13:22	1
Manganese	11		1.0	0.35	mg/Kg	☼	06/08/22 08:00	06/10/22 13:22	1
Molybdenum	ND		2.8	0.14	mg/Kg	☼	06/08/22 08:00	06/10/22 13:22	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	22000		140	22	mg/Kg	☼	06/09/22 08:00	06/13/22 11:43	10
Arsenic	0.94	J	1.4	0.36	mg/Kg	☼	06/09/22 08:00	06/13/22 15:31	2
Cobalt	2.0	J	6.9	0.072	mg/Kg	☼	06/09/22 08:00	06/13/22 15:31	2
Iron	3100		6.9	5.7	mg/Kg	☼	06/09/22 08:00	06/14/22 12:42	1
Lead	2.3		1.4	0.30	mg/Kg	☼	06/09/22 08:00	06/13/22 15:31	2
Lithium	6.9		3.5	0.21	mg/Kg	☼	06/09/22 08:00	06/14/22 12:42	1
Manganese	28		1.0	0.15	mg/Kg	☼	06/09/22 08:00	06/13/22 13:40	1
Molybdenum	0.14	J	2.8	0.11	mg/Kg	☼	06/09/22 08:00	06/13/22 13:40	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		10	1.6	mg/Kg			06/16/22 15:26	1
Arsenic	5.9		0.50	0.13	mg/Kg			06/16/22 15:26	1
Cobalt	5.2		2.5	0.023	mg/Kg			06/16/22 15:26	1
Iron	15000		5.0	4.1	mg/Kg			06/16/22 15:26	1
Lead	9.5		0.50	0.11	mg/Kg			06/16/22 15:26	1
Lithium	22		2.5	0.15	mg/Kg			06/16/22 15:26	1
Manganese	230		0.75	0.052	mg/Kg			06/16/22 15:26	1
Molybdenum	0.28	J	2.0	0.082	mg/Kg			06/16/22 15:26	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	26000		140	22	mg/Kg	☼	05/26/22 08:00	06/14/22 13:41	10
Arsenic	7.9		2.1	0.54	mg/Kg	☼	05/26/22 08:00	06/14/22 17:27	3
Cobalt	5.8	J	10	0.11	mg/Kg	☼	05/26/22 08:00	06/14/22 17:27	3
Iron	13000		6.9	5.7	mg/Kg	☼	05/26/22 08:00	06/14/22 15:40	1
Lead	7.7		2.1	0.46	mg/Kg	☼	05/26/22 08:00	06/14/22 17:27	3
Lithium	10		3.5	0.21	mg/Kg	☼	05/26/22 08:00	06/14/22 15:40	1
Manganese	200		1.0	0.15	mg/Kg	☼	05/26/22 08:00	06/14/22 15:40	1
Molybdenum	1.1	J	2.8	0.11	mg/Kg	☼	05/26/22 08:00	06/14/22 15:40	1

Client Sample ID: MW-212

Date Collected: 05/10/22 11:20
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-2

Matrix: Solid
Percent Solids: 85.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		47	7.5	mg/Kg	☼	06/01/22 08:00	06/08/22 11:42	4
Arsenic	ND		2.3	0.61	mg/Kg	☼	06/01/22 08:00	06/08/22 11:42	4
Cobalt	ND		12	0.21	mg/Kg	☼	06/01/22 08:00	06/08/22 11:42	4
Iron	ND		23	14	mg/Kg	☼	06/01/22 08:00	06/08/22 11:42	4
Lead	ND		2.3	0.52	mg/Kg	☼	06/01/22 08:00	06/08/22 11:42	4
Lithium	ND		12	0.70	mg/Kg	☼	06/01/22 08:00	06/08/22 11:42	4
Manganese	**10**		3.5	0.15	mg/Kg	☼	06/01/22 08:00	06/08/22 11:42	4
Molybdenum	ND		9.4	0.38	mg/Kg	☼	06/01/22 08:00	06/08/22 11:42	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**5.9**	**J**	35	5.6	mg/Kg	☼	06/02/22 08:00	06/08/22 13:41	3
Arsenic	ND		1.8	0.46	mg/Kg	☼	06/02/22 08:00	06/08/22 13:41	3
Cobalt	ND		8.8	0.22	mg/Kg	☼	06/02/22 08:00	06/08/22 13:41	3
Iron	ND		18	10	mg/Kg	☼	06/02/22 08:00	06/08/22 13:41	3
Lead	ND		1.8	0.39	mg/Kg	☼	06/02/22 08:00	06/08/22 13:41	3
Lithium	ND		8.8	0.53	mg/Kg	☼	06/02/22 08:00	06/08/22 13:41	3
Manganese	**30**		2.6	0.99	mg/Kg	☼	06/02/22 08:00	06/08/22 13:41	3
Molybdenum	ND		7.0	0.29	mg/Kg	☼	06/02/22 08:00	06/08/22 13:41	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**60**		12	2.5	mg/Kg	☼	06/03/22 08:00	06/09/22 11:17	1
Arsenic	**0.28**	**J**	0.59	0.15	mg/Kg	☼	06/03/22 08:00	06/09/22 11:17	1
Cobalt	**0.34**	**J**	2.9	0.053	mg/Kg	☼	06/03/22 08:00	06/09/22 11:17	1
Iron	**380**		5.9	3.4	mg/Kg	☼	06/03/22 08:00	06/09/22 11:17	1
Lead	ND		0.59	0.13	mg/Kg	☼	06/03/22 08:00	06/09/22 11:17	1
Lithium	ND		2.9	0.18	mg/Kg	☼	06/03/22 08:00	06/09/22 11:17	1
Manganese	**24**	**B**	0.88	0.032	mg/Kg	☼	06/03/22 08:00	06/09/22 11:17	1
Molybdenum	ND		2.3	0.096	mg/Kg	☼	06/03/22 08:00	06/09/22 11:17	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**450**		12	1.9	mg/Kg	☼	06/06/22 08:00	06/09/22 13:14	1
Arsenic	**0.46**	**J**	0.59	0.26	mg/Kg	☼	06/06/22 08:00	06/09/22 13:14	1
Cobalt	**1.3**	**J**	2.9	0.062	mg/Kg	☼	06/06/22 08:00	06/09/22 13:14	1
Iron	**3400**		5.9	3.4	mg/Kg	☼	06/06/22 08:00	06/09/22 13:14	1
Lead	**1.3**		0.59	0.13	mg/Kg	☼	06/06/22 08:00	06/09/22 13:14	1
Lithium	**1.1**	**J B**	2.9	0.18	mg/Kg	☼	06/06/22 08:00	06/09/22 13:14	1
Manganese	**62**		0.88	0.15	mg/Kg	☼	06/06/22 08:00	06/09/22 13:14	1
Molybdenum	**0.58**	**J**	2.3	0.096	mg/Kg	☼	06/06/22 08:00	06/09/22 13:14	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**87**	**J**	180	28	mg/Kg	☼	06/08/22 08:00	06/10/22 11:37	5
Arsenic	ND		8.8	2.2	mg/Kg	☼	06/08/22 08:00	06/10/22 11:37	5
Cobalt	ND		44	0.70	mg/Kg	☼	06/08/22 08:00	06/10/22 11:37	5
Iron	ND		88	52	mg/Kg	☼	06/08/22 08:00	06/10/22 11:37	5
Lead	ND		8.8	1.9	mg/Kg	☼	06/08/22 08:00	06/10/22 11:37	5
Lithium	**7.5**	**J B**	44	2.6	mg/Kg	☼	06/08/22 08:00	06/10/22 11:37	5

Client Sample ID: MW-212

Date Collected: 05/10/22 11:20
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-2

Matrix: Solid
Percent Solids: 85.2

Method: 6010B SEP - SEP Metals (ICP) - Step 5 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	2.5	J *1	13	2.2	mg/Kg	☼	06/08/22 08:00	06/10/22 11:37	5
Molybdenum	ND		35	1.5	mg/Kg	☼	06/08/22 08:00	06/10/22 11:37	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1200		12	1.9	mg/Kg	☼	06/08/22 08:00	06/10/22 13:37	1
Arsenic	3.4		0.59	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 13:37	1
Cobalt	1.3	J	2.9	0.054	mg/Kg	☼	06/08/22 08:00	06/10/22 13:37	1
Iron	7600		5.9	3.4	mg/Kg	☼	06/08/22 08:00	06/10/22 13:37	1
Lead	0.90		0.59	0.13	mg/Kg	☼	06/08/22 08:00	06/10/22 13:37	1
Lithium	1.9	J	2.9	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 13:37	1
Manganese	84		0.88	0.29	mg/Kg	☼	06/08/22 08:00	06/10/22 13:37	1
Molybdenum	1.4	J	2.3	0.12	mg/Kg	☼	06/08/22 08:00	06/10/22 13:37	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	29000		120	19	mg/Kg	☼	06/09/22 08:00	06/14/22 11:00	10
Arsenic	2.3		0.59	0.15	mg/Kg	☼	06/09/22 08:00	06/13/22 13:55	1
Cobalt	2.0	J	2.9	0.031	mg/Kg	☼	06/09/22 08:00	06/13/22 13:55	1
Iron	3600		5.9	4.8	mg/Kg	☼	06/09/22 08:00	06/13/22 13:55	1
Lead	7.1		0.59	0.13	mg/Kg	☼	06/09/22 08:00	06/13/22 13:55	1
Lithium	4.7		2.9	0.18	mg/Kg	☼	06/09/22 08:00	06/13/22 13:55	1
Manganese	55		0.88	0.13	mg/Kg	☼	06/09/22 08:00	06/13/22 13:55	1
Molybdenum	0.88	J	2.3	0.096	mg/Kg	☼	06/09/22 08:00	06/13/22 13:55	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	31000		10	1.6	mg/Kg			06/16/22 15:26	1
Arsenic	6.4		0.50	0.13	mg/Kg			06/16/22 15:26	1
Cobalt	4.9		2.5	0.023	mg/Kg			06/16/22 15:26	1
Iron	15000		5.0	4.1	mg/Kg			06/16/22 15:26	1
Lead	9.3		0.50	0.11	mg/Kg			06/16/22 15:26	1
Lithium	15		2.5	0.15	mg/Kg			06/16/22 15:26	1
Manganese	270		0.75	0.052	mg/Kg			06/16/22 15:26	1
Molybdenum	2.9		2.0	0.082	mg/Kg			06/16/22 15:26	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	33000		120	19	mg/Kg	☼	05/26/22 08:00	06/14/22 13:55	10
Arsenic	7.9		1.2	0.31	mg/Kg	☼	05/26/22 08:00	06/14/22 17:32	2
Cobalt	5.4	J	5.9	0.061	mg/Kg	☼	05/26/22 08:00	06/14/22 17:32	2
Iron	13000		5.9	4.8	mg/Kg	☼	05/26/22 08:00	06/14/22 15:55	1
Lead	7.3		1.2	0.26	mg/Kg	☼	05/26/22 08:00	06/14/22 17:32	2
Lithium	8.5		2.9	0.18	mg/Kg	☼	05/26/22 08:00	06/14/22 15:55	1
Manganese	200		0.88	0.13	mg/Kg	☼	05/26/22 08:00	06/14/22 15:55	1
Molybdenum	0.62	J	2.3	0.096	mg/Kg	☼	05/26/22 08:00	06/14/22 15:55	1

Client Sample ID: TW-TR2

Date Collected: 05/11/22 15:00
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-3

Matrix: Solid
Percent Solids: 84.1

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		48	7.6	mg/Kg	☼	06/01/22 08:00	06/08/22 11:47	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	06/01/22 08:00	06/08/22 11:47	4
Cobalt	**0.84**	**J**	12	0.21	mg/Kg	☼	06/01/22 08:00	06/08/22 11:47	4
Iron	ND		24	14	mg/Kg	☼	06/01/22 08:00	06/08/22 11:47	4
Lead	**0.60**	**J B**	2.4	0.52	mg/Kg	☼	06/01/22 08:00	06/08/22 11:47	4
Lithium	ND		12	0.71	mg/Kg	☼	06/01/22 08:00	06/08/22 11:47	4
Manganese	**8.3**		3.6	0.15	mg/Kg	☼	06/01/22 08:00	06/08/22 11:47	4
Molybdenum	**0.86**	**J**	9.5	0.39	mg/Kg	☼	06/01/22 08:00	06/08/22 11:47	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11**	**J**	36	5.7	mg/Kg	☼	06/02/22 08:00	06/08/22 13:46	3
Arsenic	ND		1.8	0.46	mg/Kg	☼	06/02/22 08:00	06/08/22 13:46	3
Cobalt	**1.8**	**J**	8.9	0.22	mg/Kg	☼	06/02/22 08:00	06/08/22 13:46	3
Iron	**57**		18	10	mg/Kg	☼	06/02/22 08:00	06/08/22 13:46	3
Lead	**2.1**		1.8	0.39	mg/Kg	☼	06/02/22 08:00	06/08/22 13:46	3
Lithium	**0.91**	**J**	8.9	0.53	mg/Kg	☼	06/02/22 08:00	06/08/22 13:46	3
Manganese	**47**		2.7	1.0	mg/Kg	☼	06/02/22 08:00	06/08/22 13:46	3
Molybdenum	ND		7.1	0.29	mg/Kg	☼	06/02/22 08:00	06/08/22 13:46	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**100**		12	2.5	mg/Kg	☼	06/03/22 08:00	06/09/22 11:21	1
Arsenic	**1.9**		0.59	0.15	mg/Kg	☼	06/03/22 08:00	06/09/22 11:21	1
Cobalt	**1.7**	**J**	3.0	0.053	mg/Kg	☼	06/03/22 08:00	06/09/22 11:21	1
Iron	**2500**		5.9	3.4	mg/Kg	☼	06/03/22 08:00	06/09/22 11:21	1
Lead	ND		0.59	0.13	mg/Kg	☼	06/03/22 08:00	06/09/22 11:21	1
Lithium	**0.26**	**J**	3.0	0.18	mg/Kg	☼	06/03/22 08:00	06/09/22 11:21	1
Manganese	**69**	**B**	0.89	0.032	mg/Kg	☼	06/03/22 08:00	06/09/22 11:21	1
Molybdenum	**0.50**	**J**	2.4	0.097	mg/Kg	☼	06/03/22 08:00	06/09/22 11:21	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1800**		12	1.9	mg/Kg	☼	06/06/22 08:00	06/09/22 13:18	1
Arsenic	ND		0.59	0.26	mg/Kg	☼	06/06/22 08:00	06/09/22 13:18	1
Cobalt	**1.8**	**J**	3.0	0.063	mg/Kg	☼	06/06/22 08:00	06/09/22 13:18	1
Iron	**6400**		5.9	3.4	mg/Kg	☼	06/06/22 08:00	06/09/22 13:18	1
Lead	**6.7**		0.59	0.13	mg/Kg	☼	06/06/22 08:00	06/09/22 13:18	1
Lithium	**4.4**	**B**	3.0	0.18	mg/Kg	☼	06/06/22 08:00	06/09/22 13:18	1
Manganese	**130**		0.89	0.15	mg/Kg	☼	06/06/22 08:00	06/09/22 13:18	1
Molybdenum	**0.18**	**J**	2.4	0.097	mg/Kg	☼	06/06/22 08:00	06/09/22 13:18	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**310**		180	28	mg/Kg	☼	06/08/22 08:00	06/10/22 11:42	5
Arsenic	ND		8.9	2.3	mg/Kg	☼	06/08/22 08:00	06/10/22 11:42	5
Cobalt	**0.82**	**J**	45	0.71	mg/Kg	☼	06/08/22 08:00	06/10/22 11:42	5
Iron	**530**		89	52	mg/Kg	☼	06/08/22 08:00	06/10/22 11:42	5
Lead	**3.2**	**J**	8.9	2.0	mg/Kg	☼	06/08/22 08:00	06/10/22 11:42	5
Lithium	**9.2**	**J B**	45	2.6	mg/Kg	☼	06/08/22 08:00	06/10/22 11:42	5

Client Sample ID: TW-TR2

Date Collected: 05/11/22 15:00
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-3

Matrix: Solid
Percent Solids: 84.1

Method: 6010B SEP - SEP Metals (ICP) - Step 5 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	26	*1	13	2.2	mg/Kg	☼	06/08/22 08:00	06/10/22 11:42	5
Molybdenum	ND		36	1.5	mg/Kg	☼	06/08/22 08:00	06/10/22 11:42	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	4200		12	1.9	mg/Kg	☼	06/08/22 08:00	06/10/22 13:47	1
Arsenic	1.5		0.59	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 13:47	1
Cobalt	1.4	J	3.0	0.055	mg/Kg	☼	06/08/22 08:00	06/10/22 13:47	1
Iron	5600		5.9	3.4	mg/Kg	☼	06/08/22 08:00	06/10/22 13:47	1
Lead	2.5		0.59	0.13	mg/Kg	☼	06/08/22 08:00	06/10/22 13:47	1
Lithium	5.0		3.0	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 13:47	1
Manganese	47		0.89	0.30	mg/Kg	☼	06/08/22 08:00	06/10/22 13:47	1
Molybdenum	0.34	J	2.4	0.12	mg/Kg	☼	06/08/22 08:00	06/10/22 13:47	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	28000		120	19	mg/Kg	☼	06/09/22 08:00	06/14/22 11:05	10
Arsenic	0.66		0.59	0.15	mg/Kg	☼	06/09/22 08:00	06/13/22 14:00	1
Cobalt	1.1	J	5.9	0.062	mg/Kg	☼	06/09/22 08:00	06/13/22 15:36	2
Iron	5800		5.9	4.9	mg/Kg	☼	06/09/22 08:00	06/13/22 14:00	1
Lead	2.3		0.59	0.13	mg/Kg	☼	06/09/22 08:00	06/13/22 14:00	1
Lithium	8.5		3.0	0.18	mg/Kg	☼	06/09/22 08:00	06/13/22 14:00	1
Manganese	28		0.89	0.13	mg/Kg	☼	06/09/22 08:00	06/13/22 14:00	1
Molybdenum	0.18	J	2.4	0.097	mg/Kg	☼	06/09/22 08:00	06/13/22 14:00	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	34000		10	1.6	mg/Kg			06/16/22 15:26	1
Arsenic	4.1		0.50	0.13	mg/Kg			06/16/22 15:26	1
Cobalt	9.5		2.5	0.023	mg/Kg			06/16/22 15:26	1
Iron	21000		5.0	4.1	mg/Kg			06/16/22 15:26	1
Lead	17		0.50	0.11	mg/Kg			06/16/22 15:26	1
Lithium	28		2.5	0.15	mg/Kg			06/16/22 15:26	1
Manganese	350		0.75	0.052	mg/Kg			06/16/22 15:26	1
Molybdenum	2.1		2.0	0.082	mg/Kg			06/16/22 15:26	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	73000		120	19	mg/Kg	☼	05/26/22 08:00	06/14/22 14:00	10
Arsenic	6.1		0.59	0.15	mg/Kg	☼	05/26/22 08:00	06/14/22 16:01	1
Cobalt	8.9		8.9	0.093	mg/Kg	☼	05/26/22 08:00	06/14/22 17:37	3
Iron	22000		5.9	4.9	mg/Kg	☼	05/26/22 08:00	06/14/22 16:01	1
Lead	15		1.8	0.39	mg/Kg	☼	05/26/22 08:00	06/14/22 17:37	3
Lithium	26		3.0	0.18	mg/Kg	☼	05/26/22 08:00	06/14/22 16:01	1
Manganese	270		0.89	0.13	mg/Kg	☼	05/26/22 08:00	06/14/22 16:01	1
Molybdenum	3.7		2.4	0.097	mg/Kg	☼	05/26/22 08:00	06/14/22 16:01	1

Client Sample ID: MW-210

Date Collected: 05/09/22 10:37
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-4

Matrix: Solid
Percent Solids: 83.8

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		48	7.6	mg/Kg	☼	06/01/22 08:00	06/08/22 11:52	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	06/01/22 08:00	06/08/22 11:52	4
Cobalt	ND		12	0.21	mg/Kg	☼	06/01/22 08:00	06/08/22 11:52	4
Iron	ND		24	14	mg/Kg	☼	06/01/22 08:00	06/08/22 11:52	4
Lead	**0.54**	**J B**	2.4	0.53	mg/Kg	☼	06/01/22 08:00	06/08/22 11:52	4
Lithium	ND		12	0.72	mg/Kg	☼	06/01/22 08:00	06/08/22 11:52	4
Manganese	**1.4**	**J**	3.6	0.15	mg/Kg	☼	06/01/22 08:00	06/08/22 11:52	4
Molybdenum	ND		9.5	0.39	mg/Kg	☼	06/01/22 08:00	06/08/22 11:52	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		36	5.7	mg/Kg	☼	06/02/22 08:00	06/08/22 13:51	3
Arsenic	ND		1.8	0.47	mg/Kg	☼	06/02/22 08:00	06/08/22 13:51	3
Cobalt	ND		9.0	0.23	mg/Kg	☼	06/02/22 08:00	06/08/22 13:51	3
Iron	**40**		18	10	mg/Kg	☼	06/02/22 08:00	06/08/22 13:51	3
Lead	**0.56**	**J**	1.8	0.39	mg/Kg	☼	06/02/22 08:00	06/08/22 13:51	3
Lithium	ND		9.0	0.54	mg/Kg	☼	06/02/22 08:00	06/08/22 13:51	3
Manganese	**13**		2.7	1.0	mg/Kg	☼	06/02/22 08:00	06/08/22 13:51	3
Molybdenum	ND		7.2	0.29	mg/Kg	☼	06/02/22 08:00	06/08/22 13:51	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**45**		12	2.5	mg/Kg	☼	06/03/22 08:00	06/09/22 11:26	1
Arsenic	ND		0.60	0.16	mg/Kg	☼	06/03/22 08:00	06/09/22 11:26	1
Cobalt	**0.32**	**J**	3.0	0.054	mg/Kg	☼	06/03/22 08:00	06/09/22 11:26	1
Iron	**620**		6.0	3.5	mg/Kg	☼	06/03/22 08:00	06/09/22 11:26	1
Lead	ND		0.60	0.13	mg/Kg	☼	06/03/22 08:00	06/09/22 11:26	1
Lithium	ND		3.0	0.18	mg/Kg	☼	06/03/22 08:00	06/09/22 11:26	1
Manganese	**7.2**	**B**	0.90	0.032	mg/Kg	☼	06/03/22 08:00	06/09/22 11:26	1
Molybdenum	**0.11**	**J**	2.4	0.098	mg/Kg	☼	06/03/22 08:00	06/09/22 11:26	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**570**		12	1.9	mg/Kg	☼	06/06/22 08:00	06/09/22 13:23	1
Arsenic	**0.30**	**J**	0.60	0.26	mg/Kg	☼	06/06/22 08:00	06/09/22 13:23	1
Cobalt	**1.5**	**J**	3.0	0.063	mg/Kg	☼	06/06/22 08:00	06/09/22 13:23	1
Iron	**3600**		6.0	3.5	mg/Kg	☼	06/06/22 08:00	06/09/22 13:23	1
Lead	**1.6**		0.60	0.13	mg/Kg	☼	06/06/22 08:00	06/09/22 13:23	1
Lithium	**1.4**	**J B**	3.0	0.18	mg/Kg	☼	06/06/22 08:00	06/09/22 13:23	1
Manganese	**37**		0.90	0.16	mg/Kg	☼	06/06/22 08:00	06/09/22 13:23	1
Molybdenum	**0.25**	**J**	2.4	0.098	mg/Kg	☼	06/06/22 08:00	06/09/22 13:23	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**60**	**J**	180	28	mg/Kg	☼	06/08/22 08:00	06/10/22 11:47	5
Arsenic	ND		9.0	2.3	mg/Kg	☼	06/08/22 08:00	06/10/22 11:47	5
Cobalt	ND		45	0.72	mg/Kg	☼	06/08/22 08:00	06/10/22 11:47	5
Iron	ND		90	53	mg/Kg	☼	06/08/22 08:00	06/10/22 11:47	5
Lead	ND		9.0	2.0	mg/Kg	☼	06/08/22 08:00	06/10/22 11:47	5
Lithium	**7.8**	**J B**	45	2.6	mg/Kg	☼	06/08/22 08:00	06/10/22 11:47	5

Client Sample ID: MW-210

Date Collected: 05/09/22 10:37
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-4

Matrix: Solid
Percent Solids: 83.8

Method: 6010B SEP - SEP Metals (ICP) - Step 5 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	ND	*1	13	2.2	mg/Kg	☼	06/08/22 08:00	06/10/22 11:47	5
Molybdenum	ND		36	1.5	mg/Kg	☼	06/08/22 08:00	06/10/22 11:47	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1300		12	1.9	mg/Kg	☼	06/08/22 08:00	06/10/22 13:52	1
Arsenic	2.6		0.60	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 13:52	1
Cobalt	1.3	J	3.0	0.055	mg/Kg	☼	06/08/22 08:00	06/10/22 13:52	1
Iron	6500		6.0	3.5	mg/Kg	☼	06/08/22 08:00	06/10/22 13:52	1
Lead	0.99		0.60	0.13	mg/Kg	☼	06/08/22 08:00	06/10/22 13:52	1
Lithium	1.9	J	3.0	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 13:52	1
Manganese	66		0.90	0.30	mg/Kg	☼	06/08/22 08:00	06/10/22 13:52	1
Molybdenum	0.33	J	2.4	0.12	mg/Kg	☼	06/08/22 08:00	06/10/22 13:52	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	31000		120	19	mg/Kg	☼	06/09/22 08:00	06/14/22 11:09	10
Arsenic	1.7		1.2	0.31	mg/Kg	☼	06/09/22 08:00	06/13/22 15:41	2
Cobalt	1.9	J	6.0	0.062	mg/Kg	☼	06/09/22 08:00	06/13/22 15:41	2
Iron	3300		6.0	4.9	mg/Kg	☼	06/09/22 08:00	06/13/22 14:05	1
Lead	4.7		1.2	0.26	mg/Kg	☼	06/09/22 08:00	06/13/22 15:41	2
Lithium	3.8		3.0	0.18	mg/Kg	☼	06/09/22 08:00	06/13/22 14:05	1
Manganese	61		0.90	0.13	mg/Kg	☼	06/09/22 08:00	06/13/22 14:05	1
Molybdenum	0.13	J	2.4	0.098	mg/Kg	☼	06/09/22 08:00	06/13/22 14:05	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	33000		10	1.6	mg/Kg			06/16/22 15:26	1
Arsenic	4.6		0.50	0.13	mg/Kg			06/16/22 15:26	1
Cobalt	5.1		2.5	0.023	mg/Kg			06/16/22 15:26	1
Iron	14000		5.0	4.1	mg/Kg			06/16/22 15:26	1
Lead	8.4		0.50	0.11	mg/Kg			06/16/22 15:26	1
Lithium	15		2.5	0.15	mg/Kg			06/16/22 15:26	1
Manganese	180		0.75	0.052	mg/Kg			06/16/22 15:26	1
Molybdenum	0.81	J	2.0	0.082	mg/Kg			06/16/22 15:26	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	30000		120	19	mg/Kg	☼	05/26/22 08:00	06/14/22 14:05	10
Arsenic	6.0		1.2	0.31	mg/Kg	☼	05/26/22 08:00	06/14/22 17:42	2
Cobalt	4.7	J	6.0	0.062	mg/Kg	☼	05/26/22 08:00	06/14/22 17:42	2
Iron	13000		6.0	4.9	mg/Kg	☼	05/26/22 08:00	06/14/22 16:06	1
Lead	7.1		1.2	0.26	mg/Kg	☼	05/26/22 08:00	06/14/22 17:42	2
Lithium	6.5		3.0	0.18	mg/Kg	☼	05/26/22 08:00	06/14/22 16:06	1
Manganese	170		0.90	0.13	mg/Kg	☼	05/26/22 08:00	06/14/22 16:06	1
Molybdenum	0.85	J	2.4	0.098	mg/Kg	☼	05/26/22 08:00	06/14/22 16:06	1

Client Sample ID: BH-1

Date Collected: 05/10/22 13:15
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-5

Matrix: Solid
Percent Solids: 89.0

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		45	7.2	mg/Kg	☼	06/01/22 08:00	06/08/22 11:57	4
Arsenic	ND		2.2	0.58	mg/Kg	☼	06/01/22 08:00	06/08/22 11:57	4
Cobalt	ND		11	0.20	mg/Kg	☼	06/01/22 08:00	06/08/22 11:57	4
Iron	ND		22	13	mg/Kg	☼	06/01/22 08:00	06/08/22 11:57	4
Lead	ND		2.2	0.49	mg/Kg	☼	06/01/22 08:00	06/08/22 11:57	4
Lithium	ND		11	0.67	mg/Kg	☼	06/01/22 08:00	06/08/22 11:57	4
Manganese	**0.34**	**J**	3.4	0.14	mg/Kg	☼	06/01/22 08:00	06/08/22 11:57	4
Molybdenum	ND		9.0	0.37	mg/Kg	☼	06/01/22 08:00	06/08/22 11:57	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1600**		34	5.4	mg/Kg	☼	06/02/22 08:00	06/08/22 13:56	3
Arsenic	ND		1.7	0.44	mg/Kg	☼	06/02/22 08:00	06/08/22 13:56	3
Cobalt	**0.21**	**J**	8.4	0.21	mg/Kg	☼	06/02/22 08:00	06/08/22 13:56	3
Iron	**190**		17	9.8	mg/Kg	☼	06/02/22 08:00	06/08/22 13:56	3
Lead	**0.80**	**J**	1.7	0.37	mg/Kg	☼	06/02/22 08:00	06/08/22 13:56	3
Lithium	**1.9**	**J**	8.4	0.51	mg/Kg	☼	06/02/22 08:00	06/08/22 13:56	3
Manganese	**23**		2.5	0.94	mg/Kg	☼	06/02/22 08:00	06/08/22 13:56	3
Molybdenum	ND		6.7	0.28	mg/Kg	☼	06/02/22 08:00	06/08/22 13:56	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**3400**		11	2.4	mg/Kg	☼	06/03/22 08:00	06/09/22 11:31	1
Arsenic	**1.6**		0.56	0.15	mg/Kg	☼	06/03/22 08:00	06/09/22 11:31	1
Cobalt	**0.60**	**J**	2.8	0.051	mg/Kg	☼	06/03/22 08:00	06/09/22 11:31	1
Iron	**1100**		5.6	3.3	mg/Kg	☼	06/03/22 08:00	06/09/22 11:31	1
Lead	ND		0.56	0.12	mg/Kg	☼	06/03/22 08:00	06/09/22 11:31	1
Lithium	**1.4**	**J**	2.8	0.17	mg/Kg	☼	06/03/22 08:00	06/09/22 11:31	1
Manganese	**12**	**B**	0.84	0.030	mg/Kg	☼	06/03/22 08:00	06/09/22 11:31	1
Molybdenum	**0.39**	**J**	2.2	0.092	mg/Kg	☼	06/03/22 08:00	06/09/22 11:31	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**12000**		11	1.8	mg/Kg	☼	06/06/22 08:00	06/09/22 13:28	1
Arsenic	**1.0**		0.56	0.25	mg/Kg	☼	06/06/22 08:00	06/09/22 13:28	1
Cobalt	**2.0**	**J**	2.8	0.060	mg/Kg	☼	06/06/22 08:00	06/09/22 13:28	1
Iron	**3500**		5.6	3.3	mg/Kg	☼	06/06/22 08:00	06/09/22 13:28	1
Lead	**6.3**		0.56	0.12	mg/Kg	☼	06/06/22 08:00	06/09/22 13:28	1
Lithium	**12**	**B**	2.8	0.17	mg/Kg	☼	06/06/22 08:00	06/09/22 13:28	1
Manganese	**65**		0.84	0.15	mg/Kg	☼	06/06/22 08:00	06/09/22 13:28	1
Molybdenum	**0.80**	**J**	2.2	0.092	mg/Kg	☼	06/06/22 08:00	06/09/22 13:28	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**710**		170	26	mg/Kg	☼	06/08/22 08:00	06/10/22 11:52	5
Arsenic	ND		8.4	2.1	mg/Kg	☼	06/08/22 08:00	06/10/22 11:52	5
Cobalt	ND		42	0.67	mg/Kg	☼	06/08/22 08:00	06/10/22 11:52	5
Iron	ND		84	49	mg/Kg	☼	06/08/22 08:00	06/10/22 11:52	5
Lead	ND		8.4	1.9	mg/Kg	☼	06/08/22 08:00	06/10/22 11:52	5
Lithium	**7.9**	**J B**	42	2.5	mg/Kg	☼	06/08/22 08:00	06/10/22 11:52	5

Client Sample ID: BH-1

Date Collected: 05/10/22 13:15
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-5

Matrix: Solid
Percent Solids: 89.0

Method: 6010B SEP - SEP Metals (ICP) - Step 5 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	11	J *1	13	2.1	mg/Kg	☼	06/08/22 08:00	06/10/22 11:52	5
Molybdenum	ND		34	1.4	mg/Kg	☼	06/08/22 08:00	06/10/22 11:52	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	23000		11	1.8	mg/Kg	☼	06/08/22 08:00	06/10/22 13:56	1
Arsenic	4.1		0.56	0.17	mg/Kg	☼	06/08/22 08:00	06/10/22 13:56	1
Cobalt	4.2	J	5.6	0.10	mg/Kg	☼	06/08/22 08:00	06/13/22 16:26	2
Iron	13000		5.6	3.3	mg/Kg	☼	06/08/22 08:00	06/10/22 13:56	1
Lead	4.5		1.1	0.25	mg/Kg	☼	06/08/22 08:00	06/13/22 16:26	2
Lithium	19		2.8	0.17	mg/Kg	☼	06/08/22 08:00	06/10/22 13:56	1
Manganese	86		0.84	0.28	mg/Kg	☼	06/08/22 08:00	06/10/22 13:56	1
Molybdenum	0.96	J	2.2	0.11	mg/Kg	☼	06/08/22 08:00	06/10/22 13:56	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	21000		110	18	mg/Kg	☼	06/09/22 08:00	06/14/22 11:14	10
Arsenic	1.6		0.56	0.15	mg/Kg	☼	06/09/22 08:00	06/13/22 14:10	1
Cobalt	5.6	J	14	0.15	mg/Kg	☼	06/09/22 08:00	06/13/22 15:46	5
Iron	14000		5.6	4.6	mg/Kg	☼	06/09/22 08:00	06/13/22 14:10	1
Lead	4.6		0.56	0.12	mg/Kg	☼	06/09/22 08:00	06/13/22 14:10	1
Lithium	24		2.8	0.17	mg/Kg	☼	06/09/22 08:00	06/13/22 14:10	1
Manganese	97		0.84	0.12	mg/Kg	☼	06/09/22 08:00	06/13/22 14:10	1
Molybdenum	0.98	J	2.2	0.092	mg/Kg	☼	06/09/22 08:00	06/13/22 14:10	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	62000		10	1.6	mg/Kg			06/16/22 15:26	1
Arsenic	8.3		0.50	0.13	mg/Kg			06/16/22 15:26	1
Cobalt	13		2.5	0.023	mg/Kg			06/16/22 15:26	1
Iron	31000		5.0	4.1	mg/Kg			06/16/22 15:26	1
Lead	16		0.50	0.11	mg/Kg			06/16/22 15:26	1
Lithium	67		2.5	0.15	mg/Kg			06/16/22 15:26	1
Manganese	300		0.75	0.052	mg/Kg			06/16/22 15:26	1
Molybdenum	3.1		2.0	0.082	mg/Kg			06/16/22 15:26	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	79000		110	18	mg/Kg	☼	05/26/22 08:00	06/14/22 14:09	10
Arsenic	11		1.1	0.29	mg/Kg	☼	05/26/22 08:00	06/14/22 17:48	2
Cobalt	14	J	28	0.29	mg/Kg	☼	05/26/22 08:00	06/14/22 14:09	10
Iron	35000		56	46	mg/Kg	☼	05/26/22 08:00	06/14/22 14:09	10
Lead	11		1.1	0.25	mg/Kg	☼	05/26/22 08:00	06/14/22 17:48	2
Lithium	69		28	1.7	mg/Kg	☼	05/26/22 08:00	06/14/22 14:09	10
Manganese	250		1.7	0.25	mg/Kg	☼	05/26/22 08:00	06/14/22 17:48	2
Molybdenum	3.4	J	4.5	0.18	mg/Kg	☼	05/26/22 08:00	06/14/22 17:48	2

Client Sample ID: MW-214

Date Collected: 05/12/22 15:15
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-6

Matrix: Solid
Percent Solids: 83.4

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		48	7.7	mg/Kg	☼	06/01/22 08:00	06/08/22 12:02	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	06/01/22 08:00	06/08/22 12:02	4
Cobalt	ND		12	0.22	mg/Kg	☼	06/01/22 08:00	06/08/22 12:02	4
Iron	ND		24	14	mg/Kg	☼	06/01/22 08:00	06/08/22 12:02	4
Lead	**0.59**	**J B**	2.4	0.53	mg/Kg	☼	06/01/22 08:00	06/08/22 12:02	4
Lithium	ND		12	0.72	mg/Kg	☼	06/01/22 08:00	06/08/22 12:02	4
Manganese	**0.36**	**J**	3.6	0.15	mg/Kg	☼	06/01/22 08:00	06/08/22 12:02	4
Molybdenum	ND		9.6	0.39	mg/Kg	☼	06/01/22 08:00	06/08/22 12:02	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		36	5.8	mg/Kg	☼	06/02/22 08:00	06/08/22 14:01	3
Arsenic	ND		1.8	0.47	mg/Kg	☼	06/02/22 08:00	06/08/22 14:01	3
Cobalt	ND		9.0	0.23	mg/Kg	☼	06/02/22 08:00	06/08/22 14:01	3
Iron	ND		18	10	mg/Kg	☼	06/02/22 08:00	06/08/22 14:01	3
Lead	ND		1.8	0.40	mg/Kg	☼	06/02/22 08:00	06/08/22 14:01	3
Lithium	ND		9.0	0.54	mg/Kg	☼	06/02/22 08:00	06/08/22 14:01	3
Manganese	**15**		2.7	1.0	mg/Kg	☼	06/02/22 08:00	06/08/22 14:01	3
Molybdenum	ND		7.2	0.29	mg/Kg	☼	06/02/22 08:00	06/08/22 14:01	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**110**		12	2.5	mg/Kg	☼	06/03/22 08:00	06/09/22 11:36	1
Arsenic	**0.49**	**J**	0.60	0.16	mg/Kg	☼	06/03/22 08:00	06/09/22 11:36	1
Cobalt	**1.4**	**J**	3.0	0.054	mg/Kg	☼	06/03/22 08:00	06/09/22 11:36	1
Iron	**390**		6.0	3.5	mg/Kg	☼	06/03/22 08:00	06/09/22 11:36	1
Lead	**0.32**	**J**	0.60	0.13	mg/Kg	☼	06/03/22 08:00	06/09/22 11:36	1
Lithium	**0.21**	**J**	3.0	0.18	mg/Kg	☼	06/03/22 08:00	06/09/22 11:36	1
Manganese	**83**	**B**	0.90	0.032	mg/Kg	☼	06/03/22 08:00	06/09/22 11:36	1
Molybdenum	ND		2.4	0.098	mg/Kg	☼	06/03/22 08:00	06/09/22 11:36	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2100**		12	1.9	mg/Kg	☼	06/06/22 08:00	06/09/22 13:33	1
Arsenic	**2.2**		0.60	0.26	mg/Kg	☼	06/06/22 08:00	06/09/22 13:33	1
Cobalt	**3.2**		3.0	0.064	mg/Kg	☼	06/06/22 08:00	06/09/22 13:33	1
Iron	**8400**		6.0	3.5	mg/Kg	☼	06/06/22 08:00	06/09/22 13:33	1
Lead	**4.7**		0.60	0.13	mg/Kg	☼	06/06/22 08:00	06/09/22 13:33	1
Lithium	**3.9**	**B**	3.0	0.18	mg/Kg	☼	06/06/22 08:00	06/09/22 13:33	1
Manganese	**110**		0.90	0.16	mg/Kg	☼	06/06/22 08:00	06/09/22 13:33	1
Molybdenum	**0.35**	**J**	2.4	0.098	mg/Kg	☼	06/06/22 08:00	06/09/22 13:33	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**53**	**J**	180	28	mg/Kg	☼	06/08/22 08:00	06/10/22 11:57	5
Arsenic	ND		9.0	2.3	mg/Kg	☼	06/08/22 08:00	06/10/22 11:57	5
Cobalt	ND		45	0.72	mg/Kg	☼	06/08/22 08:00	06/10/22 11:57	5
Iron	ND		90	53	mg/Kg	☼	06/08/22 08:00	06/10/22 11:57	5
Lead	ND		9.0	2.0	mg/Kg	☼	06/08/22 08:00	06/10/22 11:57	5
Lithium	**7.0**	**J B**	45	2.6	mg/Kg	☼	06/08/22 08:00	06/10/22 11:57	5

Client Sample ID: MW-214

Date Collected: 05/12/22 15:15
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-6

Matrix: Solid
Percent Solids: 83.4

Method: 6010B SEP - SEP Metals (ICP) - Step 5 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	5.0	J *1	13	2.2	mg/Kg	☼	06/08/22 08:00	06/10/22 11:57	5
Molybdenum	ND		36	1.5	mg/Kg	☼	06/08/22 08:00	06/10/22 11:57	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	4500		12	1.9	mg/Kg	☼	06/08/22 08:00	06/10/22 14:02	1
Arsenic	1.6		0.60	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 14:02	1
Cobalt	1.5	J	3.0	0.055	mg/Kg	☼	06/08/22 08:00	06/10/22 14:02	1
Iron	7300		6.0	3.5	mg/Kg	☼	06/08/22 08:00	06/10/22 14:02	1
Lead	1.2		0.60	0.13	mg/Kg	☼	06/08/22 08:00	06/10/22 14:02	1
Lithium	3.7		3.0	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 14:02	1
Manganese	62		0.90	0.30	mg/Kg	☼	06/08/22 08:00	06/10/22 14:02	1
Molybdenum	0.12	J	2.4	0.12	mg/Kg	☼	06/08/22 08:00	06/10/22 14:02	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	27000		120	19	mg/Kg	☼	06/09/22 08:00	06/14/22 11:19	10
Arsenic	1.2		0.60	0.16	mg/Kg	☼	06/09/22 08:00	06/13/22 14:16	1
Cobalt	1.1	J	3.0	0.031	mg/Kg	☼	06/09/22 08:00	06/13/22 14:16	1
Iron	4200		6.0	4.9	mg/Kg	☼	06/09/22 08:00	06/13/22 14:16	1
Lead	2.6		0.60	0.13	mg/Kg	☼	06/09/22 08:00	06/13/22 14:16	1
Lithium	5.3		3.0	0.18	mg/Kg	☼	06/09/22 08:00	06/13/22 14:16	1
Manganese	39		0.90	0.13	mg/Kg	☼	06/09/22 08:00	06/13/22 14:16	1
Molybdenum	0.15	J	2.4	0.098	mg/Kg	☼	06/09/22 08:00	06/13/22 14:16	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	34000		10	1.6	mg/Kg			06/16/22 15:26	1
Arsenic	5.4		0.50	0.13	mg/Kg			06/16/22 15:26	1
Cobalt	7.2		2.5	0.023	mg/Kg			06/16/22 15:26	1
Iron	20000		5.0	4.1	mg/Kg			06/16/22 15:26	1
Lead	9.4		0.50	0.11	mg/Kg			06/16/22 15:26	1
Lithium	20		2.5	0.15	mg/Kg			06/16/22 15:26	1
Manganese	310		0.75	0.052	mg/Kg			06/16/22 15:26	1
Molybdenum	0.62	J	2.0	0.082	mg/Kg			06/16/22 15:26	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	44000		120	19	mg/Kg	☼	05/26/22 08:00	06/14/22 14:14	10
Arsenic	7.2		0.60	0.16	mg/Kg	☼	05/26/22 08:00	06/14/22 16:18	1
Cobalt	6.1		6.0	0.062	mg/Kg	☼	05/26/22 08:00	06/14/22 17:53	2
Iron	17000		6.0	4.9	mg/Kg	☼	05/26/22 08:00	06/14/22 16:18	1
Lead	7.8		0.60	0.13	mg/Kg	☼	05/26/22 08:00	06/14/22 16:18	1
Lithium	13		3.0	0.18	mg/Kg	☼	05/26/22 08:00	06/14/22 16:18	1
Manganese	210		0.90	0.13	mg/Kg	☼	05/26/22 08:00	06/14/22 16:18	1
Molybdenum	0.66	J	2.4	0.098	mg/Kg	☼	05/26/22 08:00	06/14/22 16:18	1

Client Sample ID: MW-211-0-5FT

Date Collected: 05/10/22 08:24
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-7

Matrix: Solid
Percent Solids: 83.9

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		48	7.6	mg/Kg	☼	06/01/22 08:00	06/08/22 12:07	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	06/01/22 08:00	06/08/22 12:07	4
Cobalt	ND		12	0.21	mg/Kg	☼	06/01/22 08:00	06/08/22 12:07	4
Iron	ND		24	14	mg/Kg	☼	06/01/22 08:00	06/08/22 12:07	4
Lead	ND		2.4	0.52	mg/Kg	☼	06/01/22 08:00	06/08/22 12:07	4
Lithium	ND		12	0.72	mg/Kg	☼	06/01/22 08:00	06/08/22 12:07	4
Manganese	ND		3.6	0.15	mg/Kg	☼	06/01/22 08:00	06/08/22 12:07	4
Molybdenum	ND		9.5	0.39	mg/Kg	☼	06/01/22 08:00	06/08/22 12:07	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		36	5.7	mg/Kg	☼	06/02/22 08:00	06/08/22 14:06	3
Arsenic	ND		1.8	0.47	mg/Kg	☼	06/02/22 08:00	06/08/22 14:06	3
Cobalt	ND		8.9	0.23	mg/Kg	☼	06/02/22 08:00	06/08/22 14:06	3
Iron	ND		18	10	mg/Kg	☼	06/02/22 08:00	06/08/22 14:06	3
Lead	ND		1.8	0.39	mg/Kg	☼	06/02/22 08:00	06/08/22 14:06	3
Lithium	ND		8.9	0.54	mg/Kg	☼	06/02/22 08:00	06/08/22 14:06	3
Manganese	**17**		2.7	1.0	mg/Kg	☼	06/02/22 08:00	06/08/22 14:06	3
Molybdenum	ND		7.2	0.29	mg/Kg	☼	06/02/22 08:00	06/08/22 14:06	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**320**		12	2.5	mg/Kg	☼	06/03/22 08:00	06/09/22 11:41	1
Arsenic	**1.0**		0.60	0.16	mg/Kg	☼	06/03/22 08:00	06/09/22 11:41	1
Cobalt	**1.4**	**J**	3.0	0.054	mg/Kg	☼	06/03/22 08:00	06/09/22 11:41	1
Iron	**1100**		6.0	3.5	mg/Kg	☼	06/03/22 08:00	06/09/22 11:41	1
Lead	ND		0.60	0.13	mg/Kg	☼	06/03/22 08:00	06/09/22 11:41	1
Lithium	**0.24**	**J**	3.0	0.18	mg/Kg	☼	06/03/22 08:00	06/09/22 11:41	1
Manganese	**94**	**B**	0.89	0.032	mg/Kg	☼	06/03/22 08:00	06/09/22 11:41	1
Molybdenum	**0.21**	**J**	2.4	0.098	mg/Kg	☼	06/03/22 08:00	06/09/22 11:41	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1600**		12	1.9	mg/Kg	☼	06/06/22 08:00	06/09/22 13:38	1
Arsenic	**1.7**		0.60	0.26	mg/Kg	☼	06/06/22 08:00	06/09/22 13:38	1
Cobalt	**1.5**	**J**	3.0	0.063	mg/Kg	☼	06/06/22 08:00	06/09/22 13:38	1
Iron	**5000**		6.0	3.5	mg/Kg	☼	06/06/22 08:00	06/09/22 13:38	1
Lead	**3.6**		0.60	0.13	mg/Kg	☼	06/06/22 08:00	06/09/22 13:38	1
Lithium	**3.2**	**B**	3.0	0.18	mg/Kg	☼	06/06/22 08:00	06/09/22 13:38	1
Manganese	**67**		0.89	0.16	mg/Kg	☼	06/06/22 08:00	06/09/22 13:38	1
Molybdenum	**0.18**	**J**	2.4	0.098	mg/Kg	☼	06/06/22 08:00	06/09/22 13:38	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**190**		180	28	mg/Kg	☼	06/08/22 08:00	06/10/22 12:02	5
Arsenic	ND		8.9	2.3	mg/Kg	☼	06/08/22 08:00	06/10/22 12:02	5
Cobalt	ND		45	0.72	mg/Kg	☼	06/08/22 08:00	06/10/22 12:02	5
Iron	**410**		89	52	mg/Kg	☼	06/08/22 08:00	06/10/22 12:02	5
Lead	ND		8.9	2.0	mg/Kg	☼	06/08/22 08:00	06/10/22 12:02	5
Lithium	**6.3**	**J B**	45	2.6	mg/Kg	☼	06/08/22 08:00	06/10/22 12:02	5

Client Sample ID: MW-211-0-5FT

Date Collected: 05/10/22 08:24
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-7

Matrix: Solid
Percent Solids: 83.9

Method: 6010B SEP - SEP Metals (ICP) - Step 5 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	12	J *1	13	2.2	mg/Kg	☼	06/08/22 08:00	06/10/22 12:02	5
Molybdenum	ND		36	1.5	mg/Kg	☼	06/08/22 08:00	06/10/22 12:02	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2500		12	1.9	mg/Kg	☼	06/08/22 08:00	06/10/22 14:07	1
Arsenic	2.0		0.60	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 14:07	1
Cobalt	0.98	J	3.0	0.055	mg/Kg	☼	06/08/22 08:00	06/10/22 14:07	1
Iron	5000		6.0	3.5	mg/Kg	☼	06/08/22 08:00	06/10/22 14:07	1
Lead	1.0		0.60	0.13	mg/Kg	☼	06/08/22 08:00	06/10/22 14:07	1
Lithium	2.4	J	3.0	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 14:07	1
Manganese	39		0.89	0.30	mg/Kg	☼	06/08/22 08:00	06/10/22 14:07	1
Molybdenum	0.13	J	2.4	0.12	mg/Kg	☼	06/08/22 08:00	06/10/22 14:07	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	32000		120	19	mg/Kg	☼	06/09/22 08:00	06/14/22 11:24	10
Arsenic	1.1	J	1.8	0.47	mg/Kg	☼	06/09/22 08:00	06/13/22 15:51	3
Cobalt	2.1	J	8.9	0.093	mg/Kg	☼	06/09/22 08:00	06/13/22 15:51	3
Iron	3300		6.0	4.9	mg/Kg	☼	06/09/22 08:00	06/13/22 14:21	1
Lead	3.2		1.8	0.39	mg/Kg	☼	06/09/22 08:00	06/13/22 15:51	3
Lithium	5.6		3.0	0.18	mg/Kg	☼	06/09/22 08:00	06/13/22 14:21	1
Manganese	42		0.89	0.13	mg/Kg	☼	06/09/22 08:00	06/13/22 14:21	1
Molybdenum	0.14	J	2.4	0.098	mg/Kg	☼	06/09/22 08:00	06/13/22 14:21	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	37000		10	1.6	mg/Kg			06/16/22 15:26	1
Arsenic	5.9		0.50	0.13	mg/Kg			06/16/22 15:26	1
Cobalt	6.0		2.5	0.023	mg/Kg			06/16/22 15:26	1
Iron	15000		5.0	4.1	mg/Kg			06/16/22 15:26	1
Lead	7.8		0.50	0.11	mg/Kg			06/16/22 15:26	1
Lithium	18		2.5	0.15	mg/Kg			06/16/22 15:26	1
Manganese	270		0.75	0.052	mg/Kg			06/16/22 15:26	1
Molybdenum	0.66	J	2.0	0.082	mg/Kg			06/16/22 15:26	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	32000		120	19	mg/Kg	☼	05/26/22 08:00	06/14/22 14:19	10
Arsenic	7.8		1.2	0.31	mg/Kg	☼	05/26/22 08:00	06/14/22 17:58	2
Cobalt	5.5	J	6.0	0.062	mg/Kg	☼	05/26/22 08:00	06/14/22 17:58	2
Iron	13000		6.0	4.9	mg/Kg	☼	05/26/22 08:00	06/14/22 16:23	1
Lead	8.4		1.2	0.26	mg/Kg	☼	05/26/22 08:00	06/14/22 17:58	2
Lithium	10		3.0	0.18	mg/Kg	☼	05/26/22 08:00	06/14/22 16:23	1
Manganese	260		0.89	0.13	mg/Kg	☼	05/26/22 08:00	06/14/22 16:23	1
Molybdenum	0.98	J	2.4	0.098	mg/Kg	☼	05/26/22 08:00	06/14/22 16:23	1

Client Sample ID: MW-211-14-25FT

Date Collected: 05/10/22 09:30
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-8

Matrix: Solid
Percent Solids: 83.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		48	7.7	mg/Kg	☼	06/01/22 08:00	06/08/22 12:12	4
Arsenic	ND		2.4	0.63	mg/Kg	☼	06/01/22 08:00	06/08/22 12:12	4
Cobalt	ND		12	0.22	mg/Kg	☼	06/01/22 08:00	06/08/22 12:12	4
Iron	ND		24	14	mg/Kg	☼	06/01/22 08:00	06/08/22 12:12	4
Lead	ND		2.4	0.53	mg/Kg	☼	06/01/22 08:00	06/08/22 12:12	4
Lithium	ND		12	0.72	mg/Kg	☼	06/01/22 08:00	06/08/22 12:12	4
Manganese	**13**		3.6	0.15	mg/Kg	☼	06/01/22 08:00	06/08/22 12:12	4
Molybdenum	ND		9.6	0.39	mg/Kg	☼	06/01/22 08:00	06/08/22 12:12	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11**	**J**	36	5.8	mg/Kg	☼	06/02/22 08:00	06/08/22 14:11	3
Arsenic	ND		1.8	0.47	mg/Kg	☼	06/02/22 08:00	06/08/22 14:11	3
Cobalt	ND		9.0	0.23	mg/Kg	☼	06/02/22 08:00	06/08/22 14:11	3
Iron	**38**		18	10	mg/Kg	☼	06/02/22 08:00	06/08/22 14:11	3
Lead	**0.43**	**J**	1.8	0.40	mg/Kg	☼	06/02/22 08:00	06/08/22 14:11	3
Lithium	ND		9.0	0.54	mg/Kg	☼	06/02/22 08:00	06/08/22 14:11	3
Manganese	**29**		2.7	1.0	mg/Kg	☼	06/02/22 08:00	06/08/22 14:11	3
Molybdenum	ND		7.2	0.30	mg/Kg	☼	06/02/22 08:00	06/08/22 14:11	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**130**		12	2.5	mg/Kg	☼	06/03/22 08:00	06/09/22 11:46	1
Arsenic	**0.85**		0.60	0.16	mg/Kg	☼	06/03/22 08:00	06/09/22 11:46	1
Cobalt	**0.54**	**J**	3.0	0.054	mg/Kg	☼	06/03/22 08:00	06/09/22 11:46	1
Iron	**820**		6.0	3.5	mg/Kg	☼	06/03/22 08:00	06/09/22 11:46	1
Lead	**0.28**	**J**	0.60	0.13	mg/Kg	☼	06/03/22 08:00	06/09/22 11:46	1
Lithium	**0.19**	**J**	3.0	0.18	mg/Kg	☼	06/03/22 08:00	06/09/22 11:46	1
Manganese	**26**	**B**	0.90	0.032	mg/Kg	☼	06/03/22 08:00	06/09/22 11:46	1
Molybdenum	**0.29**	**J**	2.4	0.099	mg/Kg	☼	06/03/22 08:00	06/09/22 11:46	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1400**		12	1.9	mg/Kg	☼	06/06/22 08:00	06/09/22 13:42	1
Arsenic	**1.6**		0.60	0.26	mg/Kg	☼	06/06/22 08:00	06/09/22 13:42	1
Cobalt	**1.8**	**J**	3.0	0.064	mg/Kg	☼	06/06/22 08:00	06/09/22 13:42	1
Iron	**5500**		6.0	3.5	mg/Kg	☼	06/06/22 08:00	06/09/22 13:42	1
Lead	**1.9**		0.60	0.13	mg/Kg	☼	06/06/22 08:00	06/09/22 13:42	1
Lithium	**2.5**	**J B**	3.0	0.18	mg/Kg	☼	06/06/22 08:00	06/09/22 13:42	1
Manganese	**69**		0.90	0.16	mg/Kg	☼	06/06/22 08:00	06/09/22 13:42	1
Molybdenum	**0.64**	**J**	2.4	0.099	mg/Kg	☼	06/06/22 08:00	06/09/22 13:42	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**69**	**J**	180	28	mg/Kg	☼	06/08/22 08:00	06/10/22 12:07	5
Arsenic	ND		9.0	2.3	mg/Kg	☼	06/08/22 08:00	06/10/22 12:07	5
Cobalt	ND		45	0.72	mg/Kg	☼	06/08/22 08:00	06/10/22 12:07	5
Iron	ND		90	53	mg/Kg	☼	06/08/22 08:00	06/10/22 12:07	5
Lead	ND		9.0	2.0	mg/Kg	☼	06/08/22 08:00	06/10/22 12:07	5
Lithium	**6.6**	**J B**	45	2.6	mg/Kg	☼	06/08/22 08:00	06/10/22 12:07	5

Client Sample ID: MW-211-14-25FT

Date Collected: 05/10/22 09:30
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-8

Matrix: Solid
Percent Solids: 83.2

Method: 6010B SEP - SEP Metals (ICP) - Step 5 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	ND	*1	14	2.2	mg/Kg	☼	06/08/22 08:00	06/10/22 12:07	5
Molybdenum	ND		36	1.5	mg/Kg	☼	06/08/22 08:00	06/10/22 12:07	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2200		12	1.9	mg/Kg	☼	06/08/22 08:00	06/10/22 14:11	1
Arsenic	2.0		0.60	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 14:11	1
Cobalt	0.95	J	3.0	0.055	mg/Kg	☼	06/08/22 08:00	06/10/22 14:11	1
Iron	5400		6.0	3.5	mg/Kg	☼	06/08/22 08:00	06/10/22 14:11	1
Lead	0.62		0.60	0.13	mg/Kg	☼	06/08/22 08:00	06/10/22 14:11	1
Lithium	2.2	J	3.0	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 14:11	1
Manganese	50		0.90	0.30	mg/Kg	☼	06/08/22 08:00	06/10/22 14:11	1
Molybdenum	0.85	J	2.4	0.12	mg/Kg	☼	06/08/22 08:00	06/10/22 14:11	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	28000		120	19	mg/Kg	☼	06/09/22 08:00	06/14/22 11:29	10
Arsenic	1.3	J	1.8	0.47	mg/Kg	☼	06/09/22 08:00	06/13/22 16:06	3
Cobalt	1.4	J	9.0	0.094	mg/Kg	☼	06/09/22 08:00	06/13/22 16:06	3
Iron	2400		6.0	4.9	mg/Kg	☼	06/09/22 08:00	06/13/22 14:26	1
Lead	3.4		1.8	0.40	mg/Kg	☼	06/09/22 08:00	06/13/22 16:06	3
Lithium	4.0		3.0	0.18	mg/Kg	☼	06/09/22 08:00	06/13/22 14:26	1
Manganese	36		0.90	0.13	mg/Kg	☼	06/09/22 08:00	06/13/22 14:26	1
Molybdenum	0.16	J	2.4	0.099	mg/Kg	☼	06/09/22 08:00	06/13/22 14:26	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	32000		10	1.6	mg/Kg			06/16/22 15:26	1
Arsenic	5.8		0.50	0.13	mg/Kg			06/16/22 15:26	1
Cobalt	4.7		2.5	0.023	mg/Kg			06/16/22 15:26	1
Iron	14000		5.0	4.1	mg/Kg			06/16/22 15:26	1
Lead	6.6		0.50	0.11	mg/Kg			06/16/22 15:26	1
Lithium	16		2.5	0.15	mg/Kg			06/16/22 15:26	1
Manganese	220		0.75	0.052	mg/Kg			06/16/22 15:26	1
Molybdenum	2.0		2.0	0.082	mg/Kg			06/16/22 15:26	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	43000		120	19	mg/Kg	☼	05/26/22 08:00	06/14/22 14:24	10
Arsenic	8.7		0.60	0.16	mg/Kg	☼	05/26/22 08:00	06/14/22 16:29	1
Cobalt	4.7		3.0	0.031	mg/Kg	☼	05/26/22 08:00	06/14/22 16:29	1
Iron	13000		6.0	4.9	mg/Kg	☼	05/26/22 08:00	06/14/22 16:29	1
Lead	7.5		0.60	0.13	mg/Kg	☼	05/26/22 08:00	06/14/22 16:29	1
Lithium	9.2		3.0	0.18	mg/Kg	☼	05/26/22 08:00	06/14/22 16:29	1
Manganese	240		0.90	0.13	mg/Kg	☼	05/26/22 08:00	06/14/22 16:29	1
Molybdenum	0.79	J	2.4	0.099	mg/Kg	☼	05/26/22 08:00	06/14/22 16:29	1

Client Sample ID: TW-TR2-C2

Date Collected: 05/11/22 14:00
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-9

Matrix: Solid
Percent Solids: 54.6

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		73	12	mg/Kg	☼	06/01/22 08:00	06/08/22 12:17	4
Arsenic	ND		3.7	0.95	mg/Kg	☼	06/01/22 08:00	06/08/22 12:17	4
Cobalt	ND		18	0.33	mg/Kg	☼	06/01/22 08:00	06/08/22 12:17	4
Iron	ND		37	21	mg/Kg	☼	06/01/22 08:00	06/08/22 12:17	4
Lead	**1.1**	**J B**	3.7	0.81	mg/Kg	☼	06/01/22 08:00	06/08/22 12:17	4
Lithium	**1.6**	**J**	18	1.1	mg/Kg	☼	06/01/22 08:00	06/08/22 12:17	4
Manganese	**25**		5.5	0.23	mg/Kg	☼	06/01/22 08:00	06/08/22 12:17	4
Molybdenum	ND		15	0.60	mg/Kg	☼	06/01/22 08:00	06/08/22 12:17	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11**	**J**	55	8.8	mg/Kg	☼	06/02/22 08:00	06/08/22 14:16	3
Arsenic	ND		2.7	0.71	mg/Kg	☼	06/02/22 08:00	06/08/22 14:16	3
Cobalt	ND		14	0.35	mg/Kg	☼	06/02/22 08:00	06/08/22 14:16	3
Iron	ND		27	16	mg/Kg	☼	06/02/22 08:00	06/08/22 14:16	3
Lead	ND		2.7	0.60	mg/Kg	☼	06/02/22 08:00	06/08/22 14:16	3
Lithium	ND		14	0.82	mg/Kg	☼	06/02/22 08:00	06/08/22 14:16	3
Manganese	**11**		4.1	1.5	mg/Kg	☼	06/02/22 08:00	06/08/22 14:16	3
Molybdenum	ND		11	0.45	mg/Kg	☼	06/02/22 08:00	06/08/22 14:16	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**810**		18	3.8	mg/Kg	☼	06/03/22 08:00	06/09/22 11:51	1
Arsenic	**0.34**	**J**	0.92	0.24	mg/Kg	☼	06/03/22 08:00	06/09/22 11:51	1
Cobalt	**0.23**	**J**	4.6	0.082	mg/Kg	☼	06/03/22 08:00	06/09/22 11:51	1
Iron	**2500**		9.2	5.3	mg/Kg	☼	06/03/22 08:00	06/09/22 11:51	1
Lead	ND		0.92	0.20	mg/Kg	☼	06/03/22 08:00	06/09/22 11:51	1
Lithium	**0.32**	**J**	4.6	0.27	mg/Kg	☼	06/03/22 08:00	06/09/22 11:51	1
Manganese	**7.4**	**B**	1.4	0.049	mg/Kg	☼	06/03/22 08:00	06/09/22 11:51	1
Molybdenum	**0.33**	**J**	3.7	0.15	mg/Kg	☼	06/03/22 08:00	06/09/22 11:51	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1300**		18	2.9	mg/Kg	☼	06/06/22 08:00	06/09/22 13:47	1
Arsenic	**2.1**		0.92	0.40	mg/Kg	☼	06/06/22 08:00	06/09/22 13:47	1
Cobalt	**1.7**	**J**	4.6	0.097	mg/Kg	☼	06/06/22 08:00	06/09/22 13:47	1
Iron	**13000**		9.2	5.3	mg/Kg	☼	06/06/22 08:00	06/09/22 13:47	1
Lead	**1.7**		0.92	0.20	mg/Kg	☼	06/06/22 08:00	06/09/22 13:47	1
Lithium	**1.6**	**J B**	4.6	0.27	mg/Kg	☼	06/06/22 08:00	06/09/22 13:47	1
Manganese	**99**		1.4	0.24	mg/Kg	☼	06/06/22 08:00	06/09/22 13:47	1
Molybdenum	**3.2**	**J**	3.7	0.15	mg/Kg	☼	06/06/22 08:00	06/09/22 13:47	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**360**		270	43	mg/Kg	☼	06/08/22 08:00	06/10/22 12:12	5
Arsenic	ND		14	3.5	mg/Kg	☼	06/08/22 08:00	06/10/22 12:12	5
Cobalt	ND		69	1.1	mg/Kg	☼	06/08/22 08:00	06/10/22 12:12	5
Iron	**5300**		140	81	mg/Kg	☼	06/08/22 08:00	06/10/22 12:12	5
Lead	ND		14	3.0	mg/Kg	☼	06/08/22 08:00	06/10/22 12:12	5
Lithium	**6.0**	**J B**	69	4.0	mg/Kg	☼	06/08/22 08:00	06/10/22 12:12	5

Client Sample ID: TW-TR2-C2

Date Collected: 05/11/22 14:00
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-9

Matrix: Solid
Percent Solids: 54.6

Method: 6010B SEP - SEP Metals (ICP) - Step 5 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	26	*1	21	3.4	mg/Kg	☼	06/08/22 08:00	06/10/22 12:12	5
Molybdenum	5.1	J	55	2.3	mg/Kg	☼	06/08/22 08:00	06/10/22 12:12	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	300		18	2.9	mg/Kg	☼	06/08/22 08:00	06/10/22 14:16	1
Arsenic	0.50	J	0.92	0.27	mg/Kg	☼	06/08/22 08:00	06/10/22 14:16	1
Cobalt	1.1	J	4.6	0.084	mg/Kg	☼	06/08/22 08:00	06/10/22 14:16	1
Iron	29000		9.2	5.3	mg/Kg	☼	06/08/22 08:00	06/10/22 14:16	1
Lead	ND		0.92	0.20	mg/Kg	☼	06/08/22 08:00	06/10/22 14:16	1
Lithium	0.44	J	4.6	0.27	mg/Kg	☼	06/08/22 08:00	06/10/22 14:16	1
Manganese	100		1.4	0.46	mg/Kg	☼	06/08/22 08:00	06/10/22 14:16	1
Molybdenum	59		3.7	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 14:16	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	18000		180	29	mg/Kg	☼	06/09/22 08:00	06/14/22 11:33	10
Arsenic	ND		1.8	0.48	mg/Kg	☼	06/09/22 08:00	06/13/22 16:10	2
Cobalt	1.7	J	9.2	0.095	mg/Kg	☼	06/09/22 08:00	06/13/22 16:10	2
Iron	6800		9.2	7.5	mg/Kg	☼	06/09/22 08:00	06/13/22 14:31	1
Lead	ND		1.8	0.40	mg/Kg	☼	06/09/22 08:00	06/13/22 16:10	2
Lithium	3.9	J	4.6	0.27	mg/Kg	☼	06/09/22 08:00	06/13/22 14:31	1
Manganese	23		1.4	0.20	mg/Kg	☼	06/09/22 08:00	06/13/22 14:31	1
Molybdenum	9.2		3.7	0.15	mg/Kg	☼	06/09/22 08:00	06/13/22 14:31	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	21000		10	1.6	mg/Kg			06/16/22 15:26	1
Arsenic	2.9		0.50	0.13	mg/Kg			06/16/22 15:26	1
Cobalt	4.7		2.5	0.023	mg/Kg			06/16/22 15:26	1
Iron	57000		5.0	4.1	mg/Kg			06/16/22 15:26	1
Lead	2.8		0.50	0.11	mg/Kg			06/16/22 15:26	1
Lithium	14		2.5	0.15	mg/Kg			06/16/22 15:26	1
Manganese	290		0.75	0.052	mg/Kg			06/16/22 15:26	1
Molybdenum	77		2.0	0.082	mg/Kg			06/16/22 15:26	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	16000		180	29	mg/Kg	☼	05/26/22 08:00	06/14/22 14:29	10
Arsenic	9.3		9.2	2.4	mg/Kg	☼	05/26/22 08:00	06/14/22 14:29	10
Cobalt	8.2	J	9.2	0.095	mg/Kg	☼	05/26/22 08:00	06/14/22 18:13	2
Iron	100000		92	75	mg/Kg	☼	05/26/22 08:00	06/14/22 14:29	10
Lead	6.8	J	9.2	2.0	mg/Kg	☼	05/26/22 08:00	06/14/22 14:29	10
Lithium	6.6		4.6	0.27	mg/Kg	☼	05/26/22 08:00	06/14/22 16:34	1
Manganese	510		1.4	0.20	mg/Kg	☼	05/26/22 08:00	06/14/22 16:34	1
Molybdenum	150		3.7	0.15	mg/Kg	☼	05/26/22 08:00	06/14/22 16:34	1

Client Sample ID: TW-TR2-C1

Date Collected: 05/11/22 13:00
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-10

Matrix: Solid
Percent Solids: 64.6

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		62	9.9	mg/Kg	☼	06/01/22 08:00	06/08/22 12:22	4
Arsenic	ND		3.1	0.80	mg/Kg	☼	06/01/22 08:00	06/08/22 12:22	4
Cobalt	ND		15	0.28	mg/Kg	☼	06/01/22 08:00	06/08/22 12:22	4
Iron	ND		31	18	mg/Kg	☼	06/01/22 08:00	06/08/22 12:22	4
Lead	ND		3.1	0.68	mg/Kg	☼	06/01/22 08:00	06/08/22 12:22	4
Lithium	ND		15	0.93	mg/Kg	☼	06/01/22 08:00	06/08/22 12:22	4
Manganese	**0.24**	**J**	4.6	0.19	mg/Kg	☼	06/01/22 08:00	06/08/22 12:22	4
Molybdenum	**1.1**	**J**	12	0.51	mg/Kg	☼	06/01/22 08:00	06/08/22 12:22	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**9.7**	**J**	46	7.4	mg/Kg	☼	06/02/22 08:00	06/08/22 14:22	3
Arsenic	ND		2.3	0.60	mg/Kg	☼	06/02/22 08:00	06/08/22 14:22	3
Cobalt	ND		12	0.29	mg/Kg	☼	06/02/22 08:00	06/08/22 14:22	3
Iron	ND		23	13	mg/Kg	☼	06/02/22 08:00	06/08/22 14:22	3
Lead	ND		2.3	0.51	mg/Kg	☼	06/02/22 08:00	06/08/22 14:22	3
Lithium	**1.5**	**J**	12	0.70	mg/Kg	☼	06/02/22 08:00	06/08/22 14:22	3
Manganese	**8.3**		3.5	1.3	mg/Kg	☼	06/02/22 08:00	06/08/22 14:22	3
Molybdenum	ND		9.3	0.38	mg/Kg	☼	06/02/22 08:00	06/08/22 14:22	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		15	3.2	mg/Kg	☼	06/03/22 08:00	06/09/22 11:56	1
Arsenic	ND		0.77	0.20	mg/Kg	☼	06/03/22 08:00	06/09/22 11:56	1
Cobalt	ND		3.9	0.070	mg/Kg	☼	06/03/22 08:00	06/09/22 11:56	1
Iron	ND		7.7	4.5	mg/Kg	☼	06/03/22 08:00	06/09/22 11:56	1
Lead	ND		0.77	0.17	mg/Kg	☼	06/03/22 08:00	06/09/22 11:56	1
Lithium	**0.61**	**J**	3.9	0.23	mg/Kg	☼	06/03/22 08:00	06/09/22 11:56	1
Manganese	**1.9**	**B**	1.2	0.042	mg/Kg	☼	06/03/22 08:00	06/09/22 11:56	1
Molybdenum	**0.14**	**J**	3.1	0.13	mg/Kg	☼	06/03/22 08:00	06/09/22 11:56	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**8500**		15	2.5	mg/Kg	☼	06/06/22 08:00	06/09/22 13:52	1
Arsenic	ND	L	0.77	0.34	mg/Kg	☼	06/06/22 08:00	06/09/22 13:52	1
Cobalt	**4.8**		3.9	0.082	mg/Kg	☼	06/06/22 08:00	06/09/22 13:52	1
Iron	**15000**		7.7	4.5	mg/Kg	☼	06/06/22 08:00	06/09/22 13:52	1
Lead	**1.7**		0.77	0.17	mg/Kg	☼	06/06/22 08:00	06/09/22 13:52	1
Lithium	**6.5**	**B**	3.9	0.23	mg/Kg	☼	06/06/22 08:00	06/09/22 13:52	1
Manganese	**150**		1.2	0.20	mg/Kg	☼	06/06/22 08:00	06/09/22 13:52	1
Molybdenum	**1.4**	**J**	3.1	0.13	mg/Kg	☼	06/06/22 08:00	06/09/22 13:52	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1500**		230	36	mg/Kg	☼	06/08/22 08:00	06/10/22 12:17	5
Arsenic	ND		12	2.9	mg/Kg	☼	06/08/22 08:00	06/10/22 12:17	5
Cobalt	**2.9**	**J**	58	0.93	mg/Kg	☼	06/08/22 08:00	06/10/22 12:17	5
Iron	**700**		120	68	mg/Kg	☼	06/08/22 08:00	06/10/22 12:17	5
Lead	ND		12	2.6	mg/Kg	☼	06/08/22 08:00	06/10/22 12:17	5
Lithium	**8.4**	**J B**	58	3.4	mg/Kg	☼	06/08/22 08:00	06/10/22 12:17	5

Client Sample ID: TW-TR2-C1

Date Collected: 05/11/22 13:00
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-10

Matrix: Solid
Percent Solids: 64.6

Method: 6010B SEP - SEP Metals (ICP) - Step 5 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	19	*1	17	2.9	mg/Kg	☼	06/08/22 08:00	06/10/22 12:17	5
Molybdenum	4.8	J	46	1.9	mg/Kg	☼	06/08/22 08:00	06/10/22 12:17	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	3600		15	2.5	mg/Kg	☼	06/08/22 08:00	06/10/22 14:21	1
Arsenic	47		0.77	0.23	mg/Kg	☼	06/08/22 08:00	06/10/22 14:21	1
Cobalt	1.1	J	3.9	0.071	mg/Kg	☼	06/08/22 08:00	06/10/22 14:21	1
Iron	19000		7.7	4.5	mg/Kg	☼	06/08/22 08:00	06/10/22 14:21	1
Lead	7.8		0.77	0.17	mg/Kg	☼	06/08/22 08:00	06/10/22 14:21	1
Lithium	1.3	J	3.9	0.23	mg/Kg	☼	06/08/22 08:00	06/10/22 14:21	1
Manganese	21		1.2	0.39	mg/Kg	☼	06/08/22 08:00	06/10/22 14:21	1
Molybdenum	10		3.1	0.15	mg/Kg	☼	06/08/22 08:00	06/10/22 14:21	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	18000		150	25	mg/Kg	☼	06/09/22 08:00	06/14/22 11:38	10
Arsenic	5.2		1.5	0.40	mg/Kg	☼	06/09/22 08:00	06/13/22 16:16	2
Cobalt	1.3	J	7.7	0.080	mg/Kg	☼	06/09/22 08:00	06/13/22 16:16	2
Iron	5000		7.7	6.3	mg/Kg	☼	06/09/22 08:00	06/13/22 14:36	1
Lead	1.1	J	1.5	0.34	mg/Kg	☼	06/09/22 08:00	06/13/22 16:16	2
Lithium	6.5		3.9	0.23	mg/Kg	☼	06/09/22 08:00	06/13/22 14:36	1
Manganese	7.4		1.2	0.17	mg/Kg	☼	06/09/22 08:00	06/13/22 14:36	1
Molybdenum	1.1	J	3.1	0.13	mg/Kg	☼	06/09/22 08:00	06/13/22 14:36	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	31000		10	1.6	mg/Kg			06/16/22 15:26	1
Arsenic	52		0.50	0.13	mg/Kg			06/16/22 15:26	1
Cobalt	10		2.5	0.023	mg/Kg			06/16/22 15:26	1
Iron	39000		5.0	4.1	mg/Kg			06/16/22 15:26	1
Lead	11		0.50	0.11	mg/Kg			06/16/22 15:26	1
Lithium	25		2.5	0.15	mg/Kg			06/16/22 15:26	1
Manganese	210		0.75	0.052	mg/Kg			06/16/22 15:26	1
Molybdenum	19		2.0	0.082	mg/Kg			06/16/22 15:26	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	15000		150	25	mg/Kg	☼	05/26/22 08:00	06/14/22 14:33	10
Arsenic	56		0.77	0.20	mg/Kg	☼	05/26/22 08:00	06/14/22 16:40	1
Cobalt	8.8		7.7	0.080	mg/Kg	☼	05/26/22 08:00	06/14/22 18:19	2
Iron	33000		7.7	6.3	mg/Kg	☼	05/26/22 08:00	06/14/22 16:40	1
Lead	12		0.77	0.17	mg/Kg	☼	05/26/22 08:00	06/14/22 16:40	1
Lithium	9.1		3.9	0.23	mg/Kg	☼	05/26/22 08:00	06/14/22 16:40	1
Manganese	160		1.2	0.17	mg/Kg	☼	05/26/22 08:00	06/14/22 16:40	1
Molybdenum	17		3.1	0.13	mg/Kg	☼	05/26/22 08:00	06/14/22 16:40	1

Client Sample ID: MW-213

Date Collected: 05/12/22 12:40
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-11

Matrix: Solid
Percent Solids: 85.3

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		47	7.5	mg/Kg	☼	06/01/22 08:00	06/08/22 12:27	4
Arsenic	ND		2.3	0.61	mg/Kg	☼	06/01/22 08:00	06/08/22 12:27	4
Cobalt	**0.46**	**J**	12	0.21	mg/Kg	☼	06/01/22 08:00	06/08/22 12:27	4
Iron	ND		23	14	mg/Kg	☼	06/01/22 08:00	06/08/22 12:27	4
Lead	ND		2.3	0.52	mg/Kg	☼	06/01/22 08:00	06/08/22 12:27	4
Lithium	ND		12	0.70	mg/Kg	☼	06/01/22 08:00	06/08/22 12:27	4
Manganese	**10**		3.5	0.15	mg/Kg	☼	06/01/22 08:00	06/08/22 12:27	4
Molybdenum	ND		9.4	0.38	mg/Kg	☼	06/01/22 08:00	06/08/22 12:27	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**15**	**J**	35	5.6	mg/Kg	☼	06/02/22 08:00	06/08/22 14:27	3
Arsenic	ND		1.8	0.46	mg/Kg	☼	06/02/22 08:00	06/08/22 14:27	3
Cobalt	**1.1**	**J**	8.8	0.22	mg/Kg	☼	06/02/22 08:00	06/08/22 14:27	3
Iron	**580**		18	10	mg/Kg	☼	06/02/22 08:00	06/08/22 14:27	3
Lead	**1.6**	**J**	1.8	0.39	mg/Kg	☼	06/02/22 08:00	06/08/22 14:27	3
Lithium	**0.91**	**J**	8.8	0.53	mg/Kg	☼	06/02/22 08:00	06/08/22 14:27	3
Manganese	**69**		2.6	0.98	mg/Kg	☼	06/02/22 08:00	06/08/22 14:27	3
Molybdenum	ND		7.0	0.29	mg/Kg	☼	06/02/22 08:00	06/08/22 14:27	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**87**		12	2.5	mg/Kg	☼	06/03/22 08:00	06/09/22 12:01	1
Arsenic	**0.29**	**J**	0.59	0.15	mg/Kg	☼	06/03/22 08:00	06/09/22 12:01	1
Cobalt	**0.96**	**J**	2.9	0.053	mg/Kg	☼	06/03/22 08:00	06/09/22 12:01	1
Iron	**4900**		5.9	3.4	mg/Kg	☼	06/03/22 08:00	06/09/22 12:01	1
Lead	ND		0.59	0.13	mg/Kg	☼	06/03/22 08:00	06/09/22 12:01	1
Lithium	**0.34**	**J**	2.9	0.18	mg/Kg	☼	06/03/22 08:00	06/09/22 12:01	1
Manganese	**130**	**B**	0.88	0.032	mg/Kg	☼	06/03/22 08:00	06/09/22 12:01	1
Molybdenum	**0.11**	**J**	2.3	0.096	mg/Kg	☼	06/03/22 08:00	06/09/22 12:01	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1100**		12	1.9	mg/Kg	☼	06/06/22 08:00	06/09/22 13:57	1
Arsenic	ND	L	0.59	0.26	mg/Kg	☼	06/06/22 08:00	06/09/22 13:57	1
Cobalt	**2.4**	**J**	2.9	0.062	mg/Kg	☼	06/06/22 08:00	06/09/22 13:57	1
Iron	**14000**		5.9	3.4	mg/Kg	☼	06/06/22 08:00	06/09/22 13:57	1
Lead	**3.1**		0.59	0.13	mg/Kg	☼	06/06/22 08:00	06/09/22 13:57	1
Lithium	**3.7**	**B**	2.9	0.18	mg/Kg	☼	06/06/22 08:00	06/09/22 13:57	1
Manganese	**350**		0.88	0.15	mg/Kg	☼	06/06/22 08:00	06/09/22 13:57	1
Molybdenum	ND		2.3	0.096	mg/Kg	☼	06/06/22 08:00	06/09/22 13:57	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**59**	**J**	180	28	mg/Kg	☼	06/08/22 08:00	06/10/22 12:22	5
Arsenic	ND		8.8	2.2	mg/Kg	☼	06/08/22 08:00	06/10/22 12:22	5
Cobalt	ND		44	0.70	mg/Kg	☼	06/08/22 08:00	06/10/22 12:22	5
Iron	ND		88	52	mg/Kg	☼	06/08/22 08:00	06/10/22 12:22	5
Lead	ND		8.8	1.9	mg/Kg	☼	06/08/22 08:00	06/10/22 12:22	5
Lithium	**5.4**	**J B**	44	2.6	mg/Kg	☼	06/08/22 08:00	06/10/22 12:22	5

Client Sample ID: MW-213

Date Collected: 05/12/22 12:40
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-11

Matrix: Solid
Percent Solids: 85.3

Method: 6010B SEP - SEP Metals (ICP) - Step 5 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	7.3	J *1	13	2.2	mg/Kg	☼	06/08/22 08:00	06/10/22 12:22	5
Molybdenum	ND		35	1.5	mg/Kg	☼	06/08/22 08:00	06/10/22 12:22	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	4200		12	1.9	mg/Kg	☼	06/08/22 08:00	06/10/22 14:27	1
Arsenic	4.5		0.59	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 14:27	1
Cobalt	2.5	J	2.9	0.054	mg/Kg	☼	06/08/22 08:00	06/10/22 14:27	1
Iron	7700		5.9	3.4	mg/Kg	☼	06/08/22 08:00	06/10/22 14:27	1
Lead	1.6		0.59	0.13	mg/Kg	☼	06/08/22 08:00	06/10/22 14:27	1
Lithium	5.1		2.9	0.18	mg/Kg	☼	06/08/22 08:00	06/10/22 14:27	1
Manganese	84		0.88	0.29	mg/Kg	☼	06/08/22 08:00	06/10/22 14:27	1
Molybdenum	ND		2.3	0.12	mg/Kg	☼	06/08/22 08:00	06/10/22 14:27	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	40000		120	19	mg/Kg	☼	06/09/22 08:00	06/14/22 11:43	10
Arsenic	1.9		1.2	0.30	mg/Kg	☼	06/09/22 08:00	06/13/22 16:21	2
Cobalt	1.6	J	5.9	0.061	mg/Kg	☼	06/09/22 08:00	06/13/22 16:21	2
Iron	3700		5.9	4.8	mg/Kg	☼	06/09/22 08:00	06/13/22 14:41	1
Lead	2.1		1.2	0.26	mg/Kg	☼	06/09/22 08:00	06/13/22 16:21	2
Lithium	11		2.9	0.18	mg/Kg	☼	06/09/22 08:00	06/13/22 14:41	1
Manganese	34		0.88	0.13	mg/Kg	☼	06/09/22 08:00	06/13/22 14:41	1
Molybdenum	0.12	J	2.3	0.096	mg/Kg	☼	06/09/22 08:00	06/13/22 14:41	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	46000		10	1.6	mg/Kg			06/16/22 15:26	1
Arsenic	6.7		0.50	0.13	mg/Kg			06/16/22 15:26	1
Cobalt	9.1		2.5	0.023	mg/Kg			06/16/22 15:26	1
Iron	31000		5.0	4.1	mg/Kg			06/16/22 15:26	1
Lead	8.4		0.50	0.11	mg/Kg			06/16/22 15:26	1
Lithium	26		2.5	0.15	mg/Kg			06/16/22 15:26	1
Manganese	690		0.75	0.052	mg/Kg			06/16/22 15:26	1
Molybdenum	0.23	J	2.0	0.082	mg/Kg			06/16/22 15:26	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	62000		120	19	mg/Kg	☼	05/26/22 08:00	06/14/22 14:38	10
Arsenic	6.2		0.59	0.15	mg/Kg	☼	05/26/22 08:00	06/14/22 16:45	1
Cobalt	9.3		5.9	0.061	mg/Kg	☼	05/26/22 08:00	06/14/22 18:24	2
Iron	19000		5.9	4.8	mg/Kg	☼	05/26/22 08:00	06/14/22 16:45	1
Lead	8.9		1.2	0.26	mg/Kg	☼	05/26/22 08:00	06/14/22 18:24	2
Lithium	21		2.9	0.18	mg/Kg	☼	05/26/22 08:00	06/14/22 16:45	1
Manganese	300		0.88	0.13	mg/Kg	☼	05/26/22 08:00	06/14/22 16:45	1
Molybdenum	0.40	J	2.3	0.096	mg/Kg	☼	05/26/22 08:00	06/14/22 16:45	1

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-27497-1
Project/Site: GL21509219, GRE Stanton 2022

Method: 6010B SEP - SEP Metals (ICP) - Step 1
Prep: 3010A
SEP: Exchangeable

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 2
Prep: 3010A
SEP: Carbonate

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3
Prep: 3010A
SEP: Non-Crystalline

Analyte	RL	MDL	Units
Aluminum	10	2.1	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 4
Prep: 3010A
SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.22	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 5
Prep: 3010A

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Aluminum	30	4.7	mg/Kg
Arsenic	1.5	0.38	mg/Kg
Cobalt	7.5	0.12	mg/Kg
Iron	15	8.8	mg/Kg
Lead	1.5	0.33	mg/Kg
Lithium	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg
Molybdenum	6.0	0.25	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.15	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg
Molybdenum	2.0	0.099	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.11	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.026	mg/Kg

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-27497-1
Project/Site: GL21509219, GRE Stanton 2022

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Prep: Total

Analyte	RL	MDL	Units
Iron	5.0	4.1	mg/Kg
Lead	0.50	0.11	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.11	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-61991/17-A
Matrix: Solid
Analysis Batch: 62595

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 61991

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		05/26/22 08:00	06/14/22 14:53	1
Arsenic	ND		0.50	0.13	mg/Kg		05/26/22 08:00	06/14/22 14:53	1
Cobalt	ND		2.5	0.026	mg/Kg		05/26/22 08:00	06/14/22 14:53	1
Iron	ND		5.0	4.1	mg/Kg		05/26/22 08:00	06/14/22 14:53	1
Lead	ND		0.50	0.11	mg/Kg		05/26/22 08:00	06/14/22 14:53	1
Lithium	ND		2.5	0.15	mg/Kg		05/26/22 08:00	06/14/22 14:53	1
Manganese	ND		0.75	0.11	mg/Kg		05/26/22 08:00	06/14/22 14:53	1
Molybdenum	ND		2.0	0.082	mg/Kg		05/26/22 08:00	06/14/22 14:53	1

Lab Sample ID: LCS 140-61991/18-A
Matrix: Solid
Analysis Batch: 62595

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 61991

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	98.2		mg/Kg		98	80 - 120
Arsenic	5.00	5.31		mg/Kg		106	80 - 120
Cobalt	5.00	5.19		mg/Kg		104	80 - 125
Iron	50.0	51.9		mg/Kg		104	80 - 120
Lead	5.00	5.08		mg/Kg		102	80 - 120
Lithium	5.00	4.98		mg/Kg		100	80 - 120
Manganese	5.00	5.06		mg/Kg		101	80 - 120
Molybdenum	25.0	25.7		mg/Kg		103	80 - 125

Lab Sample ID: LCSD 140-61991/19-A
Matrix: Solid
Analysis Batch: 62595

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 61991

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	97.3		mg/Kg		97	80 - 120	1	30
Arsenic	5.00	5.29		mg/Kg		106	80 - 120	0	30
Cobalt	5.00	5.17		mg/Kg		103	80 - 125	0	30
Iron	50.0	52.4		mg/Kg		105	80 - 120	1	30
Lead	5.00	5.07		mg/Kg		101	80 - 120	0	30
Lithium	5.00	4.98		mg/Kg		100	80 - 120	0	30
Manganese	5.00	5.06		mg/Kg		101	80 - 120	0	30
Molybdenum	25.0	25.7		mg/Kg		103	80 - 125	0	30

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-61992/17-B ^4
Matrix: Solid
Analysis Batch: 62391

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 62134

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		06/01/22 08:00	06/08/22 10:43	4
Arsenic	ND		2.0	0.52	mg/Kg		06/01/22 08:00	06/08/22 10:43	4
Cobalt	ND		10	0.18	mg/Kg		06/01/22 08:00	06/08/22 10:43	4
Iron	ND		20	12	mg/Kg		06/01/22 08:00	06/08/22 10:43	4
Lead	0.592	J	2.0	0.44	mg/Kg		06/01/22 08:00	06/08/22 10:43	4

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-61992/17-B ^4
Matrix: Solid
Analysis Batch: 62391

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 62134

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	ND		10	0.60	mg/Kg		06/01/22 08:00	06/08/22 10:43	4
Manganese	ND		3.0	0.12	mg/Kg		06/01/22 08:00	06/08/22 10:43	4
Molybdenum	ND		8.0	0.33	mg/Kg		06/01/22 08:00	06/08/22 10:43	4

Lab Sample ID: LCS 140-61992/18-B ^5
Matrix: Solid
Analysis Batch: 62391

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 62134

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	102		mg/Kg		102	80 - 120
Arsenic	5.00	5.07		mg/Kg		101	80 - 120
Cobalt	5.00	5.04	J	mg/Kg		101	80 - 120
Iron	50.0	50.8		mg/Kg		102	80 - 120
Lead	5.00	5.40		mg/Kg		108	80 - 120
Lithium	5.00	5.47	J	mg/Kg		109	80 - 120
Manganese	5.00	5.09		mg/Kg		102	80 - 120
Molybdenum	25.0	24.7		mg/Kg		99	80 - 120

Lab Sample ID: LCSD 140-61992/19-B ^5
Matrix: Solid
Analysis Batch: 62391

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 62134

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	99.3		mg/Kg		99	80 - 120	3	30
Arsenic	5.00	5.06		mg/Kg		101	80 - 120	0	30
Cobalt	5.00	5.19	J	mg/Kg		104	80 - 120	3	30
Iron	50.0	51.5		mg/Kg		103	80 - 120	1	30
Lead	5.00	5.46		mg/Kg		109	80 - 120	1	30
Lithium	5.00	5.39	J	mg/Kg		108	80 - 120	1	30
Manganese	5.00	5.21		mg/Kg		104	80 - 120	2	30
Molybdenum	25.0	25.2		mg/Kg		101	80 - 120	2	30

Lab Sample ID: MB 140-62135/17-B ^3
Matrix: Solid
Analysis Batch: 62391

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 62164

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		06/02/22 08:00	06/08/22 12:41	3
Arsenic	ND		1.5	0.39	mg/Kg		06/02/22 08:00	06/08/22 12:41	3
Cobalt	ND		7.5	0.19	mg/Kg		06/02/22 08:00	06/08/22 12:41	3
Iron	ND		15	8.7	mg/Kg		06/02/22 08:00	06/08/22 12:41	3
Lead	ND		1.5	0.33	mg/Kg		06/02/22 08:00	06/08/22 12:41	3
Lithium	ND		7.5	0.45	mg/Kg		06/02/22 08:00	06/08/22 12:41	3
Manganese	ND		2.3	0.84	mg/Kg		06/02/22 08:00	06/08/22 12:41	3
Molybdenum	ND		6.0	0.25	mg/Kg		06/02/22 08:00	06/08/22 12:41	3

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-62135/18-B ^5
Matrix: Solid
Analysis Batch: 62391

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 62164

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	ND		mg/Kg		4	
Arsenic	5.00	3.61		mg/Kg		72	60 - 120
Cobalt	5.00	4.80	J	mg/Kg		96	80 - 120
Iron	50.0	ND		mg/Kg		3	
Lead	5.00	4.50		mg/Kg		90	70 - 120
Lithium	5.00	5.26	J	mg/Kg		105	80 - 120
Manganese	5.00	4.78		mg/Kg		96	80 - 120
Molybdenum	25.0	21.2		mg/Kg		85	70 - 120

Lab Sample ID: LCSD 140-62135/19-B ^5
Matrix: Solid
Analysis Batch: 62391

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 62164

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	ND		mg/Kg		3		4	
Arsenic	5.00	3.74		mg/Kg		75	60 - 120	4	30
Cobalt	5.00	4.72	J	mg/Kg		94	80 - 120	2	30
Iron	50.0	ND		mg/Kg		3		9	
Lead	5.00	4.74		mg/Kg		95	70 - 120	5	30
Lithium	5.00	4.90	J	mg/Kg		98	80 - 120	7	30
Manganese	5.00	4.76		mg/Kg		95	80 - 120	1	30
Molybdenum	25.0	21.2		mg/Kg		85	70 - 120	0	30

Lab Sample ID: MB 140-62165/17-B
Matrix: Solid
Analysis Batch: 62441

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 62194

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	2.1	mg/Kg		06/03/22 08:00	06/09/22 10:19	1
Arsenic	ND		0.50	0.13	mg/Kg		06/03/22 08:00	06/09/22 10:19	1
Cobalt	ND		2.5	0.045	mg/Kg		06/03/22 08:00	06/09/22 10:19	1
Iron	ND		5.0	2.9	mg/Kg		06/03/22 08:00	06/09/22 10:19	1
Lead	ND		0.50	0.11	mg/Kg		06/03/22 08:00	06/09/22 10:19	1
Lithium	ND		2.5	0.15	mg/Kg		06/03/22 08:00	06/09/22 10:19	1
Manganese	0.0870	J	0.75	0.027	mg/Kg		06/03/22 08:00	06/09/22 10:19	1
Molybdenum	ND		2.0	0.082	mg/Kg		06/03/22 08:00	06/09/22 10:19	1

Lab Sample ID: LCS 140-62165/18-B
Matrix: Solid
Analysis Batch: 62441

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 62194

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	102		mg/Kg		102	80 - 120
Arsenic	5.00	5.05		mg/Kg		101	80 - 120
Cobalt	5.00	5.14		mg/Kg		103	80 - 120
Iron	50.0	51.7		mg/Kg		103	80 - 120
Lead	5.00	0.143	J	mg/Kg		3	
Lithium	5.00	5.07		mg/Kg		101	80 - 120
Manganese	5.00	5.08		mg/Kg		102	80 - 120

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-62165/18-B
Matrix: Solid
Analysis Batch: 62441

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 62194

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Molybdenum	25.0	25.2		mg/Kg		101	80 - 120

Lab Sample ID: LCSD 140-62165/19-B
Matrix: Solid
Analysis Batch: 62441

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 62194

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	103		mg/Kg		103	80 - 120	1	30
Arsenic	5.00	5.11		mg/Kg		102	80 - 120	1	30
Cobalt	5.00	5.16		mg/Kg		103	80 - 120	0	30
Iron	50.0	52.2		mg/Kg		104	80 - 120	1	30
Lead	5.00	0.149	J	mg/Kg		3		4	
Lithium	5.00	5.08		mg/Kg		102	80 - 120	0	30
Manganese	5.00	5.05		mg/Kg		101	80 - 120	1	30
Molybdenum	25.0	25.5		mg/Kg		102	80 - 120	1	30

Lab Sample ID: MB 140-62195/17-B
Matrix: Solid
Analysis Batch: 62441

Client Sample ID: Method Blank
Prep Type: Step 4
Prep Batch: 62239

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		06/06/22 08:00	06/09/22 12:15	1
Arsenic	ND		0.50	0.22	mg/Kg		06/06/22 08:00	06/09/22 12:15	1
Cobalt	ND		2.5	0.053	mg/Kg		06/06/22 08:00	06/09/22 12:15	1
Iron	ND		5.0	2.9	mg/Kg		06/06/22 08:00	06/09/22 12:15	1
Lead	ND		0.50	0.11	mg/Kg		06/06/22 08:00	06/09/22 12:15	1
Lithium	0.166	J	2.5	0.15	mg/Kg		06/06/22 08:00	06/09/22 12:15	1
Manganese	ND		0.75	0.13	mg/Kg		06/06/22 08:00	06/09/22 12:15	1
Molybdenum	ND		2.0	0.082	mg/Kg		06/06/22 08:00	06/09/22 12:15	1

Lab Sample ID: LCS 140-62195/18-B
Matrix: Solid
Analysis Batch: 62441

Client Sample ID: Lab Control Sample
Prep Type: Step 4
Prep Batch: 62239

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	107		mg/Kg		107	80 - 120
Arsenic	5.00	5.45		mg/Kg		109	80 - 130
Cobalt	5.00	5.35		mg/Kg		107	80 - 120
Iron	50.0	54.3		mg/Kg		109	80 - 120
Lead	5.00	5.17		mg/Kg		103	80 - 120
Lithium	5.00	5.37		mg/Kg		107	80 - 120
Manganese	5.00	5.19		mg/Kg		104	80 - 120
Molybdenum	25.0	27.2		mg/Kg		109	80 - 120

Lab Sample ID: LCSD 140-62195/19-B
Matrix: Solid
Analysis Batch: 62441

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 62239

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	103		mg/Kg		103	80 - 120	4	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-62195/19-B
Matrix: Solid
Analysis Batch: 62441

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 62239

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic			5.00	5.21		mg/Kg		104	80 - 130	5	30
Cobalt			5.00	5.13		mg/Kg		103	80 - 120	4	30
Iron			50.0	52.0		mg/Kg		104	80 - 120	4	30
Lead			5.00	4.89		mg/Kg		98	80 - 120	5	30
Lithium			5.00	5.10		mg/Kg		102	80 - 120	5	30
Manganese			5.00	4.96		mg/Kg		99	80 - 120	4	30
Molybdenum			25.0	26.1		mg/Kg		105	80 - 120	4	30

Lab Sample ID: MB 140-62240/17-B ^5
Matrix: Solid
Analysis Batch: 62493

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 62350

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		150	24	mg/Kg		06/08/22 08:00	06/10/22 10:11	5
Arsenic	ND		7.5	1.9	mg/Kg		06/08/22 08:00	06/10/22 10:11	5
Cobalt	ND		38	0.60	mg/Kg		06/08/22 08:00	06/10/22 10:11	5
Iron	ND		75	44	mg/Kg		06/08/22 08:00	06/10/22 10:11	5
Lead	ND		7.5	1.7	mg/Kg		06/08/22 08:00	06/10/22 10:11	5
Lithium	5.22	J	38	2.2	mg/Kg		06/08/22 08:00	06/10/22 10:11	5
Manganese	ND		11	1.9	mg/Kg		06/08/22 08:00	06/10/22 10:11	5
Molybdenum	ND		30	1.3	mg/Kg		06/08/22 08:00	06/10/22 10:11	5

Lab Sample ID: LCS 140-62240/18-B ^5
Matrix: Solid
Analysis Batch: 62493

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 62350

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum			300	ND		mg/Kg		5	
Arsenic			15.0	10.9		mg/Kg		73	60 - 100
Cobalt			15.0	ND		mg/Kg		3	1 - 60
Iron			150	ND		mg/Kg		2	
Lead			15.0	8.02		mg/Kg		53	40 - 80
Lithium			15.0	20.3	J	mg/Kg		135	80 - 150
Manganese			15.0	2.48	J	mg/Kg		17	1 - 60
Molybdenum			75.0	54.8		mg/Kg		73	60 - 100

Lab Sample ID: LCSD 140-62240/19-B ^5
Matrix: Solid
Analysis Batch: 62493

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 62350

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum			300	28.6	J	mg/Kg		10		67	
Arsenic			15.0	10.4		mg/Kg		69	60 - 100	5	30
Cobalt			15.0	ND		mg/Kg		3	1 - 60	8	30
Iron			150	ND		mg/Kg		-0.2		244	
Lead			15.0	8.11		mg/Kg		54	40 - 80	1	30
Lithium			15.0	21.4	J	mg/Kg		142	80 - 150	5	30
Manganese			15.0	3.62	J *1	mg/Kg		24	1 - 60	37	30
Molybdenum			75.0	55.9		mg/Kg		75	60 - 100	2	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-62351/17-A
Matrix: Solid
Analysis Batch: 62493

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 62351

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		06/08/22 08:00	06/10/22 12:37	1
Arsenic	ND		0.50	0.15	mg/Kg		06/08/22 08:00	06/10/22 12:37	1
Cobalt	ND		2.5	0.046	mg/Kg		06/08/22 08:00	06/10/22 12:37	1
Iron	ND		5.0	2.9	mg/Kg		06/08/22 08:00	06/10/22 12:37	1
Lead	ND		0.50	0.11	mg/Kg		06/08/22 08:00	06/10/22 12:37	1
Lithium	ND		2.5	0.15	mg/Kg		06/08/22 08:00	06/10/22 12:37	1
Manganese	ND		0.75	0.25	mg/Kg		06/08/22 08:00	06/10/22 12:37	1
Molybdenum	ND		2.0	0.099	mg/Kg		06/08/22 08:00	06/10/22 12:37	1

Lab Sample ID: LCS 140-62351/18-A
Matrix: Solid
Analysis Batch: 62493

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 62351

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	97.2		mg/Kg		97	80 - 120
Arsenic	5.00	5.03		mg/Kg		101	80 - 120
Cobalt	5.00	4.90		mg/Kg		98	80 - 120
Iron	50.0	49.0		mg/Kg		98	80 - 120
Lead	5.00	4.81		mg/Kg		96	80 - 120
Lithium	5.00	4.79		mg/Kg		96	80 - 120
Manganese	5.00	4.94		mg/Kg		99	80 - 120
Molybdenum	25.0	24.1		mg/Kg		96	80 - 120

Lab Sample ID: LCSD 140-62351/19-A
Matrix: Solid
Analysis Batch: 62493

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 6
Prep Batch: 62351

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	100	102		mg/Kg		102	80 - 120	4	30
Arsenic	5.00	5.09		mg/Kg		102	80 - 120	1	30
Cobalt	5.00	4.98		mg/Kg		100	80 - 120	2	30
Iron	50.0	50.7		mg/Kg		101	80 - 120	3	30
Lead	5.00	4.97		mg/Kg		99	80 - 120	3	30
Lithium	5.00	4.99		mg/Kg		100	80 - 120	4	30
Manganese	5.00	5.00		mg/Kg		100	80 - 120	1	30
Molybdenum	25.0	24.8		mg/Kg		99	80 - 120	3	30

Lab Sample ID: MB 140-62386/17-A
Matrix: Solid
Analysis Batch: 62545

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 62386

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.50	0.13	mg/Kg		06/09/22 08:00	06/13/22 12:55	1
Cobalt	ND		2.5	0.026	mg/Kg		06/09/22 08:00	06/13/22 12:55	1
Lead	ND		0.50	0.11	mg/Kg		06/09/22 08:00	06/13/22 12:55	1
Manganese	ND		0.75	0.11	mg/Kg		06/09/22 08:00	06/13/22 12:55	1
Molybdenum	ND		2.0	0.082	mg/Kg		06/09/22 08:00	06/13/22 12:55	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-62386/17-A
Matrix: Solid
Analysis Batch: 62595

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 62386

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		06/09/22 08:00	06/14/22 11:57	1
Arsenic	ND		0.50	0.13	mg/Kg		06/09/22 08:00	06/14/22 11:57	1
Cobalt	ND		2.5	0.026	mg/Kg		06/09/22 08:00	06/14/22 11:57	1
Iron	ND		5.0	4.1	mg/Kg		06/09/22 08:00	06/14/22 11:57	1
Lead	ND		0.50	0.11	mg/Kg		06/09/22 08:00	06/14/22 11:57	1
Lithium	ND		2.5	0.15	mg/Kg		06/09/22 08:00	06/14/22 11:57	1
Manganese	ND		0.75	0.11	mg/Kg		06/09/22 08:00	06/14/22 11:57	1
Molybdenum	ND		2.0	0.082	mg/Kg		06/09/22 08:00	06/14/22 11:57	1

Lab Sample ID: LCS 140-62386/18-A
Matrix: Solid
Analysis Batch: 62545

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 62386

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	5.00	5.28		mg/Kg		106	80 - 120
Cobalt	5.00	5.30		mg/Kg		106	80 - 125
Lead	5.00	5.15		mg/Kg		103	80 - 120
Manganese	5.00	5.24		mg/Kg		105	80 - 120
Molybdenum	25.0	26.5		mg/Kg		106	80 - 125

Lab Sample ID: LCS 140-62386/18-A
Matrix: Solid
Analysis Batch: 62595

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 62386

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	100	98.1		mg/Kg		98	80 - 120
Arsenic	5.00	5.23		mg/Kg		105	80 - 120
Cobalt	5.00	5.18		mg/Kg		104	80 - 125
Iron	50.0	51.4		mg/Kg		103	80 - 120
Lead	5.00	5.18		mg/Kg		104	80 - 120
Lithium	5.00	5.08		mg/Kg		102	80 - 120
Manganese	5.00	5.11		mg/Kg		102	80 - 120
Molybdenum	25.0	25.4		mg/Kg		101	80 - 125

Lab Sample ID: LCSD 140-62386/19-A
Matrix: Solid
Analysis Batch: 62545

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 62386

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	5.00	5.34		mg/Kg		107	80 - 120	1	30
Cobalt	5.00	5.32		mg/Kg		106	80 - 125	0	30
Lead	5.00	5.19		mg/Kg		104	80 - 120	1	30
Manganese	5.00	5.16		mg/Kg		103	80 - 120	1	30
Molybdenum	25.0	26.6		mg/Kg		107	80 - 125	0	30

Client: Golder Associates Inc.
Project/Site: GL21509219, GRE Stanton 2022

Job ID: 140-27497-1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-62386/19-A
Matrix: Solid
Analysis Batch: 62595

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 62386

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum			100	98.0		mg/Kg		98	80 - 120	0	30
Arsenic			5.00	5.27		mg/Kg		105	80 - 120	1	30
Cobalt			5.00	5.17		mg/Kg		103	80 - 125	0	30
Iron			50.0	50.9		mg/Kg		102	80 - 120	1	30
Lead			5.00	5.12		mg/Kg		102	80 - 120	1	30
Lithium			5.00	5.03		mg/Kg		101	80 - 120	1	30
Manganese			5.00	5.05		mg/Kg		101	80 - 120	1	30
Molybdenum			25.0	25.3		mg/Kg		101	80 - 125	0	30

Metals

Prep Batch: 61991

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Total/NA	Solid	Total	
140-27497-2	MW-212	Total/NA	Solid	Total	
140-27497-3	TW-TR2	Total/NA	Solid	Total	
140-27497-4	MW-210	Total/NA	Solid	Total	
140-27497-5	BH-1	Total/NA	Solid	Total	
140-27497-6	MW-214	Total/NA	Solid	Total	
140-27497-7	MW-211-0-5FT	Total/NA	Solid	Total	
140-27497-8	MW-211-14-25FT	Total/NA	Solid	Total	
140-27497-9	TW-TR2-C2	Total/NA	Solid	Total	
140-27497-10	TW-TR2-C1	Total/NA	Solid	Total	
140-27497-11	MW-213	Total/NA	Solid	Total	
MB 140-61991/17-A	Method Blank	Total/NA	Solid	Total	
LCS 140-61991/18-A	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-61991/19-A	Lab Control Sample Dup	Total/NA	Solid	Total	

SEP Batch: 61992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 1	Solid	Exchangeable	
140-27497-2	MW-212	Step 1	Solid	Exchangeable	
140-27497-3	TW-TR2	Step 1	Solid	Exchangeable	
140-27497-4	MW-210	Step 1	Solid	Exchangeable	
140-27497-5	BH-1	Step 1	Solid	Exchangeable	
140-27497-6	MW-214	Step 1	Solid	Exchangeable	
140-27497-7	MW-211-0-5FT	Step 1	Solid	Exchangeable	
140-27497-8	MW-211-14-25FT	Step 1	Solid	Exchangeable	
140-27497-9	TW-TR2-C2	Step 1	Solid	Exchangeable	
140-27497-10	TW-TR2-C1	Step 1	Solid	Exchangeable	
140-27497-11	MW-213	Step 1	Solid	Exchangeable	
MB 140-61992/17-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-61992/18-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-61992/19-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	

Prep Batch: 62134

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 1	Solid	3010A	61992
140-27497-2	MW-212	Step 1	Solid	3010A	61992
140-27497-3	TW-TR2	Step 1	Solid	3010A	61992
140-27497-4	MW-210	Step 1	Solid	3010A	61992
140-27497-5	BH-1	Step 1	Solid	3010A	61992
140-27497-6	MW-214	Step 1	Solid	3010A	61992
140-27497-7	MW-211-0-5FT	Step 1	Solid	3010A	61992
140-27497-8	MW-211-14-25FT	Step 1	Solid	3010A	61992
140-27497-9	TW-TR2-C2	Step 1	Solid	3010A	61992
140-27497-10	TW-TR2-C1	Step 1	Solid	3010A	61992
140-27497-11	MW-213	Step 1	Solid	3010A	61992
MB 140-61992/17-B ^4	Method Blank	Step 1	Solid	3010A	61992
LCS 140-61992/18-B ^5	Lab Control Sample	Step 1	Solid	3010A	61992
LCSD 140-61992/19-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	61992

Metals

SEP Batch: 62135

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 2	Solid	Carbonate	
140-27497-2	MW-212	Step 2	Solid	Carbonate	
140-27497-3	TW-TR2	Step 2	Solid	Carbonate	
140-27497-4	MW-210	Step 2	Solid	Carbonate	
140-27497-5	BH-1	Step 2	Solid	Carbonate	
140-27497-6	MW-214	Step 2	Solid	Carbonate	
140-27497-7	MW-211-0-5FT	Step 2	Solid	Carbonate	
140-27497-8	MW-211-14-25FT	Step 2	Solid	Carbonate	
140-27497-9	TW-TR2-C2	Step 2	Solid	Carbonate	
140-27497-10	TW-TR2-C1	Step 2	Solid	Carbonate	
140-27497-11	MW-213	Step 2	Solid	Carbonate	
MB 140-62135/17-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-62135/18-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-62135/19-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	

Prep Batch: 62164

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 2	Solid	3010A	62135
140-27497-2	MW-212	Step 2	Solid	3010A	62135
140-27497-3	TW-TR2	Step 2	Solid	3010A	62135
140-27497-4	MW-210	Step 2	Solid	3010A	62135
140-27497-5	BH-1	Step 2	Solid	3010A	62135
140-27497-6	MW-214	Step 2	Solid	3010A	62135
140-27497-7	MW-211-0-5FT	Step 2	Solid	3010A	62135
140-27497-8	MW-211-14-25FT	Step 2	Solid	3010A	62135
140-27497-9	TW-TR2-C2	Step 2	Solid	3010A	62135
140-27497-10	TW-TR2-C1	Step 2	Solid	3010A	62135
140-27497-11	MW-213	Step 2	Solid	3010A	62135
MB 140-62135/17-B ^3	Method Blank	Step 2	Solid	3010A	62135
LCS 140-62135/18-B ^5	Lab Control Sample	Step 2	Solid	3010A	62135
LCSD 140-62135/19-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	62135

SEP Batch: 62165

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 3	Solid	Non-Crystalline	
140-27497-2	MW-212	Step 3	Solid	Non-Crystalline	
140-27497-3	TW-TR2	Step 3	Solid	Non-Crystalline	
140-27497-4	MW-210	Step 3	Solid	Non-Crystalline	
140-27497-5	BH-1	Step 3	Solid	Non-Crystalline	
140-27497-6	MW-214	Step 3	Solid	Non-Crystalline	
140-27497-7	MW-211-0-5FT	Step 3	Solid	Non-Crystalline	
140-27497-8	MW-211-14-25FT	Step 3	Solid	Non-Crystalline	
140-27497-9	TW-TR2-C2	Step 3	Solid	Non-Crystalline	
140-27497-10	TW-TR2-C1	Step 3	Solid	Non-Crystalline	
140-27497-11	MW-213	Step 3	Solid	Non-Crystalline	
MB 140-62165/17-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-62165/18-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-62165/19-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	

Metals

Prep Batch: 62194

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 3	Solid	3010A	62165
140-27497-2	MW-212	Step 3	Solid	3010A	62165
140-27497-3	TW-TR2	Step 3	Solid	3010A	62165
140-27497-4	MW-210	Step 3	Solid	3010A	62165
140-27497-5	BH-1	Step 3	Solid	3010A	62165
140-27497-6	MW-214	Step 3	Solid	3010A	62165
140-27497-7	MW-211-0-5FT	Step 3	Solid	3010A	62165
140-27497-8	MW-211-14-25FT	Step 3	Solid	3010A	62165
140-27497-9	TW-TR2-C2	Step 3	Solid	3010A	62165
140-27497-10	TW-TR2-C1	Step 3	Solid	3010A	62165
140-27497-11	MW-213	Step 3	Solid	3010A	62165
MB 140-62165/17-B	Method Blank	Step 3	Solid	3010A	62165
LCS 140-62165/18-B	Lab Control Sample	Step 3	Solid	3010A	62165
LCSD 140-62165/19-B	Lab Control Sample Dup	Step 3	Solid	3010A	62165

SEP Batch: 62195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 4	Solid	Metal Hydroxide	
140-27497-2	MW-212	Step 4	Solid	Metal Hydroxide	
140-27497-3	TW-TR2	Step 4	Solid	Metal Hydroxide	
140-27497-4	MW-210	Step 4	Solid	Metal Hydroxide	
140-27497-5	BH-1	Step 4	Solid	Metal Hydroxide	
140-27497-6	MW-214	Step 4	Solid	Metal Hydroxide	
140-27497-7	MW-211-0-5FT	Step 4	Solid	Metal Hydroxide	
140-27497-8	MW-211-14-25FT	Step 4	Solid	Metal Hydroxide	
140-27497-9	TW-TR2-C2	Step 4	Solid	Metal Hydroxide	
140-27497-10	TW-TR2-C1	Step 4	Solid	Metal Hydroxide	
140-27497-11	MW-213	Step 4	Solid	Metal Hydroxide	
MB 140-62195/17-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-62195/18-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-62195/19-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	

Prep Batch: 62239

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 4	Solid	3010A	62195
140-27497-2	MW-212	Step 4	Solid	3010A	62195
140-27497-3	TW-TR2	Step 4	Solid	3010A	62195
140-27497-4	MW-210	Step 4	Solid	3010A	62195
140-27497-5	BH-1	Step 4	Solid	3010A	62195
140-27497-6	MW-214	Step 4	Solid	3010A	62195
140-27497-7	MW-211-0-5FT	Step 4	Solid	3010A	62195
140-27497-8	MW-211-14-25FT	Step 4	Solid	3010A	62195
140-27497-9	TW-TR2-C2	Step 4	Solid	3010A	62195
140-27497-10	TW-TR2-C1	Step 4	Solid	3010A	62195
140-27497-11	MW-213	Step 4	Solid	3010A	62195
MB 140-62195/17-B	Method Blank	Step 4	Solid	3010A	62195
LCS 140-62195/18-B	Lab Control Sample	Step 4	Solid	3010A	62195
LCSD 140-62195/19-B	Lab Control Sample Dup	Step 4	Solid	3010A	62195

Metals

SEP Batch: 62240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 5	Solid	Organic-Bound	
140-27497-2	MW-212	Step 5	Solid	Organic-Bound	
140-27497-3	TW-TR2	Step 5	Solid	Organic-Bound	
140-27497-4	MW-210	Step 5	Solid	Organic-Bound	
140-27497-5	BH-1	Step 5	Solid	Organic-Bound	
140-27497-6	MW-214	Step 5	Solid	Organic-Bound	
140-27497-7	MW-211-0-5FT	Step 5	Solid	Organic-Bound	
140-27497-8	MW-211-14-25FT	Step 5	Solid	Organic-Bound	
140-27497-9	TW-TR2-C2	Step 5	Solid	Organic-Bound	
140-27497-10	TW-TR2-C1	Step 5	Solid	Organic-Bound	
140-27497-11	MW-213	Step 5	Solid	Organic-Bound	
MB 140-62240/17-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-62240/18-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-62240/19-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	

Prep Batch: 62350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 5	Solid	3010A	62240
140-27497-2	MW-212	Step 5	Solid	3010A	62240
140-27497-3	TW-TR2	Step 5	Solid	3010A	62240
140-27497-4	MW-210	Step 5	Solid	3010A	62240
140-27497-5	BH-1	Step 5	Solid	3010A	62240
140-27497-6	MW-214	Step 5	Solid	3010A	62240
140-27497-7	MW-211-0-5FT	Step 5	Solid	3010A	62240
140-27497-8	MW-211-14-25FT	Step 5	Solid	3010A	62240
140-27497-9	TW-TR2-C2	Step 5	Solid	3010A	62240
140-27497-10	TW-TR2-C1	Step 5	Solid	3010A	62240
140-27497-11	MW-213	Step 5	Solid	3010A	62240
MB 140-62240/17-B ^5	Method Blank	Step 5	Solid	3010A	62240
LCS 140-62240/18-B ^5	Lab Control Sample	Step 5	Solid	3010A	62240
LCSD 140-62240/19-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	62240

SEP Batch: 62351

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 6	Solid	Acid/Sulfide	
140-27497-2	MW-212	Step 6	Solid	Acid/Sulfide	
140-27497-3	TW-TR2	Step 6	Solid	Acid/Sulfide	
140-27497-4	MW-210	Step 6	Solid	Acid/Sulfide	
140-27497-5	BH-1	Step 6	Solid	Acid/Sulfide	
140-27497-6	MW-214	Step 6	Solid	Acid/Sulfide	
140-27497-7	MW-211-0-5FT	Step 6	Solid	Acid/Sulfide	
140-27497-8	MW-211-14-25FT	Step 6	Solid	Acid/Sulfide	
140-27497-9	TW-TR2-C2	Step 6	Solid	Acid/Sulfide	
140-27497-10	TW-TR2-C1	Step 6	Solid	Acid/Sulfide	
140-27497-11	MW-213	Step 6	Solid	Acid/Sulfide	
MB 140-62351/17-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-62351/18-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-62351/19-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	

Metals

Prep Batch: 62386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 7	Solid	Residual	
140-27497-2	MW-212	Step 7	Solid	Residual	
140-27497-3	TW-TR2	Step 7	Solid	Residual	
140-27497-4	MW-210	Step 7	Solid	Residual	
140-27497-5	BH-1	Step 7	Solid	Residual	
140-27497-6	MW-214	Step 7	Solid	Residual	
140-27497-7	MW-211-0-5FT	Step 7	Solid	Residual	
140-27497-8	MW-211-14-25FT	Step 7	Solid	Residual	
140-27497-9	TW-TR2-C2	Step 7	Solid	Residual	
140-27497-10	TW-TR2-C1	Step 7	Solid	Residual	
140-27497-11	MW-213	Step 7	Solid	Residual	
MB 140-62386/17-A	Method Blank	Step 7	Solid	Residual	
LCS 140-62386/18-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-62386/19-A	Lab Control Sample Dup	Step 7	Solid	Residual	

Analysis Batch: 62391

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 1	Solid	6010B SEP	62134
140-27497-1	MW-212-C	Step 2	Solid	6010B SEP	62164
140-27497-2	MW-212	Step 1	Solid	6010B SEP	62134
140-27497-2	MW-212	Step 2	Solid	6010B SEP	62164
140-27497-3	TW-TR2	Step 1	Solid	6010B SEP	62134
140-27497-3	TW-TR2	Step 2	Solid	6010B SEP	62164
140-27497-4	MW-210	Step 1	Solid	6010B SEP	62134
140-27497-4	MW-210	Step 2	Solid	6010B SEP	62164
140-27497-5	BH-1	Step 1	Solid	6010B SEP	62134
140-27497-5	BH-1	Step 2	Solid	6010B SEP	62164
140-27497-6	MW-214	Step 1	Solid	6010B SEP	62134
140-27497-6	MW-214	Step 2	Solid	6010B SEP	62164
140-27497-7	MW-211-0-5FT	Step 1	Solid	6010B SEP	62134
140-27497-7	MW-211-0-5FT	Step 2	Solid	6010B SEP	62164
140-27497-8	MW-211-14-25FT	Step 1	Solid	6010B SEP	62134
140-27497-8	MW-211-14-25FT	Step 2	Solid	6010B SEP	62164
140-27497-9	TW-TR2-C2	Step 1	Solid	6010B SEP	62134
140-27497-9	TW-TR2-C2	Step 2	Solid	6010B SEP	62164
140-27497-10	TW-TR2-C1	Step 1	Solid	6010B SEP	62134
140-27497-10	TW-TR2-C1	Step 2	Solid	6010B SEP	62164
140-27497-11	MW-213	Step 1	Solid	6010B SEP	62134
140-27497-11	MW-213	Step 2	Solid	6010B SEP	62164
MB 140-61992/17-B ^4	Method Blank	Step 1	Solid	6010B SEP	62134
MB 140-62135/17-B ^3	Method Blank	Step 2	Solid	6010B SEP	62164
LCS 140-61992/18-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	62134
LCS 140-62135/18-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	62164
LCSD 140-61992/19-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	62134
LCSD 140-62135/19-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	62164

Analysis Batch: 62441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 3	Solid	6010B SEP	62194
140-27497-1	MW-212-C	Step 4	Solid	6010B SEP	62239
140-27497-2	MW-212	Step 3	Solid	6010B SEP	62194

Metals (Continued)

Analysis Batch: 62441 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-2	MW-212	Step 4	Solid	6010B SEP	62239
140-27497-3	TW-TR2	Step 3	Solid	6010B SEP	62194
140-27497-3	TW-TR2	Step 4	Solid	6010B SEP	62239
140-27497-4	MW-210	Step 3	Solid	6010B SEP	62194
140-27497-4	MW-210	Step 4	Solid	6010B SEP	62239
140-27497-5	BH-1	Step 3	Solid	6010B SEP	62194
140-27497-5	BH-1	Step 4	Solid	6010B SEP	62239
140-27497-6	MW-214	Step 3	Solid	6010B SEP	62194
140-27497-6	MW-214	Step 4	Solid	6010B SEP	62239
140-27497-7	MW-211-0-5FT	Step 3	Solid	6010B SEP	62194
140-27497-7	MW-211-0-5FT	Step 4	Solid	6010B SEP	62239
140-27497-8	MW-211-14-25FT	Step 3	Solid	6010B SEP	62194
140-27497-8	MW-211-14-25FT	Step 4	Solid	6010B SEP	62239
140-27497-9	TW-TR2-C2	Step 3	Solid	6010B SEP	62194
140-27497-9	TW-TR2-C2	Step 4	Solid	6010B SEP	62239
140-27497-10	TW-TR2-C1	Step 3	Solid	6010B SEP	62194
140-27497-10	TW-TR2-C1	Step 4	Solid	6010B SEP	62239
140-27497-11	MW-213	Step 3	Solid	6010B SEP	62194
140-27497-11	MW-213	Step 4	Solid	6010B SEP	62239
MB 140-62165/17-B	Method Blank	Step 3	Solid	6010B SEP	62194
MB 140-62195/17-B	Method Blank	Step 4	Solid	6010B SEP	62239
LCS 140-62165/18-B	Lab Control Sample	Step 3	Solid	6010B SEP	62194
LCS 140-62195/18-B	Lab Control Sample	Step 4	Solid	6010B SEP	62239
LCSD 140-62165/19-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	62194
LCSD 140-62195/19-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	62239

Analysis Batch: 62493

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 5	Solid	6010B SEP	62350
140-27497-1	MW-212-C	Step 6	Solid	6010B SEP	62351
140-27497-2	MW-212	Step 5	Solid	6010B SEP	62350
140-27497-2	MW-212	Step 6	Solid	6010B SEP	62351
140-27497-3	TW-TR2	Step 5	Solid	6010B SEP	62350
140-27497-3	TW-TR2	Step 6	Solid	6010B SEP	62351
140-27497-4	MW-210	Step 5	Solid	6010B SEP	62350
140-27497-4	MW-210	Step 6	Solid	6010B SEP	62351
140-27497-5	BH-1	Step 5	Solid	6010B SEP	62350
140-27497-5	BH-1	Step 6	Solid	6010B SEP	62351
140-27497-6	MW-214	Step 5	Solid	6010B SEP	62350
140-27497-6	MW-214	Step 6	Solid	6010B SEP	62351
140-27497-7	MW-211-0-5FT	Step 5	Solid	6010B SEP	62350
140-27497-7	MW-211-0-5FT	Step 6	Solid	6010B SEP	62351
140-27497-8	MW-211-14-25FT	Step 5	Solid	6010B SEP	62350
140-27497-8	MW-211-14-25FT	Step 6	Solid	6010B SEP	62351
140-27497-9	TW-TR2-C2	Step 5	Solid	6010B SEP	62350
140-27497-9	TW-TR2-C2	Step 6	Solid	6010B SEP	62351
140-27497-10	TW-TR2-C1	Step 5	Solid	6010B SEP	62350
140-27497-10	TW-TR2-C1	Step 6	Solid	6010B SEP	62351
140-27497-11	MW-213	Step 5	Solid	6010B SEP	62350
140-27497-11	MW-213	Step 6	Solid	6010B SEP	62351
MB 140-62240/17-B ^5	Method Blank	Step 5	Solid	6010B SEP	62350

Metals (Continued)

Analysis Batch: 62493 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-62351/17-A	Method Blank	Step 6	Solid	6010B SEP	62351
LCS 140-62240/18-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	62350
LCS 140-62351/18-A	Lab Control Sample	Step 6	Solid	6010B SEP	62351
LCSD 140-62240/19-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	62350
LCSD 140-62351/19-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	62351

Analysis Batch: 62545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 7	Solid	6010B SEP	62386
140-27497-1	MW-212-C	Step 7	Solid	6010B SEP	62386
140-27497-1	MW-212-C	Step 7	Solid	6010B SEP	62386
140-27497-2	MW-212	Step 7	Solid	6010B SEP	62386
140-27497-3	TW-TR2	Step 7	Solid	6010B SEP	62386
140-27497-3	TW-TR2	Step 7	Solid	6010B SEP	62386
140-27497-4	MW-210	Step 7	Solid	6010B SEP	62386
140-27497-4	MW-210	Step 7	Solid	6010B SEP	62386
140-27497-5	BH-1	Step 6	Solid	6010B SEP	62351
140-27497-5	BH-1	Step 7	Solid	6010B SEP	62386
140-27497-5	BH-1	Step 7	Solid	6010B SEP	62386
140-27497-6	MW-214	Step 7	Solid	6010B SEP	62386
140-27497-7	MW-211-0-5FT	Step 7	Solid	6010B SEP	62386
140-27497-7	MW-211-0-5FT	Step 7	Solid	6010B SEP	62386
140-27497-8	MW-211-14-25FT	Step 7	Solid	6010B SEP	62386
140-27497-8	MW-211-14-25FT	Step 7	Solid	6010B SEP	62386
140-27497-9	TW-TR2-C2	Step 7	Solid	6010B SEP	62386
140-27497-9	TW-TR2-C2	Step 7	Solid	6010B SEP	62386
140-27497-10	TW-TR2-C1	Step 7	Solid	6010B SEP	62386
140-27497-10	TW-TR2-C1	Step 7	Solid	6010B SEP	62386
140-27497-11	MW-213	Step 7	Solid	6010B SEP	62386
140-27497-11	MW-213	Step 7	Solid	6010B SEP	62386
MB 140-62386/17-A	Method Blank	Step 7	Solid	6010B SEP	62386
LCS 140-62386/18-A	Lab Control Sample	Step 7	Solid	6010B SEP	62386
LCSD 140-62386/19-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	62386

Analysis Batch: 62595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Step 7	Solid	6010B SEP	62386
140-27497-1	MW-212-C	Total/NA	Solid	6010B	61991
140-27497-1	MW-212-C	Total/NA	Solid	6010B	61991
140-27497-1	MW-212-C	Total/NA	Solid	6010B	61991
140-27497-2	MW-212	Step 7	Solid	6010B SEP	62386
140-27497-2	MW-212	Total/NA	Solid	6010B	61991
140-27497-2	MW-212	Total/NA	Solid	6010B	61991
140-27497-2	MW-212	Total/NA	Solid	6010B	61991
140-27497-3	TW-TR2	Step 7	Solid	6010B SEP	62386
140-27497-3	TW-TR2	Total/NA	Solid	6010B	61991
140-27497-3	TW-TR2	Total/NA	Solid	6010B	61991
140-27497-3	TW-TR2	Total/NA	Solid	6010B	61991
140-27497-4	MW-210	Step 7	Solid	6010B SEP	62386
140-27497-4	MW-210	Total/NA	Solid	6010B	61991
140-27497-4	MW-210	Total/NA	Solid	6010B	61991

Metals (Continued)

Analysis Batch: 62595 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-4	MW-210	Total/NA	Solid	6010B	61991
140-27497-5	BH-1	Step 7	Solid	6010B SEP	62386
140-27497-5	BH-1	Total/NA	Solid	6010B	61991
140-27497-5	BH-1	Total/NA	Solid	6010B	61991
140-27497-6	MW-214	Step 7	Solid	6010B SEP	62386
140-27497-6	MW-214	Total/NA	Solid	6010B	61991
140-27497-6	MW-214	Total/NA	Solid	6010B	61991
140-27497-6	MW-214	Total/NA	Solid	6010B	61991
140-27497-7	MW-211-0-5FT	Step 7	Solid	6010B SEP	62386
140-27497-7	MW-211-0-5FT	Total/NA	Solid	6010B	61991
140-27497-7	MW-211-0-5FT	Total/NA	Solid	6010B	61991
140-27497-7	MW-211-0-5FT	Total/NA	Solid	6010B	61991
140-27497-8	MW-211-14-25FT	Step 7	Solid	6010B SEP	62386
140-27497-8	MW-211-14-25FT	Total/NA	Solid	6010B	61991
140-27497-8	MW-211-14-25FT	Total/NA	Solid	6010B	61991
140-27497-9	TW-TR2-C2	Step 7	Solid	6010B SEP	62386
140-27497-9	TW-TR2-C2	Total/NA	Solid	6010B	61991
140-27497-9	TW-TR2-C2	Total/NA	Solid	6010B	61991
140-27497-9	TW-TR2-C2	Total/NA	Solid	6010B	61991
140-27497-10	TW-TR2-C1	Step 7	Solid	6010B SEP	62386
140-27497-10	TW-TR2-C1	Total/NA	Solid	6010B	61991
140-27497-10	TW-TR2-C1	Total/NA	Solid	6010B	61991
140-27497-10	TW-TR2-C1	Total/NA	Solid	6010B	61991
140-27497-11	MW-213	Step 7	Solid	6010B SEP	62386
140-27497-11	MW-213	Total/NA	Solid	6010B	61991
140-27497-11	MW-213	Total/NA	Solid	6010B	61991
140-27497-11	MW-213	Total/NA	Solid	6010B	61991
MB 140-61991/17-A	Method Blank	Total/NA	Solid	6010B	61991
MB 140-62386/17-A	Method Blank	Step 7	Solid	6010B SEP	62386
LCS 140-61991/18-A	Lab Control Sample	Total/NA	Solid	6010B	61991
LCS 140-62386/18-A	Lab Control Sample	Step 7	Solid	6010B SEP	62386
LCSD 140-61991/19-A	Lab Control Sample Dup	Total/NA	Solid	6010B	61991
LCSD 140-62386/19-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	62386

Analysis Batch: 62654

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Sum of Steps 1-7	Solid	6010B SEP	
140-27497-2	MW-212	Sum of Steps 1-7	Solid	6010B SEP	
140-27497-3	TW-TR2	Sum of Steps 1-7	Solid	6010B SEP	
140-27497-4	MW-210	Sum of Steps 1-7	Solid	6010B SEP	
140-27497-5	BH-1	Sum of Steps 1-7	Solid	6010B SEP	
140-27497-6	MW-214	Sum of Steps 1-7	Solid	6010B SEP	
140-27497-7	MW-211-0-5FT	Sum of Steps 1-7	Solid	6010B SEP	
140-27497-8	MW-211-14-25FT	Sum of Steps 1-7	Solid	6010B SEP	
140-27497-9	TW-TR2-C2	Sum of Steps 1-7	Solid	6010B SEP	
140-27497-10	TW-TR2-C1	Sum of Steps 1-7	Solid	6010B SEP	
140-27497-11	MW-213	Sum of Steps 1-7	Solid	6010B SEP	

QC Association Summary

Client: Golder Associates Inc.
Project/Site: GL21509219, GRE Stanton 2022

Job ID: 140-27497-1

General Chemistry

Analysis Batch: 62024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-27497-1	MW-212-C	Total/NA	Solid	Moisture	
140-27497-2	MW-212	Total/NA	Solid	Moisture	
140-27497-3	TW-TR2	Total/NA	Solid	Moisture	
140-27497-4	MW-210	Total/NA	Solid	Moisture	
140-27497-5	BH-1	Total/NA	Solid	Moisture	
140-27497-6	MW-214	Total/NA	Solid	Moisture	
140-27497-7	MW-211-0-5FT	Total/NA	Solid	Moisture	
140-27497-8	MW-211-14-25FT	Total/NA	Solid	Moisture	
140-27497-9	TW-TR2-C2	Total/NA	Solid	Moisture	
140-27497-10	TW-TR2-C1	Total/NA	Solid	Moisture	
140-27497-11	MW-213	Total/NA	Solid	Moisture	
140-27497-1 DU	MW-212-C	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-27497-1
Project/Site: GL21509219, GRE Stanton 2022

Client Sample ID: MW-212-C
Lab Sample ID: 140-27497-1
Date Collected: 05/10/22 10:48
Matrix: Solid
Date Received: 05/18/22 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62654	06/16/22 15:26	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			62024	05/25/22 14:02	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: MW-212-C
Lab Sample ID: 140-27497-1
Date Collected: 05/10/22 10:48
Matrix: Solid
Date Received: 05/18/22 11:20
Percent Solids: 72.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62595	06/14/22 13:41	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 15:40	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		3			62595	06/14/22 17:27	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			62391	06/08/22 11:27	JGT	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			62391	06/08/22 13:26	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 11:02	JGT	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 12:59	JGT	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 11:22	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 13:22	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62545	06/13/22 11:43	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: GL21509219, GRE Stanton 2022

Job ID: 140-27497-1

Client Sample ID: MW-212-C
Date Collected: 05/10/22 10:48
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-1
Matrix: Solid
Percent Solids: 72.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 13:40	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			62545	06/13/22 15:31	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62595	06/14/22 12:42	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-212
Date Collected: 05/10/22 11:20
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62654	06/16/22 15:26	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			62024	05/25/22 14:02	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: MW-212
Date Collected: 05/10/22 11:20
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-2
Matrix: Solid
Percent Solids: 85.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62595	06/14/22 13:55	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 15:55	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			62595	06/14/22 17:32	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			62391	06/08/22 11:42	JGT	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			62391	06/08/22 13:41	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 11:17	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-212

Lab Sample ID: 140-27497-2
Date Collected: 05/10/22 11:20
Matrix: Solid
Date Received: 05/18/22 11:20
Percent Solids: 85.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 13:14	JGT	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 11:37	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 13:37	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 13:55	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62595	06/14/22 11:00	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: TW-TR2

Lab Sample ID: 140-27497-3
Date Collected: 05/11/22 15:00
Matrix: Solid
Date Received: 05/18/22 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62654	06/16/22 15:26	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			62024	05/25/22 14:02	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: TW-TR2

Lab Sample ID: 140-27497-3
Date Collected: 05/11/22 15:00
Matrix: Solid
Date Received: 05/18/22 11:20
Percent Solids: 84.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62595	06/14/22 14:00	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 16:01	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		3			62595	06/14/22 17:37	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			62391	06/08/22 11:47	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-27497-1
Project/Site: GL21509219, GRE Stanton 2022

Client Sample ID: TW-TR2
Lab Sample ID: 140-27497-3
Date Collected: 05/11/22 15:00
Matrix: Solid
Date Received: 05/18/22 11:20
Percent Solids: 84.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			62391	06/08/22 13:46	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 11:21	JGT	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 13:18	JGT	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 11:42	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 13:47	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 14:00	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			62545	06/13/22 15:36	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62595	06/14/22 11:05	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-210
Lab Sample ID: 140-27497-4
Date Collected: 05/09/22 10:37
Matrix: Solid
Date Received: 05/18/22 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62654	06/16/22 15:26	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			62024	05/25/22 14:02	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: GL21509219, GRE Stanton 2022

Job ID: 140-27497-1

Client Sample ID: MW-210

Date Collected: 05/09/22 10:37
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-4

Matrix: Solid
Percent Solids: 83.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62595	06/14/22 14:05	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 16:06	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			62595	06/14/22 17:42	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			62391	06/08/22 11:52	JGT	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			62391	06/08/22 13:51	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 11:26	JGT	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 13:23	JGT	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 11:47	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 13:52	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 14:05	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			62545	06/13/22 15:41	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62595	06/14/22 11:09	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: BH-1

Lab Sample ID: 140-27497-5

Date Collected: 05/10/22 13:15

Matrix: Solid

Date Received: 05/18/22 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62654	06/16/22 15:26	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			62024	05/25/22 14:02	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: BH-1

Lab Sample ID: 140-27497-5

Date Collected: 05/10/22 13:15

Matrix: Solid

Date Received: 05/18/22 11:20

Percent Solids: 89.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62595	06/14/22 14:09	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			62595	06/14/22 17:48	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			62391	06/08/22 11:57	JGT	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			62391	06/08/22 13:56	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 11:31	JGT	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 13:28	JGT	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 11:52	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 13:56	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		2			62545	06/13/22 16:26	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 14:10	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: GL21509219, GRE Stanton 2022

Job ID: 140-27497-1

Client Sample ID: BH-1
Date Collected: 05/10/22 13:15
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-5
Matrix: Solid
Percent Solids: 89.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		5			62545	06/13/22 15:46	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62595	06/14/22 11:14	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-214
Date Collected: 05/12/22 15:15
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62654	06/16/22 15:26	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			62024	05/25/22 14:02	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: MW-214
Date Collected: 05/12/22 15:15
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-6
Matrix: Solid
Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62595	06/14/22 14:14	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 16:18	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			62595	06/14/22 17:53	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			62391	06/08/22 12:02	JGT	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			62391	06/08/22 14:01	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 11:36	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-27497-1
Project/Site: GL21509219, GRE Stanton 2022

Client Sample ID: MW-214
Lab Sample ID: 140-27497-6
Date Collected: 05/12/22 15:15
Matrix: Solid
Date Received: 05/18/22 11:20
Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 13:33	JGT	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 11:57	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 14:02	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 14:16	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62595	06/14/22 11:19	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-211-0-5FT
Lab Sample ID: 140-27497-7
Date Collected: 05/10/22 08:24
Matrix: Solid
Date Received: 05/18/22 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62654	06/16/22 15:26	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			62024	05/25/22 14:02	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: MW-211-0-5FT
Lab Sample ID: 140-27497-7
Date Collected: 05/10/22 08:24
Matrix: Solid
Date Received: 05/18/22 11:20
Percent Solids: 83.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62595	06/14/22 14:19	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 16:23	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			62595	06/14/22 17:58	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			62391	06/08/22 12:07	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: GL21509219, GRE Stanton 2022

Job ID: 140-27497-1

Client Sample ID: MW-211-0-5FT

Date Collected: 05/10/22 08:24
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-7

Matrix: Solid
Percent Solids: 83.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			62391	06/08/22 14:06	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 11:41	JGT	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 13:38	JGT	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 12:02	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 14:07	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 14:21	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		3			62545	06/13/22 15:51	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62595	06/14/22 11:24	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-211-14-25FT

Date Collected: 05/10/22 09:30
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-8

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62654	06/16/22 15:26	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			62024	05/25/22 14:02	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: GL21509219, GRE Stanton 2022

Job ID: 140-27497-1

Client Sample ID: MW-211-14-25FT

Date Collected: 05/10/22 09:30
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-8

Matrix: Solid
Percent Solids: 83.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62595	06/14/22 14:24	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 16:29	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			62391	06/08/22 12:12	JGT	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			62391	06/08/22 14:11	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 11:46	JGT	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 13:42	JGT	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 12:07	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 14:11	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 14:26	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		3			62545	06/13/22 16:06	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62595	06/14/22 11:29	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: TW-TR2-C2

Date Collected: 05/11/22 14:00
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-9

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62654	06/16/22 15:26	KNC	TAL KNX
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-27497-1
Project/Site: GL21509219, GRE Stanton 2022

Client Sample ID: TW-TR2-C2
Lab Sample ID: 140-27497-9
Date Collected: 05/11/22 14:00
Matrix: Solid
Date Received: 05/18/22 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			62024	05/25/22 14:02	ACW	TAL KNX

Client Sample ID: TW-TR2-C2
Lab Sample ID: 140-27497-9
Date Collected: 05/11/22 14:00
Matrix: Solid
Date Received: 05/18/22 11:20
Percent Solids: 54.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62595	06/14/22 14:29	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 16:34	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			62595	06/14/22 18:13	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			62391	06/08/22 12:17	JGT	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			62391	06/08/22 14:16	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 11:51	JGT	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 13:47	JGT	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 12:12	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 14:16	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 14:31	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			62545	06/13/22 16:10	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-27497-1
Project/Site: GL21509219, GRE Stanton 2022

Client Sample ID: TW-TR2-C2
Lab Sample ID: 140-27497-9
Date Collected: 05/11/22 14:00
Matrix: Solid
Date Received: 05/18/22 11:20
Percent Solids: 54.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62595	06/14/22 11:33	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: TW-TR2-C1
Lab Sample ID: 140-27497-10
Date Collected: 05/11/22 13:00
Matrix: Solid
Date Received: 05/18/22 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62654	06/16/22 15:26	KNC	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			62024	05/25/22 14:02	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: TW-TR2-C1
Lab Sample ID: 140-27497-10
Date Collected: 05/11/22 13:00
Matrix: Solid
Date Received: 05/18/22 11:20
Percent Solids: 64.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62595	06/14/22 14:33	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 16:40	JGT	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			62595	06/14/22 18:19	JGT	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			62391	06/08/22 12:22	JGT	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			62391	06/08/22 14:22	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 11:56	JGT	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 13:52	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-27497-1
Project/Site: GL21509219, GRE Stanton 2022

Client Sample ID: TW-TR2-C1
Lab Sample ID: 140-27497-10
Date Collected: 05/11/22 13:00
Matrix: Solid
Date Received: 05/18/22 11:20
Percent Solids: 64.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 12:17	JGT	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 14:21	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 14:36	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			62545	06/13/22 16:16	JGT	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62595	06/14/22 11:38	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: MW-213
Lab Sample ID: 140-27497-11
Date Collected: 05/12/22 12:40
Matrix: Solid
Date Received: 05/18/22 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			62654	06/16/22 15:26	KNC	TAL KNX
	Instrument ID:	NOEQUIP								
Total/NA	Analysis	Moisture		1			62024	05/25/22 14:02	ACW	TAL KNX
	Instrument ID:	NOEQUIP								

Client Sample ID: MW-213
Lab Sample ID: 140-27497-11
Date Collected: 05/12/22 12:40
Matrix: Solid
Date Received: 05/18/22 11:20
Percent Solids: 85.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			62595	06/14/22 14:38	JGT	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 16:45	JGT	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			62595	06/14/22 18:24	JGT	TAL KNX
	Instrument ID:	DUO								
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			62391	06/08/22 12:27	JGT	TAL KNX
	Instrument ID:	DUO								

Client Sample ID: MW-213

Date Collected: 05/12/22 12:40
Date Received: 05/18/22 11:20

Lab Sample ID: 140-27497-11

Matrix: Solid
Percent Solids: 85.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			62391	06/08/22 14:27	JGT	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 12:01	JGT	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 13:57	JGT	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 12:22	JGT	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 14:27	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 14:41	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			62545	06/13/22 16:21	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			62595	06/14/22 11:43	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 140-61991/17-A

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 14:53	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-27497-1
Project/Site: GL21509219, GRE Stanton 2022

Client Sample ID: Method Blank
Lab Sample ID: MB 140-61992/17-B ^4
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			62391	06/08/22 10:43	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-62135/17-B ^3
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			62391	06/08/22 12:41	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-62165/17-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 10:19	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-62195/17-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 12:15	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-62240/17-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 10:11	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-62351/17-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 12:37	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-62386/17-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 12:55	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62595	06/14/22 11:57	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-61991/18-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 14:58	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-61992/18-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			62391	06/08/22 10:48	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-62135/18-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			62391	06/08/22 12:46	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-62165/18-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 10:24	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-62195/18-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 12:20	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-62240/18-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 10:16	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-62351/18-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 12:42	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-62386/18-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 13:00	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62595	06/14/22 12:02	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-27497-1
Project/Site: GL21509219, GRE Stanton 2022

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-61991/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	61991	05/26/22 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			62595	06/14/22 15:03	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-61992/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	61992	05/31/22 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	62134	06/01/22 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			62391	06/08/22 10:53	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-62135/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	62135	06/01/22 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	62164	06/02/22 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			62391	06/08/22 12:51	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-62165/19-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	62165	06/02/22 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	62194	06/03/22 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			62441	06/09/22 10:28	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-62195/19-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	62195	06/03/22 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	62239	06/06/22 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			62441	06/09/22 12:25	JGT	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-27497-1
Project/Site: GL21509219, GRE Stanton 2022

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-62240/19-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	62240	06/06/22 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	62350	06/08/22 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			62493	06/10/22 10:21	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-62351/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	62351	06/08/22 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			62493	06/10/22 12:47	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-62386/19-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62545	06/13/22 13:05	JGT	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	62386	06/09/22 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			62595	06/14/22 12:07	JGT	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-212-C
Lab Sample ID: 140-27497-1 DU
Date Collected: 05/10/22 10:48
Matrix: Solid
Date Received: 05/18/22 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			62024	05/25/22 14:02	ACW	TAL KNX
	Instrument ID: NOEQUIP									

Laboratory References:
TAL KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Golder Associates Inc.
Job ID: 140-27497-1
Project/Site: GL21509219, GRE Stanton 2022

Laboratory: Eurofins Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-25
ANAB	Dept. of Energy	L2311.01	02-13-25
ANAB	ISO/IEC 17025	L2311	02-13-25
Arkansas DEQ	State	88-0688	06-17-22
California	State	2423	06-30-22
Colorado	State	TN00009	02-28-23
Connecticut	State	PH-0223	09-30-23
Florida	NELAP	E87177	06-30-22
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-22
Kansas	NELAP	E-10349	10-31-22
Kentucky (DW)	State	90101	12-31-22
Louisiana	NELAP	83979	06-30-22
Louisiana (DW)	State	LA019	12-31-22
Maryland	State	277	03-31-23
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-22
New Hampshire	NELAP	299919	01-17-23
New Jersey	NELAP	TN001	06-30-22
New York	NELAP	10781	03-31-23
North Carolina (DW)	State	21705	07-31-22
North Carolina (WW/SW)	State	64	12-31-22
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-22
Oregon	NELAP	TNI0189	12-31-22
Pennsylvania	NELAP	68-00576	12-31-22
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-22
Virginia	NELAP	460176	09-14-22
Washington	State	C593	01-19-23
West Virginia (DW)	State	9955C	12-31-22
West Virginia DEP	State	345	04-30-23
Wisconsin	State	998044300	08-31-22

Method Summary

Client: Golder Associates Inc.
Project/Site: GL21509219, GRE Stanton 2022

Job ID: 140-27497-1

Method	Method Description	Protocol	Laboratory
6010B	SEP Metals (ICP) - Total	SW846	TAL KNX
6010B SEP	SEP Metals (ICP)	SW846	TAL KNX
Moisture	Percent Moisture	EPA	TAL KNX
3010A	Preparation, Total Metals	SW846	TAL KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	TAL KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	TAL KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	TAL KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	TAL KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	TAL KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	TAL KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	TAL KNX
Total	Preparation, Total Material	TAL-KNOX	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

TAL KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike

Knoxville, TN 37921-5947
phone 865.291.3000 fax 865.584.4315

Chain of Custody Record

eurofins | Environment Testing America

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: CCR

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Erin Hunter	Site Contact: Brittany Bradley	Date:	COC No: 1
Golder Associates USA Inc., Member of WSP	Email: erin.hunter@wsp.com	Lab Contact: Ryan Henry	Carrier:	1 of 1 COCs
7245 W Alaska Drive, Suite 200	Tel/Fax: 720-962-3424			TALS Project #:
Lakewood, CO 80226	Analysis Turnaround Time			Sampler:
(303) 980-0540 Phone	☐ CALENDAR DAYS ☑ WORKING DAYS			For Lab Use Only:
(xxx) xxx-xxxx FAX	TAT if different from Below ____			Walk-in Client:
Project Name: GL21509219, GRE Stanton 2022	☐ 2 weeks			
Site: Stanton Station	☐ 1 week			
P O #	☐ 2 days			
	☐ 1 day			

140-27497 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	6010B SEP - Al, As, Fe, Li, Mn	Sample Specific Notes:
MW-212-C	5/10/22	10:48	Soil	C	1	N	N	X	0-5 ft
MW-212	5/10/22	11:20	C	Soil	1	N	N	X	14-25 ft
TW-TR2	5/11/22	15:00	C	Soil	1	N	N	X	75-95 ft
MW-210	5/9/22	10:37	C	Soil	1	N	N	X	15-25 ft
BH-1	5/10/22	13:15	C	Soil	1	N	N	X	2-5 ft
MW-214	5/12/22	15:15	C	Soil	1	N	N	X	2-15 ft
MW-211 - 0-5 ft	5/10/22	8:24	C	Soil	1	N	N	X	0-5 ft
MW-211 - 14-25ft	5/10/22	9:30	C	Soil	1	N	N	X	14-25 ft
TW-TR2-C2	5/11/22	14:00	C	Soil	1	N	N	X	50-55 ft
TW-TR2-C1	5/11/22	13:00	C	Soil	1	N	N	X	20-25 ft
MW-213	5/12/22	12:40	C	Soil	1	N	N	X	20-30 ft

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments: NO CUSTODY SEALS, RECEIVED AMBIENT AT 20.3/CT 20.6'C
BMS 7822, 1 BOX FEDX #2731 1134 0091 G

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: ____ Corr'd: ____		Therm ID No.: ____
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: ETA KNX	Date/Time: 5-18-22 11:20
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Loc: 140
27497

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓		✓	☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC71 Correction factor: +0.3°C			✓	☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?		✓		☑ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)		✓		☑ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

10

14

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 14006675 PM Instructions:

Sample Receiving Associate: [signature] Date: 5-18-22

QA026R32.doc, 062719

APPENDIX B

Ground Water Mineral Saturation

Well	Date	Ferrihydrite	Melanterite	Anglesite	Gypsum	Jarosite-H	Jarosite-K	Jarosite-Na	Calcite	Dolomite	Magnesite	Siderite	Cerussite	Fluorite
Mineral Formula		$(Fe^{3+})_2O_3•0.5H_2$	$Fe2+(H_2O)^6SO_4$	PbSO4	$CaSO_42H_2O$	$(H_3O)Fe_3(SO4)2(OH)_6$	$KFe_3(SO_4)_2(OH)_6$	$NaFe_3(SO_4)_2(OH)_6$	CaCO3	MgCa(CO3)2	MgCaCO3	FeCO3	PbCaCO3	CaF
MW-102	5/5/2021	2.2	-6.1	-5.6	-1.2	-2.9	3.6	2.1	0.2	0.6	-0.1	-0.5	-2.7	-1.8
MW-102	11/23/2021	3.1	-6.0	-5.8	-1.1	-1.4	5.6	4.0	0.4	1.0	0.1	-0.3	-2.7	-1.9
MW-102	3/15/2022	2.2	-6.6	-5.8	-1.1	-3.6	3.2	1.7	0.4	0.9	0.0	-0.9	-2.7	-1.9
MW-102	6/28/2022	2.1	-6.5	-5.7	-1.2	-3.7	3.0	1.5	0.3	0.7	0.0	-0.9	-2.7	-1.9
MW-103	5/5/2021	2.3	-10.0	-6.8	-1.6	-7.9	0.2	-1.2	1.1	2.3	0.8	-3.2	-2.6	-2.7
MW-103	11/23/2021	2.6	-8.7	-6.2	-1.4	-5.6	2.3	0.8	0.9	2.0	0.6	-2.3	-2.4	-2.4
MW-103	3/15/2022	2.8	-9.8	-6.3	-1.5	-6.9	1.4	-0.1	1.1	2.2	0.7	-3.1	-2.2	-2.7
MW-103	6/28/2022	2.0	-10.3	-6.1	-1.6	-8.8	-0.4	-2.1	0.9	2.0	0.6	-3.6	-2.1	-3.1
MW-105	5/6/2021	2.3	-6.9	-6.1	-1.5	-4.0	2.9	1.2	0.4	1.6	0.6	-0.9	-2.7	-1.5
MW-105	11/22/2021	2.1	-6.6	-5.9	-1.5	-3.9	2.8	1.1	0.2	1.1	0.4	-0.8	-2.7	-1.6
MW-105	3/14/2022	2.4	-7.2	-6.2	-1.5	-4.2	2.8	1.1	0.5	1.6	0.7	-1.1	-2.7	-1.5
MW-105	6/27/2022	2.3	-7.0	-6.2	-1.5	-4.0	2.8	1.1	0.5	1.7	0.8	-0.9	-2.7	-1.6
MW-210	5/26/2022	3.8	-5.4	-5.5	-1.1	0.6	7.7	5.9	0.5	0.7	-0.3	0.3	-2.4	-1.7
MW-210	7/19/2022	3.9	-5.1	-5.4	-1.2	1.1	8.0	6.3	0.3	0.5	-0.4	0.6	-2.4	-1.6
MW-211	5/26/2022	3.9	-6.3	-5.6	-1.1	-0.3	7.2	5.6	0.7	1.6	0.4	-0.3	-2.2	-1.9
MW-211	7/19/2022	4.4	-4.6	-4.7	-1.1	2.9	9.9	8.4	0.3	0.9	0.0	1.0	-1.7	-1.9
MW-213	5/26/2022	3.7	-5.9	-6.0	-1.1	-0.4	6.8	4.9	0.7	0.9	-0.2	0.0	-2.7	-1.3
MW-213	7/19/2022	3.6	-4.5	-4.8	-1.1	1.4	8.1	6.2	0.2	0.0	-0.7	1.0	-2.0	-1.2
MW-214	5/26/2022	4.0	-5.8	-5.7	-1.4	0.3	7.5	5.8	0.5	1.4	0.3	0.2	-2.2	-1.8
MW-214	7/19/2022	3.9	-5.8	-5.2	-1.4	0.1	7.2	5.5	0.4	1.0	0.1	0.2	-1.7	-1.8
MW-6B	6/10/2019	2.4	-7.5	-6.1	-1.7	-4.5	2.5	1.1	0.2	0.3	-0.3	-1.4	-2.7	-2.1
MW-6B	11/25/2019	2.4	-7.2	-6.0	-1.7	-4.2	2.7	1.3	0.0	-0.1	-0.6	-1.3	-2.7	-2.2
MW-6B	5/6/2021	2.1	-6.3	-5.7	-1.7	-3.5	2.9	1.5	-0.2	-0.7	-0.9	-0.7	-2.7	-2.1
MW-6B	11/22/2021	2.5	-6.8	-5.9	-1.8	-3.6	3.2	1.8	-0.1	-0.4	-0.8	-1.0	-2.7	-2.2
MW-6B	3/14/2022	2.5	-7.1	-6.0	-1.8	-4.0	2.9	1.5	0.0	-0.2	-0.7	-1.2	-2.7	-2.1
MW-6B	6/27/2022	2.6	-7.0	-6.0	-1.8	-3.7	3.1	1.7	0.0	-0.1	-0.6	-1.1	-2.7	-2.1
MW-7A	6/10/2019	1.8	-5.9	-4.9	0.0	-2.9	4.3	3.2	0.7	2.0	0.8	-1.1	-2.7	-1.9
MW-7A	11/25/2019	1.5	-5.9	-4.8	0.1	-3.2	3.9	2.7	0.6	1.8	0.6	-1.2	-2.7	-1.7
MW-7A	5/6/2021	1.3	-5.9	-4.8	0.1	-3.6	3.4	2.2	0.6	1.8	0.6	-1.1	-2.7	-1.8
MW-7A	11/22/2021	1.0	-5.8	-4.7	0.0	-4.1	2.9	1.7	0.5	1.4	0.4	-1.2	-2.7	-1.8
MW-7A	3/14/2022	1.7	-5.1	-4.7	0.1	-2.0	5.0	3.8	0.5	1.5	0.5	-0.5	-2.7	-1.8
MW-7A	6/27/2022	2.5	-5.2	-4.9	0.1	-0.8	6.4	5.3	0.7	2.0	0.7	-0.4	-2.7	-1.8
MW-7B	5/6/2021	3.3	-6.8	-6.3	-1.9	-2.3	4.9	3.2	0.2	0.5	-0.2	-0.6	-2.7	-2.1
MW-7B	11/22/2021	2.9	-5.9	-5.9	-1.9	-1.7	5.1	3.5	-0.3	-0.4	-0.6	-0.1	-2.7	-2.2
MW-7B	3/14/2022	3.2	-6.2	-6.2	-2.0	-1.7	5.3	3.7	0.0	0.1	-0.3	-0.1	-2.7	-2.2
MW-7B	6/27/2022	2.8	-6.0	-5.9	-1.9	-2.1	4.6	3.0	-0.3	-0.4	-0.6	-0.2	-2.7	-2.2
MW-8B	6/10/2019	2.3	-6.8	-5.9	-1.2	-3.9	3.0	1.1	0.4	1.0	0.1	-1.0	-2.7	-2.3
MW-8B	11/25/2019	2.2	-6.6	-5.8	-1.1	-3.8	3.0	1.1	0.4	1.0	0.1	-0.9	-2.7	-2.2
MW-8B	5/6/2021	2.4	-7.1	-6.1	-1.2	-4.3	2.5	0.4	0.7	1.4	0.2	-1.1	-2.7	-2.5
MW-8B	11/22/2021	1.5	-6.6	-5.7	-1.4	-5.1	1.3	-0.8	0.1	0.3	-0.3	-1.0	-2.7	-2.4
MW-8B	3/14/2022	1.9	-6.7	-5.8	-1.3	-4.5	2.1	-0.1	0.3	0.6	-0.2	-1.0	-2.7	-2.5
MW-8B	6/27/2022	1.9	-6.7	-5.9	-1.3	-4.5	2.0	-0.1	0.3	0.7	-0.1	-0.9	-2.7	-2.4
MW-9N	6/11/2019	1.6	-6.1	-5.4	-1.0	-4.0	2.9	1.3	0.1	0.8	0.2	-0.9	-2.7	-1.9
MW-9N	11/25/2019	1.6	-6.1	-5.4	-0.9	-3.9	3.0	1.3	0.3	1.0	0.2	-0.9	-2.7	-1.9
MW-9N	5/5/2021	1.6	-6.2	-5.5	-0.9	-4.0	2.9	1.3	0.3	1.2	0.3	-0.8	-2.7	-1.7

Well	Date	Ferrihydrite	Melanterite	Anglesite	Gypsum	Jarosite-H	Jarosite-K	Jarosite-Na	Calcite	Dolomite	Magnesite	Siderite	Cerussite	Fluorite
Mineral Formula		$(Fe^{3+})_2O_3•0.5H_2$	$Fe2+(H_2O)^6SO_4$	PbSO4	$CaSO_42H_2O$	$(H_3O)Fe_3(SO4)2(OH)_6$	$KFe_3(SO_4)_2(OH)_6$	$NaFe_3(SO_4)_2(OH)_6$	CaCO3	MgCa(CO3)2	MgCaCO3	FeCO3	PbCaCO3	CaF
MW-9N	11/23/2021	1.4	-6.0	-5.4	-0.9	-4.0	2.8	1.1	0.2	0.8	0.2	-0.7	-2.7	-1.7
MW-9N	3/15/2022	1.0	-6.1	-5.3	-0.9	-4.8	1.9	0.2	0.1	0.6	0.1	-1.0	-2.7	-1.7
MW-9N	6/28/2022	2.4	-5.6	-5.5	-0.9	-1.8	5.1	3.5	0.4	1.2	0.3	-0.2	-2.7	-1.6
MW-PB1	3/28/2022	3.2	-4.6	-4.5	-1.0	0.6	7.4	5.4	0.2	0.4	-0.4	0.8	-1.7	-1.6
MW-PB1	5/25/2022	3.8	-4.8	-4.8	-0.8	1.4	8.4	6.5	0.6	1.1	0.0	0.8	-1.8	-1.5
MW-PB1	6/27/2022	3.8	-4.8	-5.7	-0.8	1.4	8.4	6.5	0.6	1.1	0.0	0.8	-2.7	-1.4
Average		2.5	-6.4	-5.6	-1.2	-2.8	4.2	2.5	0.4	0.9	0.1	-0.7	-2.5	-1.9
Minimum		1.0	-10.3	-6.8	-2.0	-8.8	-0.4	-2.1	-0.3	-0.7	-0.9	-3.6	-2.7	-3.1
Maximum		4.4	-4.5	-4.5	0.1	2.9	9.9	8.4	1.1	2.3	0.8	1.0	-1.7	-1.2
Median		2.4	-6.2	-5.7	-1.2	-3.6	3.1	1.7	0.4	1.0	0.1	-0.9	-2.7	-1.9

APPENDIX C

SGS XRD Lab Report

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for:	*Golder USA*
Project Number/ LIMS No.	*18363-01/MI7001-FEB21*
Sample Receipt:	*February 2, 2021*
Sample Analysis:	*March 11, 2021*
Reporting Date:	*March 15, 2021*

Instrument:	BRUKER AXS D8 Advance Diffractometer
Test Conditions:	Co radiation, 35 kV, 40 mA Regular Scanning: Step: 0.02°, Step time: 1s, 2θ range: 3-80°
Interpretations :	PDF2/PDF4 powder diffraction databases issued by the International Center for Diffraction Data (ICDD). DiffracPlus Eva and Topas software.
Detection Limit :	0.5-2%. Strongly dependent on crystallinity.

Contents:

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Senior Mineralogist

Huyun Zhou, Ph.D., P.Geo.
Senior Mineralogist

ACCREDITATION: SGS Minerals Services Lakefield is accredited to the requirements of ISO/IEC 17025 for specific tests as listed on our scope of accreditation, including geochemical, mineralogical and trade mineral tests. To view a list of the accredited methods, please visit the following website and search SGS Canada - Minerals Services - Lakefield: http://palcan.scc.ca/SpecsSearch/GLSearchForm.do.

Method Summary

The Rietveld Method of Mineral Identification by XRD (ME-LR-MIN-MET-MN-D05) method used by SGS Minerals Services is accredited to the requirements of ISO/IEC 17025.

Mineral Identification and Interpretation:

Mineral identification and interpretation involves matching the diffraction pattern of an unknown material to patterns of single-phase reference materials. The reference patterns are compiled by the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD) database and released on software as Powder Diffraction Files (PDF).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Quantitative Rietveld Analysis is performed by using Topas 4.2 (Bruker AXS), a graphics based profile analysis program built around a non-linear least squares fitting system, to determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile until it matches the obtained experimental patterns.

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.05wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

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Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	Stanton MW-103 FEB7001-1 (wt %)
Amorphous Content	33.7
*LiF	0.0
Quartz	13.9
Dolomite	2.6
Albite	2.4
Microcline	1.4
Muscovite	1.2
Phlogopite	0.3
Ilmenite	0.1
Calcite	44.4
TOTAL	100

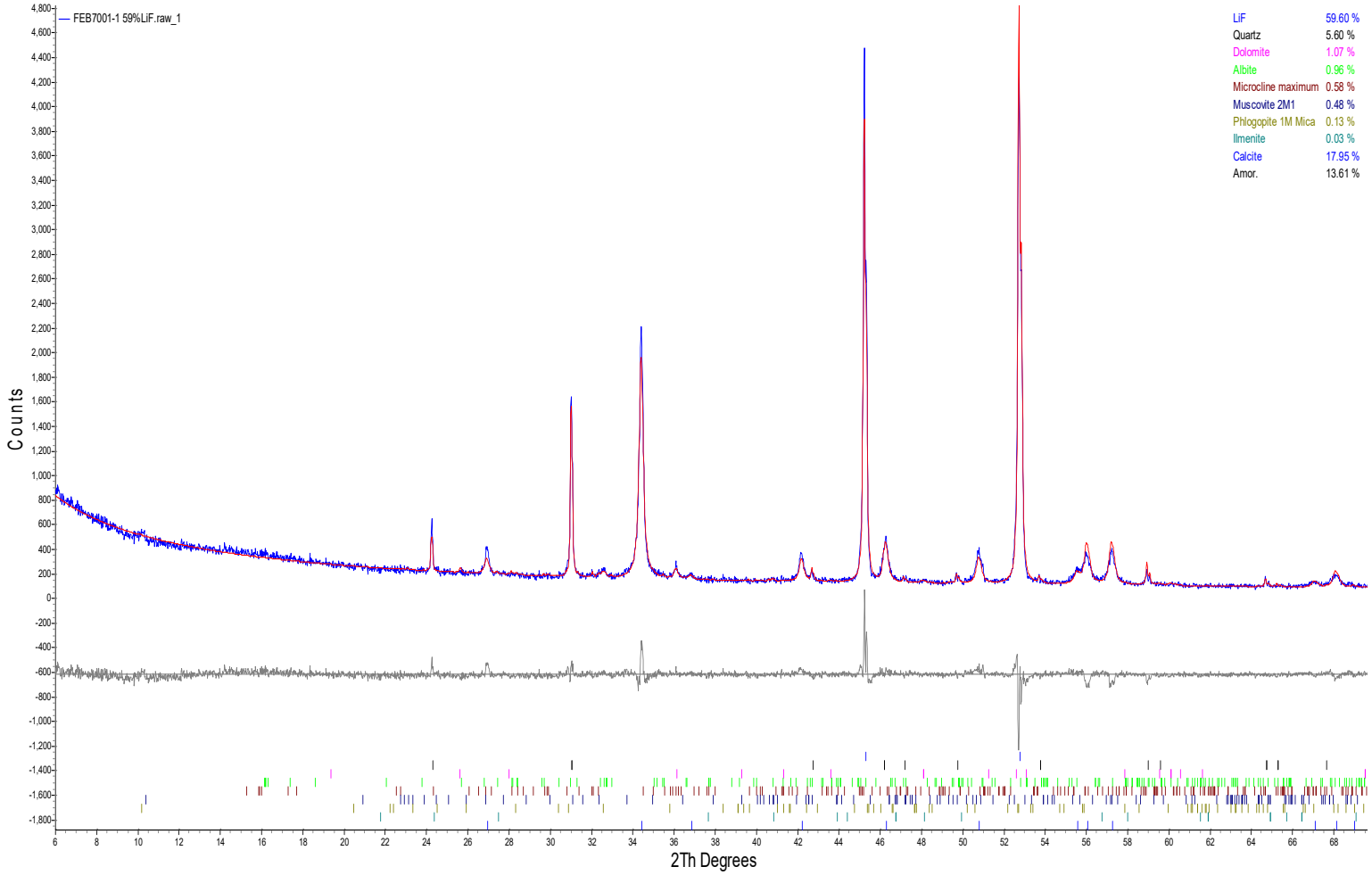
The weight percent quantities indicated have been normalized to a sum of 100%.

**LiF was mixted with sample as a reference for amorphous determination.*

Mineral/Compound	Formula
Quartz	SiO_2
Dolomite	$CaMg(CO_3)_2$
Albite	$NaAlSi_3O_8$
Microcline	$KAlSi_3O_8$
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$
Phlogopite	$KMg_3(AlSi_3O_{10})(OH)_2$
Ilmenite	$FeTiO_3$
Calcite	$CaCO_3$

Golder USA
18363-01/MI7001-FEB21
03/15/2021

Stanton MW-103



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